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Peace, Energy and Environment *for* Architectural Morphogenesis

Towards A Conceptual 'Peacenergy' Studio

By

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Key Words

Environment

The external conditions, resources, stimuli etc. with which an organism interacts and it means all of the outside forces, events, and things which contains:

Natural environment, all living and non-living things that occur naturally on Earth.

Built environment, constructed surroundings that provide the setting for human activity, ranging from the large-scale civic surroundings to the personal places.

Social environment, the culture that an individual lives in, and the people and institutions with whom they interact. *(http://en.wikipedia.org/wiki/Environment)*

Morphogenesis

(from the Greek morphê shape and genesis creation),(literally, "beginning of the shape"), is one of three fundamental aspects of developmental biology along with the control of cell growth and cellular differentiation. Morphogenesis is concerned with the shapes of tissues, organs and entire organisms and the positions of the various specialized cell types. Cell growth and differentiation can take place in cell culture or inside of tumor cell masses without the normal morphogenesis that is seen in an intact organism. The study of morphogenesis involves an attempt to understand the processes that control the organized spatial distribution of cells that arises during the embryonic development of an organism and that give rise to the characteristic forms of tissues, organs, and overall body anatomy. In the human embryo, the change from a cluster of nearly identical cells at the blastula stage to a post-gastrulation embryo with structured tissues and organs is controlled by the genetic "program" and can be modified by environmental factor.*(http://en.wikipedia.org/wiki/Morphogenesis)*

Christopher Alexander, the famous architect, linked the idea of morphogenesis to architecture and proposed how the powerful ideas on morphogenesis are not armchair theory, but could produce real, tangible results, in the human richness of the built environment.

Definitions of Terms

According to the findings of the thesis and the fact that energy is a common factor to everything, new definitions from energy point of view were proposed as follows:

Energy

Energy is a flux of information carrying meaningful messages, which can be decoded through resonance causing transaction and communication in the universe. Some of these transactions can be acknowledged when they are within our energy language

Architecture

Architecture can be defined as harmonizing energy patterns, which form architectural spaces within their function, in resonance with human being to create the feeling of peace. In this sense, architecture has become a tool for change and transits conventional time and space concepts.

Peace

Peace can be defined as a balanced state arising from harmony of all different energy fields in all components of individual and collective activities of a society on several hierarchies' levels. This harmonizing balance quality into any activity is a basic criterion towards peace.

'Peacenergy'

It is a new term of an integrated field combining peace as a catalyst with all energy fields of architectural spaces and human energy fields to maintain inner and outer balanced state within the built environment.

'Peacenergy' Environmental Concept

The genetic peace concept is manifested in most architectural morphogenesis throughout history giving it its ability to produce a balanced physical, physiological, psychological, mental and spiritual state of the human being. This state is generated from harmonizing resonance by integration of all energy fields of architectural space and human energy fields to maintain the state of balance. This balanced state brining qualities to architectural space, which generate and maintain peace to the built environment.

act

The world, nowadays, is full of contradictions, conflicts, insecurity. The quest for peace inner and outer started to be one of the vital needs for the existence of the human beings seeking a balanced relation between both soul and mind.

greed that architecture is a mirror of existing and it is the most trustworthy anuscript of the autobiographies of any nation for that architects are living now in the ossroad of three major crises: crisis of contemporary architecture, crisis of peace and of risis of energy, depending on the fact that everything is an energy and it is the common factor to everything. The problem of this research arises from the triangle of these three ajor crises within the concept of liking and bridging of zero time.

The main goal of the thesis is to achieve and maintain peace within our built environment by using the balanced relation between architecture and energy quality. This could lead to enhance the quality of environment within architectural and urban spaces.

The thesis is based on four hypotheses to reach its main goal and objectives. These four hypotheses are:

1. Peace was, has been, and will be the ultimate goal and destination of all architectural creations as far as humanity exists.
2. The architectural space creates its own energy fields, which have the ability to produce a sensible change of the existing mental, physiological, psychological state of the human beings. The total energy of the architectural space is generated from the integration of all energy fields inside and outside architectural space.
3. The energy of architectural and urban spaces highly affects the quality of environment within these spaces, which play a major role in the quality of life of human being.

4. The balanced relation between architecture and energy quality could be a tool for change of human attitudes and their relations towards each other, towards nature, and towards the universe to create inner and outer peace.

Based on the previous assumptions, the thesis has been prepared and organized in the form of an introduction and four consecutive chapters to introduce a new concept of energy, peace and architecture as follows:

- **Introduction:**

It explained the existing challenging conflict of architecture and environment, the idea of architecture as a tool of reshaping, the difference between conflict resolution and conflict transformation in architecture, then introduced the concept of science in architecture in the 21st century. Peace, energy and architecture in the environmental context were explored to define the problem definition of the thesis.

- **Chapter 1: Peace ... The Hidden Dimension in Architecture**

It re-examined the concept of peace and space from the first origin the mother of the uterus. Studying different definitions of peace from different point of view, different concepts and its evolution in literature, the directions of peace concepts in architecture lead to formulation of the peace concepts in architecture and broad the definition of peace.

- **Chapter 2: A Journey into Fields of Energy in Architecture**

This chapter reviewed and criticized existing meanings and definitions of energy and its sources, patterns and tools of measurements. The anatomy of earth energy and geopathic stress, human energy fields, electromagnetic and subtle energy and how it affects the quality of architectural space and human being were investigated leading to a new definition of energy.

- **Chapter 3: Peace in Architecture as a Qualitative Energy Concept**

It explored the common roots of architecture, energy and peace throughout history, then analyzed and re-examined these concepts separated or integrated in some of the most recent contemporary architecture: Cosmogenic architecture, Blub, Nano, Fab Tree Hab and Biogeometrical architecture. It clarified the delicate differences between these concepts and discussed the concept of peace and energy in these trends.

The chapter furthermore, discussed the hidden dimensions in architecture, manifested through science of wave, harmonics and resonance taking into consideration zero time concepts and its relation to architecture. A new definition of peace from energy point of view was formalized.

- **Chapter 4: Towards A Conceptual 'Peacenergy' Environmental Studio**

It proposes the concept of "peacenergy environmental studio" which integrates various dimensions and aspects of architecture discussed and formulated in the three chapters to enhance the quality of architecture space, aiming to achieve peace within our built environment. The chapter introduces the studio concept, goal, principles, forming process and the stages of this forming process and critical analysis of contemporary buildings. The studio concluded with "peacenergy" forming process chart; and checklist which help architects to evaluate their generated designs.

The thesis at the end showed that all the four main hypothesises are being proved and it concluded by giving new definitions for energy, peace and architecture; and proposes a definition of 'peacenergy' environmental concept. Moreover, the thesis ends in a conclusion and recommendations for further studies on "peacenergy" studies.

Table of Contents

CHAPTER 3 Peace in Architecture as a Qualitative Energy Concept

CHAPTER 4 Towards a Conceptual 'Peacenergy' Environmental Studio

LIST OF TABLES

List of Figures

CHAPTER 2 A Journey into Fields of Energy in Architecture

CHAPTER 3 Peace in Architecture as a Qualitative Energy Concept

CHAPTER 4

Peace and Environment

"Universal laws give
Birth to mother nature
A Unique blending of beauty

Peace is inbuilt to mother nature
The sun rise, sun set and bounty of
Flora and fauna express peace
Stimulating the innerness of
Life forms transforming them
Reptile to mammalian ones

Ecology, the science of relationship
Between life forms and their environment
Based on the energy of peace
Creates and dissolves
To be again part of universal peace
A wonderful and beautiful universe
Would have been there
With colorful peace and ecology"

***Source*:** http://www.worldpeacetech.com/peace%20poems.htm

Peace, Energy and Environment for Architectural Morphogenesis
Introduction
Architecture, Energy and Peace
Chapter 1
Peace... The Hidden Dimension in Architecture
Chapter 2
A Journey into Fields of Energy in Architecture
Chapter3
Peace in Architecture as a Qualitative Energy Concept
Chapter 4
Towards a Conceptual 'Peacenergy' Environmental Studio
Architecture & Environment
Architecture as a Tool for Reshaping
Towards a new Science of Architecture
Architecture, Energy and Peace... A Challenging Conflict
Conflict Resolution or Conflict Transformation in Architecture
Hypotheses
Goal
Objectives
Methodology

Preface

The world, nowadays, is full of contradictions, conflicts, insecurity and injustice. Poverty is dominating. On the other side, human being is seeking peace and a balanced relation between both soul and mind. Peace is a word of so many meanings that one hesitates to use for fear of being misunderstood. The concept of peace has both positive and negative aspects. On the positive side, peace signifies a condition of good management, orderly resolution of conflict, harmony associated with mature relationship, and love. On the negative side, it is conceived as absence of something and absence of turmoil, tension, conflict, and war. The contrasting aspects of the concept are likewise reflected in a certain ambiguity with regard to the evaluation of peace. (Kenneth, E. Boulding, 1978)

Opportunities to contribute to a just peace vary. An officially employed counselor, social workers, human rights lawyers, conflict resolution consultant, peace negotiator or peacekeeper may have specific responsibilities to contribute to such a goal. Any one can make a contribution towards a long-term goal and experience and a small victory in a short-term cause. Ordinary citizens also seize the chance to put their aspirations into effect. To do so, they do not have to join a widespread movement. They do so in many ways, including working to achieve peace with justice in any culture or country, a task which requires knowledge, understanding and skills. (Rees, Stuart, 2003)

Architects in the new millennium have a major role to play. They are invited strongly to take an active share in the creation of peace on its all levels and to be part of the solution. This will not happen unless the architects become willing to bridge the gap between matter and aspiration and between physics of quantity and physics of quality.

thermal comfort, which has been the basis of most environmental considerations in architectural design since 1950, was extended to total comfort, proposed by the researcher in her master thesis in 2004. It further will be re-extended according to this thesis to a new vision in that peace is the ultimate goal of all architectural creations.

This thesis is one of the trails to step away from the 20th century vision of the work of the architect as an isolated triumph from violence and conflicts in the world to a more inclusive 21st century idea of the designer as part of a vibrant, messy, exhilarating, harmony process of creating a living, breathing, harmonious, peaceful and balanced built environment.

There is today a tremendous energy being devoted to rethinking how spaces, buildings, streets, and our built environment shape our behaviors, our lives, our communities, our economy, our democracy, our sense of ourselves, and our feeling of peace. The distinguishing feature of this new direction in design is the subtle but the significant shift from matter to spirit and from quantity to quality.

In that direction, when it comes to quality, one cannot ignore the quality of energy inside and outside the architectural spaces. Energy quality shapes the architectural spaces then the spaces reshape feelings, behaviors and attitudes of human being.

Architecture and Environment

> *"While nature is vastly complex, it turns out that many of its processes are surprisingly simple. However, in their operation, the interaction of sheer vast numbers creates patterns and ripples of astonishing, mind-numbing complexity. Yet the emergent structure still has great coherence, because it is adaptive over time. Moreover, often that simple process functions as a kind of code. For example, life itself arises from a code, the genetic sequence of only four molecules (DNA) that comprises the genome. The incredible variety and beauty of life is coded, in what is at its heart a remarkably simple way. As we study it and begin to tease apart its secrets, we have found to our surprise that even the entire genome is simpler than we had expected that much of the complexity of the organism emerge in the process of stepwise differentiation of tissues. Therefore, to repeat, the individual steps can be quite simple, but the emergent pattern is often vastly complex. Moreover, the complexity of that pattern emerges over time, in a process"* (Mehaffy, Michael, 2005)

As Michael Mehaffy explained in the previous quotation, nature could be quite simple, but the emergent pattern is often vastly complex and the process is very important. Architects should pay attention to that fact.

On the other side, people are living in a fast track world, where technology increasingly dictates our way of life. Technology has separated many billions of people from the natural world by distancing them from basic resources: electricity reaches us through a wire: food comes to us dressed and wrapped. Such separation has made it difficult for people to appreciate the influence of nature on their lives. (Molyneaux, Brian Leigh, 1995)

and technological transformations collide with existing debates about challenges that face humanity. Radical review of relationship between the human and both nature and technology is an urge to reform this relationship in response to these transformations.

Allen Edward (1974) discussed the relation between nature and the built environment. He argued that we have pursued the mastery of nature as if we ourselves were not a of that nature. We have boasted of our command over our physical environment while we ourselves have done our urgent best to destroy it... In his final analysis, the world is the ultimate responsive environment, a vast interdependent system. Thus, in reality we do not have to "create" a responsive environment, we already have *one that works*. There can be no improvement over present trends, even with a new "super-building" technology, unless we realize that man and his structured environments have an affect on and in turn are affected by the natural environment.

Built environments have various purposes: to shelter people and their activities and possessions from the elements, from human and animal enemies, and from supernatural powers; to establish place; to create a humanized, safe area in a profane and potentially dangerous world; to stress social identity and indicate status; among others. Thus, the origins of architecture are best understood if one takes a wider view and considers sociocultural factors, in the broadest sense, to be more important than climate, technology, materials, and economy. In any situation, it is the interplay of all these factors that best explains the form of buildings. No single explanation will suffice, because buildings, even apparently humble dwellings, are more than material objects or structures. They are institutions, basic cultural phenomena. (Ching, Francis D.K., 1995).

Architects introduced architecture as a real representation of existing conflicts in our age. There is a common statement that "architecture is a mirror of existing". As Lewis Mumford puts it "in the state of building at any period one may discover, in legible script, the complicated process and changes that are taking place within civilization itself. Built environment reflects the underlying relationships, tensions, and contradictions in society: it likewise serves as one of the means through which they are sustained and legitimized.

> *"The built environment gives expression, meaning, and identity to the entire sweep of forces involved in people's relation to their surroundings. It is provides cues for all kinds of human behavior, and it is symbolic of all kinds of political, social and cultural elements, a result a building or other element of the built environment of a given period and type tends to be a carrier of the zeitgeist or "spirit" of its item. Therefore every city can be read as a multilayered "text" a narrative of signs and symbols, if we think in the way of the city as a text, the built environment becomes a biography of urban and architectural change".*
> (Jennifer Reymundi-Micheo, 1996)

It is agreed that built environment is a biography of urban and architectural change and architecture is a mirror of existing conflicts. This should be over looked to give more active role to architecture to be a challenging and advancing tool for change of existing conflicts instead of a mirror of existing conflicts.

II. Architecture as a Tool for Reshaping

Space affects us and can control our spirit: and a large part of the pleasure we obtain from architecture pleasure, which seems unaccountable for or we do not bother to account for springs in reality from space. Even from a utilitarian point of view, space is logically our end. To enclose a space is the aim of building: when we build we detach a convenient quantity of space, seclude it and protect it, and all architecture springs from that necessity. Nevertheless, aesthetic space is even more supreme. Spatial interpretation does not compete with other interpretations, because it does not operate on the same plane. It is a super-interpretation, or, if you wish an underlying-interpretation. More precisely, it is not a specific interpretation like the others, since interpretation of space may be political, social, scientific, technical, physio-psychological, musical and geometric, or formalistic (Bruno Zevi, 1957).

Throughout history, people of all cultures have assumed that environment influences behavior. Now modern science is confirming that our actions, thoughts, and feelings are indeed shaped not just by our genes and neurochemistry, history and relationships, but also by our surroundings. More than two thousand years ago, Hippocrates observed that our wellbeing is affected by our settings.

These days, any big conference concerned with the future of our planet or species includes presentations and discussions of aspects of the relationship between people and places. At a recent annual meeting of the American Psychological Association, for example, two papers suggested something of the complexities to be revealed by increasingly sophisticated investigations of this feedback system. One study was an analysis of the ways in which lively and dull interiors affect mood and performance. Here the subject's responses to a stimulating, plant-filled, homey setting and a grim, institutional one were contrasted. The only reaction they all shared was a decline in vigorous activity and increased feeling of fatigue in the austere environment.

Environmental activists urge people to "think globally, act locally," but what scientists are learning about the relationship between places and behavior suggests that thinking locally is not an idea, either. If people could learn to approach larger increments of territory as people do their homes, their lives would be in a better shape, and so would the planet. Because people know their psychological and physical well-being is at stake, they make sure their homes are happy, healthful, beautiful places. Architects should pay attention to the climate and atmosphere, and be wary of incorporating technology that many endanger people. People should become "addicted" to their homes not just because of their physical features but because they support their social bonds, buffer them from commotion, and help them find meaning and express their identity. Whether they are in the city, the country, or increasingly, somewhere in between, each of these sophisticated versions of the mammalian nest is a small piece of the global village. When people realize that they are true of their relationship with their homes, neighborhoods and their regions, then thinking locally will mean acting globally, and that means saving the world. (Winifred Gallagher, 1993)

Remarkable advances in the field of genetics have accustomed people to the notion that they inherit certain biological influences on our behavior. While this controversial concept is now scientifically respectable, the idea that living at odds with the natural world courtesy of electric light, air-conditioning, and central heating might have consequences strikes us as mere romanticism.

Places affect us. Beyond their biological effects, they make us feel uncomfortable and ill at ease, energetic and stimulated or relaxed or relaxed and at peace. These effects are not just transient, but resound in us. They can work so deeply into our being that they affect our state of health. (Day, Christopher, 2004)

previous points of view that there is a strong relation between architecture and our behaviors, attitudes and relations so the major role of architects is to change architecture to be a tool for reshaping our time and enhance the quality of life of human beings.

2.1. Towards a New Science of Architecture

> *"In the past century, architecture has always been a minor science if it has been a science at all. Present day architects, who want to be scientific, try to incorporate the ideas of physics, psychology, and anthropology ... in their work....in the hope of keeping in tune with the "scientific" times. I believe we are on the threshold of a new era, when this relation between architecture and the physical sciences may be reversed when the proper understanding of the deep questions of space, as they are embodied in architecture . . . will play a revolutionary role in the way we see the world . . . and will do for the world view of the 21st and 22nd centuries, what physics did for the 19th and 20th."*
> (Alexander, Christopher, 1983)

Christopher Alexander is considered the most famous architect who discussed the topic of "architecture and science" in his books and articles. It is useful to draw attention to the fact that his education started in physics, chemistry, and mathematics, and that he spent a considerable part of his life as a working scientist.

In 2003, in his article "New concepts in complexity theory arising from studies in architecture", Alexander asked, *"What are the essential problems of architecture understood by any scientist who applied himself to the questions of architecture?"*

He introduced the following seven issues:

1. There are issues of value that cannot be separated from the main task of serving functional needs. Thus, aesthetics dismissed as subjective in much contemporary science lies at the core of architecture.
2. There is the issue of context, a building grows out of, and must complement, the place where it appears. Thus, there is a concept of healing (or making whole) and building into a context.
3. There is the issue of design and creation processes capable of generating unity.
4. There is the issue of human feeling since, of course, no building can be considered if it is not related, somehow, to human feeling as an objective matter.
5. There is the issue of ecological, sustainable, and biological connection to the land.
6. There is the vital issue of social agreement regarding decision making in regards to a complex system: this arises naturally when hundreds of people need to make decisions together – often the case in the human environment.
7. There is the issue of emerging beauty of shape, as the goal and outcome of all processes.

The issue of "spirituality of architecture" should be added to the seven issues which were proposed by Alexander because spirituality should be the essence of any architectural product.

Alexander viewed that, these issues lead to certain questions and conclusions. Architecture presents a new kind of insight into complexity because it is one of the

human endeavors where we most explicitly deal with complexity and have to create it not typical in physics or biology.

In 2004, Alexander's book *"Nature of Order"* and in 2005, Michael Mehaffy's article *"Towards a new science of architecture, and a new architecture of science"*, it was argued that many architects may well ask themselves how anything scientific could possibly help them in their task. They could easily wonder, "Is the interest in new science and in a new science of architecture, something trendy, a wish to be "scientific" for its own sake, and little more?"

The answer is "No." The purpose of a scientific view of architecture is to enable us to create deeper structure and that means design that is more satisfying, more eternal forms, more valuable places, more beautiful buildings. The new theory is not merely a gloss on architecture, to raise its intellectual level. It is, above all, a source of help to pull us out of the mud pit we have fallen into during the last eighty years, by making, following, and copying over simplified forms, only because commercial instincts have robbed the field entirely of the kind of awareness which was needed, for millennia, by the people who made the great buildings of the past, in many cultures, and in many conditions. This awareness, hinges above all, on the processes that are used to make these buildings. The process we have learned, and have come to accept, as the "normal" way to design buildings and to get them built – the procurement methods of the 20th century are very, very defective. To do better, to make places people genuinely like, to make places where people feel at home, it is necessary to have new tools of practice, new ways of creating buildings, new ways of conceiving buildings.

In physics and biology, some progress has been made toward understanding the preservation of order, and the processes, which create order. The creation of living organisms through the morphogenetic process, the creation of matter, the creation of

suns and galaxies from nuclear fire, the constant creation of particles by interaction with another- have all been studied in the last seventy years. In these limited cases, we now have a rudimentary idea of the way the order-creation works. It has become clear; in addition, that the way the order is created in these cases is of essential importance to our understanding of the world. Our knowledge of order-creating processes in physics, chemistry, and biology has molded the modern view of the universe. The art of building has not, so far, had a comparable impact on our understanding of the world. Our modern picture of the universe, what kind of stuff space and matter is made of, has not been influenced by building or by architecture. Yet, it was argued, *the process of building is an order-creating process of no less importance than those of physics and biology.* It is vast in its scale and scope. It is almost universal in our experience. It is therefore reasonable to think that the *art of building might give us equally essential insights.*

Michael Mehaffy, 2005 in his article "Codes and the architecture of life" argued that there is today a massive crater in our understanding of modernity that *we are mired in a mechanical understanding of nature that still largely guides our acts of planning and building.* Nevertheless, the fascinating and hopeful thing for us is that the most recent science shows us a path out of that crater – a path that holds intriguing and exciting possibilities.This is the revolutionary new scientific understanding of the structure of nature, and in particular of living systems the science of organised complexity, networks, fractals, so-called "strange attractors."

Michael Mehaffy, 2005, stated that:

> *"Perhaps the most familiar such system is of course the DNA code of life itself, made from just four molecules but through adaptive morphogenetic process acting over time, it produces the astonishingly varied patterns and intricate wonders of life itself.*

> *These insights form the basis of what the architectural theorist and designer Charles Jencks has called the "new paradigm" in architecture, and rightly so, although Michael Mehaffy thinks even Jencks does not grasp the real revolutionary implications of it. In fact, we have only scratched the surface".*

He asked the following questions: "What does the new science tell us about the complex structure of human life, in the form of settlement patterns, economic processes, social patterns, interaction with complex ecosystems, and sustainable development? What does it say about ***urban pattern***, ***urban morphogenesis*** and ***architectural morphogenesis***?

Moreover, what tools might there be to manipulate these complex phenomena to fulfil human ends, in art and in life? Can we learn something from ***genetic coding***, for example, about the astounding variety and the robust success of life? ***Can we devise codes based upon similar morphogenetic principles***?

There are many people who believe that this new science, this new understanding of the structure and the organization of things, may in time revolutionise everything, just as the old science did previously, including markets, institutions, the very structure of civilization itself. Moreover, it holds out the promise of deeper understanding and reform of the horrific mistakes of the early industrial period. These are mistakes that it looks increasingly like we had better reverse, and soon, or else we are all in a great deal of trouble.

Architecture, Energy and Peace... ... a Challenging Conflict

> *We live in a challenging time. Veiled by an air of normality, both the planetary life-support system and the bonds holding society together are under threat. We all know we cannot survive another century continuing to live as we have. The environmental crisis of our time is multidimensional. Material resources are running out; the living systems of nature under assault; social life under strain; and stress commonplace. Issues of matter, life, soul and spirit, these are not isolated issues but manifestations of a single crisis. Actions directed at single issues invariably spawn more problems than they solve. Without holistic awareness, environmental controls easily cause many problems".* (Day, Christopher, 2002)

Architects are living now in the cross road of three major conflicts:

- The conflict of contemporary architecture.
- The conflict of energy.
- The conflict of peace.

To understand the problem, we will address each one of the conflict differentially attempting to solve the conflicts between the architecture, energy and peace.

1. The Crisis of Architecture

> *"Design and architecture have been in a state of continuous crisis since the failure of modernism began to be acknowledged in the 1960s. In the wake of this, there have been numerous attempts to make designing more responsive to users, but these reactions, such as postmodernism, can now be seen to be little more than superficial changes of fashion that do not address the fundamental problems at the core of the crisis"* (Mitchell, C. Tomas and Wu, Jiangmei, 1998)

Eisenman is a problematic figure in the architectural firmament because he actually does what is implicit, if unacknowledged, in the work of many other major architects. Though it probably is not true that most architects seek to make their work alienating, as Eisenman assures us he does with his own, giving the philosophy on which their work is based, and the methods used in its production, " dislocation" (to use Eisenman's term) is the natural result.

The alienation of the public from architecture results directly from the view that buildings are art objects that need conform only to the architect's criteria of success. Not only architecture but also *the whole of Western thinking is based on such an "object- oriented" view in which too much attention is paid to the "subject" and too little to the "context".* This relationship was addressed by the late philosopher Alan Watts, 1995 who wrote:

> *"For before we can truly appreciate the changing individuality of things we must, in a certain sense, realize their unreality. That is to say, one must understand that not only oneself, but all other things in the universe are meaningless and dead when considered by themselves, as permanent, isolated, self-sufficient entities"*

So much of built environment in the West is perceived to be meaningless and dead as a result of this object-oriented focus of architecture and design. Though this leads to problems with conventional design, the challenge faced by the design professions is further intensified as the nature of design tasks undergoes rapid transformation. Alongside architecture and product design for which, in the short term at least, an object- oriented approach was an expedient, there is now a range of design tasks, such as the design of computer operating systems, that have no physical presence.(Mitchell, C. Thomas, 1998)

For designers trained in the planning of form through drawing, this transition to intangible, process-based designing can be a difficult one. These tasks require a whole range of new skills and sensitivities. The prevalence of unsolved problems with tangible designs, such as architecture and product design, and the emergence of new, intangible design. The primary focus of such a design should not be on form but on the many layers of connections, cultural, social, and psychological- through which people interact with design. It is not enough just to modify our existing processes; rather new ones based on a more comprehensive view of the role and importance of design must be developed. (Mitchell, C. Thomas, 1998)

The philosophy of Western design is simply a reflection of the broader culture of which it is a part. Though they are rarely examined, the cultural assumptions on which the object orientation are based are worthy of investigation.

Alan Watts, 1995, was one of the first to compare the very *different views of the world held by those in the East and West*. He pointed out:

> *"The whole of western thought is profoundly influenced through and through by the idea that all things- all events, all people, all mountains, all flowers, all grasshoppers, and all worms are artifacts; they have been made. It is therefore natural for a Western child to say to its mother, "How was I made?" On the other hand, that would be quite an unnatural question for a Chinese child, because the Chinese do not think of nature as something that grows, and the two processes are quite different. When you make something, you put it together: you assemble parts, or you carve an image out of wood or stone, working from the outside to the inside. However, when you watch something grow, it works in an entirely different way. It dose not assemble its parts. It expands from within and gradually complicates itself,*

expanding outwards, like a bud blossoming or a seed turning into a plant. (Watts, Alan, 1995)

This distinction between making and growing is fundamental. Western architecture and design are devoted to making (or rather planning for others to make), as opposed to setting into motion a process of growth through which a building or product will evolve and adapt as circumstances change. This process of evolution happens to all physical artifacts in context; the question is whether they resist this change or accommodate it gracefully. (Mitchell, C. Thomas, 1998)

Charles Jenks in his article *"The new paradigm in architecture"* pointed to the different paradigms of Western architecture which can be concluded in the following most famous paradigms, Cosmogenic, Fractal, Orgai – Tech, Blob, Enigmatic Signifier Flooding, Waves and Nano architecture

On the other hand, in the last four decades, many trends of environmental architecture appeared in the world practice of architectural design. The most important environmental architectural trends: Organic, Solar, Ecological, Bioclimatic, Sustainable, Green, Biogeometrical architecture and Smart architecture.

It seems that there are more than 15 trends now in architecture, each trend has its own principles, pattern, morphology, and its relation with energy and environment. Some of them are similar and the others are different.

The essence and meaning of architecture and human being are confused between all of these trends, concepts and confusion between quantity and quality.

2. The Conflict of Energy

The energy crisis in 1973 brought with it new dimensions to architecture. Much attention has been given since that time for reducing energy consumption in buildings as in other aspects of human activities. New architectural trends put energy conservation as a major need in architectural designs.

Many forms of energy man uses today were virtually unknown 150 years ago. They were not "invented"; they were discovered, and these discoveries were the result of heightened awareness on the part of a few gifted men, aided by development of

increasingly sensitive instruments, which revealed to them changes previously unnoticed within their fields of observation.

When we refer to energy conflicts, there are two levels of conflicts:

- **The Conflict of Energy Quantity**

It is known that energy is at the heart of the dominant political and economic crisis in the world today. Yet, in an increasingly globalized and industrialized world, the competition for fossil fuels, and the increasing demand for nuclear power will surely bring new and greater crises in a world where dwindling fuel supplies intensify competition for those necessary resources. The energy crisis and its future, which threaten the world, produced hundreds of environmental buildings, which reduce energy consumption, and still the research, is underway for more energy efficiency architecture.

- **The Conflict of Energy Quality**

> *"The age of information carries with it the potential to the global extinction of our civilization. We are continuously increasing the amount of carrier waves needed for the wireless technology of modern communication in the earth's atmosphere every day. These electromagnetic waves are thousands of times stronger than the level used in the communication in our body cells. The problem is not the saturation of the earth's atmosphere through quantity, but also a detrimental quality. Even people who avoid using high technology are not immune. No one is immune even if one lives at the far end of the world or on top of the Himalayas, because these are carrier waves with penetrating properties" (Ibrahim Karim, 2002).*

Today man-made energy and geopathic stress, which will be explained in chapter two, cause larger harmful impact on human health, behaviors and the quality of his life on

to be taken into consideration. Different energy sciences and traditions dealt with energy of quality as follows:

- *Feng Shui, Vastue*: ancient traditions have dealt with natural energy quality in their environment.
- ***Bau-Biology***: deals with the proper use of man - made energy in materials.
- *Geobiology, earth energy sciences*: were used to provide harmony between the building and the earth.
- While ***Biogeometry***: uses design principles to transform the energy qualities of man-made and natural environment.

3. The Conflict of Peace

The desire for peace and an end to violent and destructive conflict is not new. Many people have gone before, in different fields, testing and trying many ways to discourage violence in others and create a more peaceful world system but until now people cannot find peace and they still suffer on different levels.

The crisis of peace transition profoundly affected the lives of individuals and different social groups. The conflict of peace in the world today is caused by the interests of multinational and industrial world, which overshadow our perception of the true value of peace.

There are many conflicts inherent in peace conflict in our world:

- Resource conflict between excessive use of resource and rationa consumption.

  Equity conflict between resource management and resource owning to promote distributive justice.

  Context conflict between physical and non physical, matter and spirit, quantity and quality.

Conflict Resolution or Conflict Transformation in Architecture

> *"The root of our trouble in the sphere of art and architecture, a fundamental mistake caused by a certain conception of the nature of matter, the nature of the universe. More precisely, I believe that the mistake and confusion in our picture of the art of building has come from our conception of what matter is. ....Our idea of matter is essentially governed by our idea of order. What matter is governed by our idea of how space can be arranged; and that in turn is governed by our idea of how orderly arrangement in space creates matter. So it is the nature of order which lies in the root of the problem in architecture"*
> (Christopher Alexander, 2004)

The plurality of styles and architectural trends is a keynote. This reflects an underlying concern for the increasing pluralism of global cities. Growing out of post-modern complexity of the sixties and seventies - Jane Jacobs and Robert Venturi introduced the complexity theory of the 1980s: Pluralism leads to conflict, the inclusion of opposite tastes and composite goals, a melting and boiling pot. Modernist purity and reduction could not handle this reality very well. However, the goals of the new paradigm are wider than the science and politics that support it, or the computer that allows it to be conceived and built economically. This is the shift in world view that sees nature and culture as growing out of the narrative of the universe, a story that has only been sketched by the new cosmology in the last 30 years. In a global culture of conflict, this narrative provides a possible direction and iconography that transcend national and sectarian interests. (Jencks, Charles, 2002)

What do architects need for current architectural conflict? Do architects search for conflict resolution or conflict transformation?

...eses question we should distinguish between the two definitions of ...ion or conflict transformation, which is explained in table (I)

Table (I) Conflict Resolution and Conflict Transformation
A Brief Comparison of Perspective
Source: Hart, Barry, Manual of Conflict transformation, Cauxscholar program, Switzerland, 2006

	Conflict Resolution Perspective	**Conflict Transformation Perspective**
The Key Question	How do we end something not desired?	How to end something destructive and build something desired?
The Focus	It is content centric.	It is relationship-centric.
The Purpose	To achieve an agreement and solution.	To promote constructive change processes, inclusive of, but not limited to immediate solutions.
The Development of the Process	It is embedded and built around the immediacy of the relationship where the symptoms of disruptions appear.	It envisions presenting problem as an opportunity for response to symptoms and engagement of systems within which relationships are embedded.
Timeframe	The horizon is a short term relief to pain, anxiety and difficulties.	The horizon is changing in mid to long range and is intentionally crisis responsive rather than crisis driven.
View of Conflict	It envisions the need to de-escalate conflict processes.	It envisions conflict as web and ecology which are relationally dynamic with ebb (conflict de-escalation to pursuer constructive change) and flow (conflict escalation to pursuer constructive change.)

From this comparison, it is clear that we need conflict transformation in architecture to promote constructive change process.

VI. Problem Definition

As stated earlier that architects are living now in the cross road of the three major conflicts, which were discussed: architecture, energy and peace and it was explained that architecture should be a tool for change and its ultimate goal is peace. Therefore, the problem which architects face these days is how to reach a balanced and scientific formula for a balanced state, which enhances the quality of architectural spaces,

which affect the quality of life of human being in zero time, see figure (A). Zero time has different meaning and definition which will be discussed in chapter three but it could be said that "how the history live in the future in a balanced relation and how to link and bridge thinking". As Frank Gehry said

"Architecture should speak of its time and place, but yearn for timelessness"

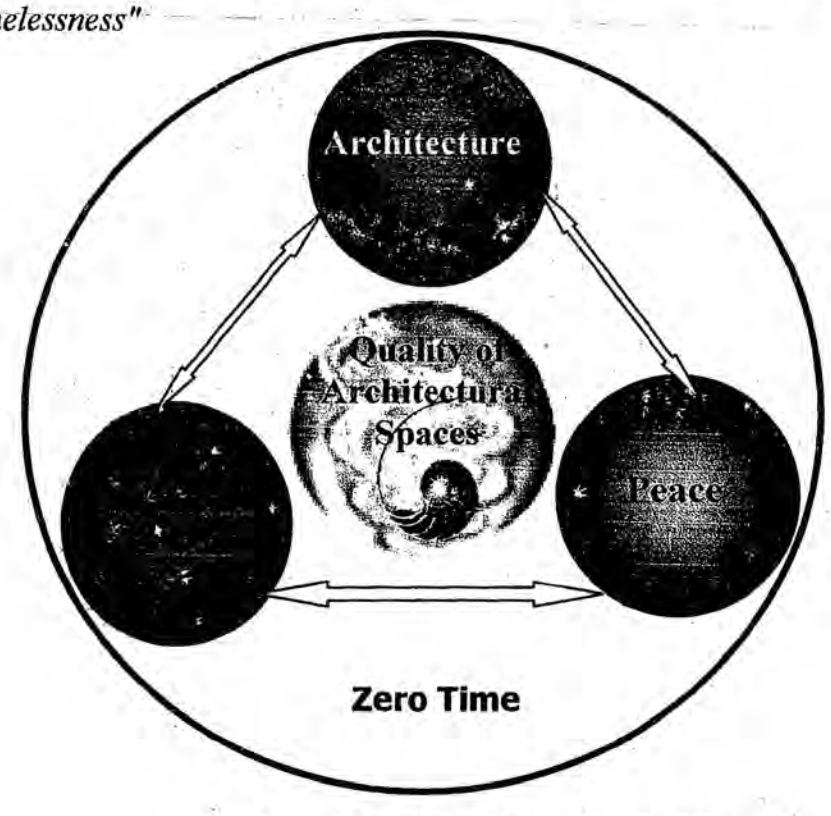


Fig. (A) The Triangle of the Problem

VII. Hypotheses

1. Peace was, has been, and will be the ultimate goal and destination of all architectural creations as far as humanity exists.
2. The architectural space creates its own energy fields which have the ability to produce a sensible change of the existing mental, physiological, psychological state of the human beings. The total energy of the architectural space is generated from the integration of all energy fields inside and outside architectural space.

The energy of architectural and urban spaces highly affects the quality of environment within these spaces, which plays a major role in the quality of life of human being.

4. The balanced relation between architecture and energy quality could be a tool for change of human attitudes and their relations towards each other, towards nature, and towards the universe to create inner and outer peace.

VIII. Goal

The goal of this thesis is to achieve and maintain peace within our built environment by using the balanced relation between architecture and energy quality. This could lead to enhance the quality of environment within architectural and urban spaces.

IX. Objectives

This thesis will address the following objectives:

- to expand the definitions of architecture, energy and peace to respond to the new scientific era of 21st century
- Investigate and define the relation between architecture, energy and peace.
- Introduce a new environmental architectural studio based on balanced relation between architecture, energy and peace.
- Introduce new criteria for architects and urban planners to examine their designs and evaluate it.
- Create a space where human can find inner and outer peace which is considered the ultimate goal of architecture

X. Methodology

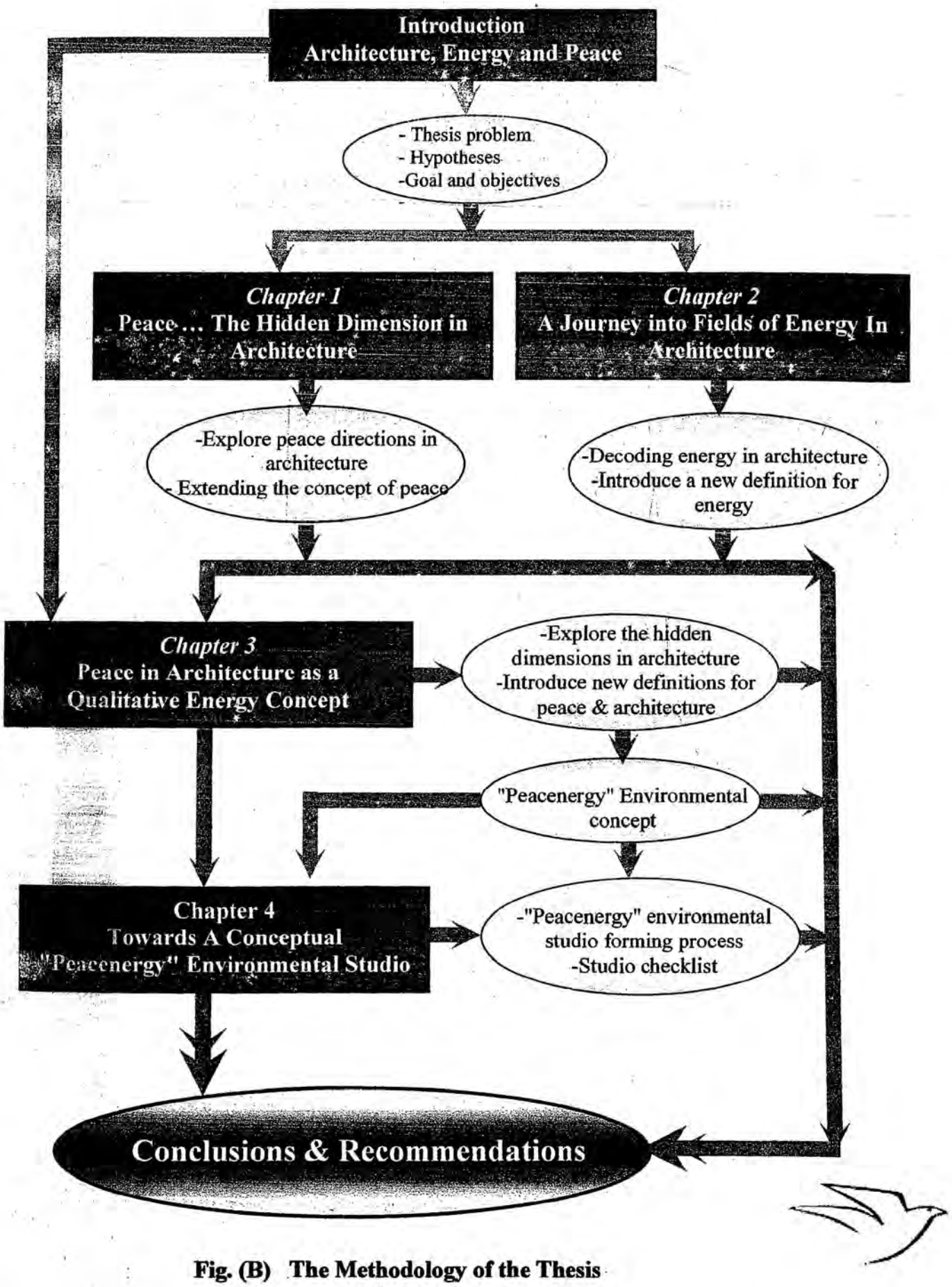


Fig. (B) The Methodology of the Thesis

Defining Peace

"The first smile of newly born baby is peace
Mother's love for the baby is peace
Parenting the baby is peace
Peace is opposite of violence
Peace is truth, order and harmony
Peace is love, affection and empathy
Equity, sustainability and eco-friendly
Peace is a source of energy
Creating spirit and then
Proton, neutron and electron
Peace creates life

Consciousness is a product of peace and
That of the universe and the life
Peace is infinite and time and spaceless
But creates temporal objects
Peace is a bridge between 'science and spirituality"
Peace provides life-support systems
Creating resources and ecological equilibrium
Peace creates prosperity

With adoption of appropriate technology
Peace is divine and material
Peace stimulates wisdom and peaceful behavior
To develop ecology and human systems
Sustaining universal laws
OH humans accept and develop the definition of peace For
creating one world-one peaceful global human family"

Source: http://www.worldpeacetech.com/peace%20poems.htm

Peace, Energy and Environment for Architectural Morphogenesis
Introduction
Peace, Energy and Architecture
Chapter 1
Peace... The Hidden Dimension in Architecture
Chapter 2
A Journey into Fields of Energy in Architecture
Chapter3
Peace in Architecture as a Qualitative Energy Concept
Chapter 4
Towards a Conceptual 'Peacenergy' Environmental Studio
Peace and Architecture ... Our Beginning
Concept of Peace Analytical Approach
Peace as a Dynamic Organic Process
Peace Building Model
Peace Conceptualization in Architecture
Redefining Peace
Conclusion

Introduction

> *In recent years an increasing numbers of laypeople have taken an interest in the effect which the built environment has on them. The concerns that people have include the pragmatic, such as lack of comfort or proper accommodation of their activities; the visual, especially dissatisfaction with 'sterile and unappealing surroundings; health issues, including sick building syndrome and carpal tunnel syndrome; and the more far-fetched such as fear of malevolent spirits that endanger physical and mental* (Mitchell, C. Tomas and Wu, Jiangmei, 1998)

Theses concerns have been dominated in our levels of conscious through the dealing with the built environment, dictates on architects and urban planners to reexamine the existing theories and methods to achieve the ultimate goal of architecture, peace.

This chapter will reexamine the concept of peace and space from the first origin inside the uterus of the mother. Studying different definitions of peace from different point of view, different concepts and its evolution in literature, its conceptualization in architecture and broaden the concept and definition of peace.

1.1 Peace and Architecture... Our Beginning

Peace has been always a motivating force of life and existence for all living organisms and systems. It has guided our activities and behavior through the history of human being since the first beginning on our mother earth.

Architecture was, is and will be the manifestation of peace. This concept started with the experience of embryo in his home inside his mother's uterus before he is born, see figure (1.1). This home then is the first space the humanity experienced before coming to the man-made environment. It is flexible enough to maintain and accommodate responsively to the motion and the need of the embryo to give him safety, security, passion, love and peace.

Fig (1.1) The Beginning of Peace Started With Experience of Embryo In his First Home Inside his Mother's Uterus
Source: http://www.dbtechno.com/science/2008/01/17/scientists-clone-first-ever-human-embryo/

Side by side with supporting the life system of embryo supplying him with all his physiological and biological needs whenever he needs it. This home maintains the comfortable conditions and environment, which he needs, listening to the rhythm of mother heart beats. This is the first home ever been existed. It is the home that is registered in the back mind of each of us since the first beginning. It is the roots of our feeling of peace and its relation to our first home inside our mother's uterus.

Then, it was the first step on earth, searching for another uterus where human could find protection, security and his first feeling with peace. This time was the uterus of the earth, the cave, see figure (1.2). The cave is the basis of all human existence. Shelter was generated from the idea of a cave. It was the refuge from strict nature. The common shape of the space of cave was rounded in cross section; roughly semicircular as shown in figure (1.3).

Fig. (1.2) The Cave Is the Basis of all Human Existence
Source: Wines, James, Green Architecture, 2000

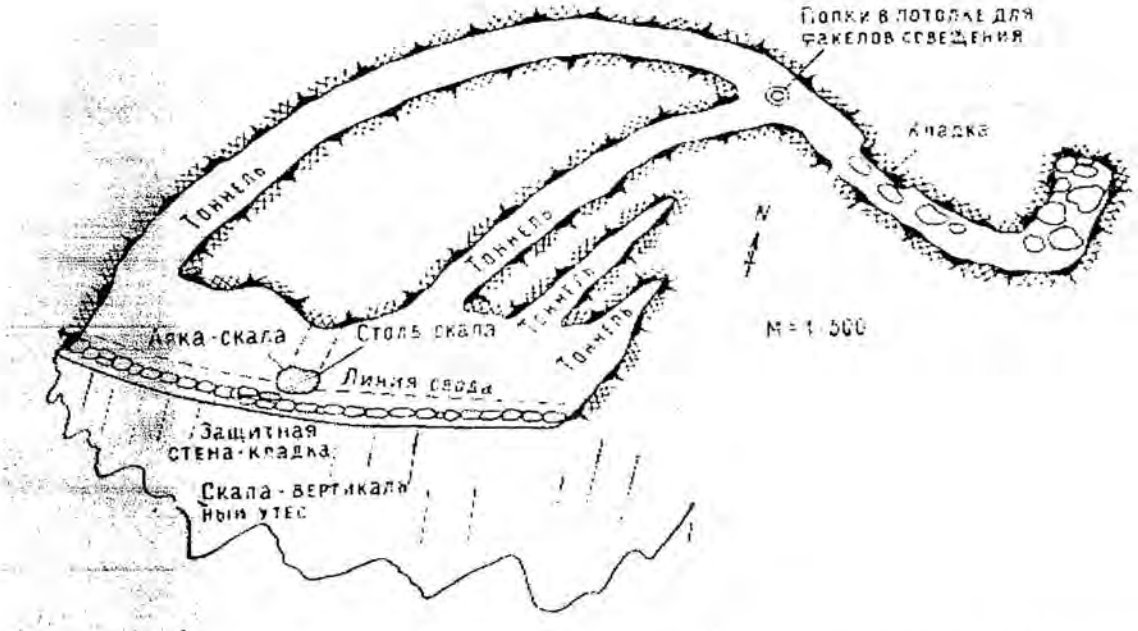


Fig. (1. 3) Plan of a Natural Cave with Defense Wall at "Tcilto, Armenia", Russia
Source: Fsirkinov, B.Y, The beginning of creativity, 1965

1.2 Concept Of Peace ... Analytical Approach

1.2.1 Meaning of Peace

It is agreed that peace has various meanings in different cultural and political contexts and has a wide range of interpretations. Although various definitions of peace appear in the literature, there is no consensus on a conceptually clear definition to guide researchers in developing measurement procedures and indicators.

In the Wikipedia, Peace was defined as follow:

> *"Peace is generally the opposite of war. Peace can be a state of harmony or the absence of hostility. "Peace" is used to describe the cessation of violent conflict. Peace can mean a state of quiet or tranquility — an absence of disturbance or agitation. Peace can also describe a relationship between any people characterized by respect, justice, and good will. Peace can describe calm, serenity, and silence. This latter understanding of peace can also pertain to an individual's sense of himself or herself, as to be "at peace" with one's own mind".* (http://en.wikipedia.org/wiki/Peace)

Lark Siegmund, in his research " Peace: A new paradigm, part 1 ", 1998 argued that today, despite abundant and daily evidence of the absence of peace, most of us would agree that we would prefer to have peace in our personal and global life. However, many would say, despite a desire for peace, that peace could never become a normal condition of human life. Yet, consider how our views about peace have changed in 20th century. In 1959 Nobel Peace Laureate, British political leader, Philip Noel-Baker wrote in 1965: "...before World War I the response to a question about peace would have been very different. Many people, including government leaders, would have agreed with German Field Marshal Helmuth von Moltke's words, 'Perpetual peace is a dream, and it is not even a beautiful dream.' Or they might have repeated the words of British essayist John Ruskin, 'War is the foundation of all high virtues and faculties of

Such people pointed out that throughout recorded history, war organize conflict between groups, tribes, cities, and nations and was a constant feature o human society. They believed that military success was the highest of huma achievements and that armed might was the measure of national greatness an prestige. In support of their beliefs, they argued and a handful of militarists still argu along the following line of reasoning:

(1) Man is by nature a fighting animal.

(2) His progress has been achieved by the survival of the fittest in the unending struggle for wealth and power.

(3) Stable peace is, therefore, contrary to the decisive forces in human evolution; and

(4) If stable peace could be achieved, man's worth and man's achievement would decline. As things have been in the past, the militarists say, so they must be in the future. They conclude that because there always have been wars, there will be always wars. British biologist Sir Wilfrid Le Gros Clark roundly denied this proposition (that man is a fighting animal). Man, said Sir Wilfrid, by a process of evolution over millions of years, has become the dominant species among hundreds of thousands of other species. He has done so not because he is a fighter, but on the contrary, because he has a gift of 'altruism' and a capacity for 'cooperativeness' possessed by no other species. Biologist, Sir Julian Huxley, has written: 'The biologist denies emphatically that there are human war instincts, either to make war in a particular way, or to make war in general.' He further stated: 'The biologist is able to say with assurance that war is not a general law of life, but an exceedingly rare biological phenomenon.' The militarists' romance is bad history. War has not promoted human progress. How many of the ablest and noblest human beings have perished in war before they could make

their proper contribution to man's advance? How many of the most gifted peoples have been exterminated by genocide or have been subjugated by slavery?

Many historians have overestimated the importance of warriors in human evolution. (Mark Siegmund, 1998)

How we find meaning for peace affects the way that we will think about it, and ultimately what we will have to say about it. Definitions of peace range from the absence of war among nations, to nonviolent resolution of strife within our communities, and to the serenity, that follows resolution of internal conflicts. Correspondingly, for war, the definitions range from violent conflict between nations or groups of nations, to crusades against such things as poverty, drugs or pornography, and to contention between the sexes. (Forcfy, Linda, 1989)

On the other hand, political scientist, Charles Hauss, in his article "A Rational Basis for Hope", 1989 showed that there is an urgent need to think anew about peace, due to the failure of our old ways of thinking. However, all of the contributors make clear; there is no one way to think about peace, but many. In order to think creatively about peace, we not only need to be aware of interpersonal- oriented perspectives on human needs, but also of systems-oriented approaches to the historical experience of the world.

The field of peace studies requires an integration of the interpersonal and systems oriented approaches through the contribution of a variety of disciplines or fields of study. Each approach has its areas of truth. To attempt to think about the peace process examining individual behavior and responsibility without reference to political and social collectivity is to neglect the realities of our historical situation. To stress the system to the point of eliminating individual behavior and responsibility may well mire us in cyclic determinism. Peace studies cannot afford an approach. It is

of thinking and talking together about the meanings we give to peace, and the ways in which our politics affect our thinking about peace that we will find our own voices for strategies for peace.

After more than 20 years of Charles Hauss's call for a new thinking about peace and the integration of the interpersonal and systems-oriented approaches through the contribution of a variety of disciplines or fields of study to achieve peace, we still thinking that achieving peace is the role of politicians and the role of architects in peace studies is still vague.

1.2.2 Peace and Spirituality

> *"A Muslim is one who surrenders to the will of Allah and is an establisher of peace (while Islam means establishment of peace, Muslim means one who establishes peace through his actions and conduct)." Islam*

> *"I'm leaving you with a gift -- peace of mind and heart. And the peace I give isn't like the peace the world gives. So don't be troubled or afraid" (John 14:27). Christianity*

> *"The whole of the Torah is for the purpose of promoting peace." Judaism*
> *If a man sings of God and hears of Him, And lets love of God sprout within him, All his sorrows shall vanish, And in his mind, God will bestow abiding peace." Sikhism*

> *"The Lord lives in the heart of every creature. He turns them round and round upon the wheel of Maya. Take refuge utterly in Him. By his grace you will find supreme peace, and the state which is beyond all change." Hinduism*

> *"Peace ... comes within the souls of men when they realize their relationship, their openness, with the universe and all*

its powers and when they realize that at the center of the universe dwells Wakan-Tanka, and that this center is really everywhere, it is within each of us."-from The Sacred Pipe, by Black Elk, Lakota Sioux Medicine Man

Linda Groff, professor in California State University, and Paul Smoker, professor in Antioch College, in their paper " spirituality, religion, culture, and peace: exploring the foundations for inner-outer peace in the twenty-first century", 1997, discussed the role of religion to promote and contribute to the creation of a global culture of peace. They started their paper with the above quotations, which indicated that almost all of the world's religions, in their own sacred writings and scriptures say that they support "peace". Nevertheless, it is a known fact that war and violence have often been undertaken historically, as well as at present, in the name of religion. However, religions profess to want peace. It should be understandable that the major part of the mission of all Prophets was to bring peace to the world.

Hasan Al-Banna, 1948, in his essay "Peace in Islam" discussed the concept of peace in Islam and he called on humanity to return to its Creator and learn the lessons of peace, intellectually, theoretically and practically. The term of peace was mentioned in Qur'an many times as follows:

1. Term of peace was Furthermore the revelation of the Qur'an brought with it the angels of peace and the night in which it was revealed became a night of peace:

"ليلة القدر خير من ألف شهر * تنزل الملائكة والروح فيها بإذن ربهم من كل أمر * سلام هي حتي مطلع الفجر" (القدر 97: الآية 4-5)

"The night of Al-Qadr (Decree) is better than a thousand months. Therein descend the angels and the Rûh [Jibrîl (Gabrîl)] by Allâh's Permission with all Decrees, (All that

[illegible] there is Peace (and Goodness from Allâh to His believing slaves) until the appearance of dawn". (Sûrat Al-Qadr 97 : 4 - 5)

2. The servant greets his Lord with no better greeting than the greeting of peace:

"تحيتهم يوم يلقونه سلام وأعد لهم أجرا كريما" (الأحزاب 33: الآية 44)

"Their greeting on the Day they shall meet Him will be 'Salâm' Peace. And He has prepared for them a generous reward" (Sûrat Al-Ahzâb 33: 44)

3. The Angels will welcome the righteous into paradise with peace:

"جنات عدن يدخلونها ومن صلح من ابائهم وأزواجهم وذرياتهم والملائكة يدخلون عليهم من كل باب* سلم عليكم بما صبرتم فنعم عقبى الدار " (الرعد 13:23-24)

"Adn (Eden) Paradise, which they shall enter and (also) those who acted righteously among their fathers, and their wives, and their offspring. And angels shall enter unto them from every gate (saying): "Salâmun 'Alaikum (peace be upon you) for you persevered in patience! Excellent indeed is the final home!" (Sûrat Ar-Ra'd 13: 23-24)

4. Paradise is itself a place of peace:

لهم دار السلام عند ربهم و هو وليهم بما كانوا يعملون " (الأنعام : 127)

"For them will be the home of peace (paradise) with their Lord. And He will be their Walî (Helper and Protector) *because of what they used to do."* (Sûrat Al-An'âm 6:127)

والله يدعو إلي دار السلام" (يونس 10: 25)

" Allâh calls to the home of peace and guides whom He wills to a Straight path. " (Sûrat Yûnus10: 25)

5. Allah, the High, the Blessed, has named Himself "Peace":

"هو الله الذي لا إله إلا هو الملك القدوس السلام" (الحشر : 23)

"He is Allâh beside Whom Lâ ilâha illa Huwa (none has the right to be worshipped but He), the King, the Holy, the Peace..." (Sûrat Al-Hashr59: 23)

6. Of course, the Muslim would not hesitate to answer this call to peace, and will never reject it.

"وإن جنحوا للسلم فاجنح لها وتوكل علي الله إنه هو السميع العليم" (الأنفال 8 : 61)

"But if they incline to peace, you also incline to it, and (put your) trust in Allâh. Verily, He is the All-Hearer, the All-Knower" (Sûrat Al-Anfâl 8: 61)

"ولا تقولوا لمن ألقي إليكم السلم لست مؤمنا تبتغون عرض الحياة الدنيا فعند الله مغانم كثيرة" (النساء 4: 94)

"And say not to anyone who greets you: "You are not a believer"; seeking the perishable goods of the worldly life. There are much more profits and booties with Allâh" (Sûrat An-Nisâ' 4: 94)

To understand the concept of peace in Islam, we should take into consideration the holistic systematic approach to the universe and humanity. If we addressed Islam as a religion of peace, we can find that No religious law or social system has encouraged the establishment of peace in the same way that Islam has done.

Maulana Wahiduddin Khan in his paper "Islam and Peace" explained that Islam aims to build a peaceful society at all cost. This is because higher human objectives cannot be achieved in the absence of peaceful circumstances. The spiritual as well as moral progress of the individual is possible only in a peaceful atmosphere. Hence, the atmosphere of peace is essential for the building of good society. Academic research too is possible only in peaceful circumstances. The task of the propagation of truth too can be performed only in a peaceful atmosphere. This path of peace is followed by the entire universe. This path is also known in science as the law of nature, which is imposed upon it by God. Whereas man has to adopt this path of peace of his own free will. This has been expressed in the Qur'an in these words:

"أفغير دين الله يبغون وله أسلم من في السموات والأرض طوعا وكرها واليه يرجعون" (ال عمران 83:2)

Do they seek (other) than the religion of Allâh, while to Him submitted all creatures in the heavens and the earth, willingly or unwillingly. And to Him shall they all be returned". (Sûrat Âl-'Imrân3:83)

When God created heaven and the earth, He so ordered things that each part might perform its function peacefully without clashing with any other part. (Khan, Maulana Wahiduddin, 1999)

Different studies discussed the concept of peace addressing the inner peace and our desire to achieve it and its relations with religions and spirituality. It could be concluded in the following quotation of Dr. Bilal Philips, 2007 in his article "The Search for Inner Peace":

> *"The topic of inner peace addresses a universal need. There is nobody on the planet that does not desire inner peace. It is not a desire that is new to our time; rather, it is something that everybody has been searching for throughout the ages, regardless of color, creed, religion, race, nationality, age, sex, wealth, ability or technological advancement. People have taken a variety of different paths in trying to achieve inner peace, some through religion and spirituality, others through accumulating material possessions and wealth, others through drugs; some through music, others through meditation; some through their husbands and wives, others through their careers and some through their children's achievements and the list goes on. Yet the search also goes on. In our time we have been led to believe that technological advancement, modernization will produce for us physical comforts, and through these, we will attain inner peace.*
>
> *The reality is that technological advancement and modernization have not brought inner peace and tranquility.*

> *Rather in spite of the comforts that modernization has brought us, we are further away from inner peace than our ancestors were. Inner peace is for the most part of our lives very elusive; we never seem to get our hands on it"*

It can be said that peace is an attitude of heart and mind, and realizing peace is in part realizing oneself as a peaceful entity. (Thomas Keefe, 1991)

1.2.3 Evolution of Peace Concept

Many researches and studies analyzed the evolution of peace concept especially in Western studies. Linda Groff and Paul Smoker in their paper " spirituality, religion, culture, and peace: exploring the foundations for inner-outer peace in the twenty-first century", 1997, outlined six broad categories of peace thinking that have emerged historically within Western peace research especially over the past fifty years (since the end of World War 11).

These six categories roughly correspond to the evolution of peace thinking in Western peace research. This does not mean that all scholars once thought one way and now think another, nor that the majority of peace researchers now adopt the sixth type of peace thinking, the holistic inner-outer peace paradigm. Rather, it argues that overall there has been a trend in peace research away from the traditional idea that peace is simply the absence of war towards a more holistic view as seen in figure (1.4).

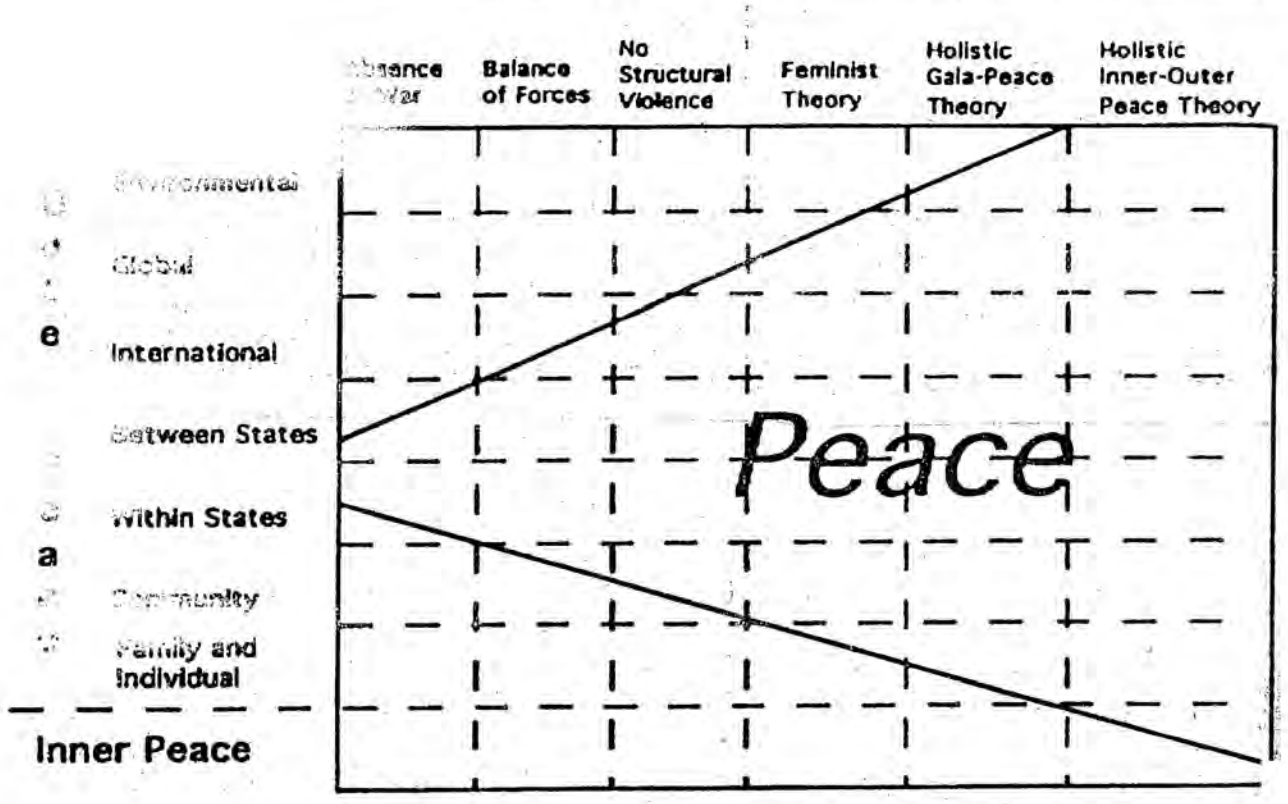


Fig (1. 4) Six Concepts in the Evolution of Peace
Source: http://www.gmu.edu/academic/ijps/vol1_1/smoker.html

Groff and Smoker explained the six stages in the evolution of peace concept, which was illustrated in the last figure as follows:

(A) Peace as absence of war

Figure (1.4) summarizes six perspectives on peace in terms of the levels of analysis and theoretical focus that each includes. The first perspective, peace as the absence of war, is applied to violent conflict between and within states--war and civil war. This view of peace is still widely held among general populations and politicians. In certain situations, it can be argued that this is still a legitimate objective, at least until killing stops and it is possible to ask for more out of life than avoiding death in war. Furthermore, all six definitions of peace discussed here require absence of war as a necessary precondition for peace.

(B) Peace as balance of forces in the international system

Quincy Wright (1941) modified this absence of war idea to suggest that peace was a dynamic balance involving political, social, cultural and technological factors, and that war occurred when this balance broke down. Wright argued that this balance of forces occurred in the international system defined in terms of the overall pattern of relationships between states and International Governmental Organizations (IGOs) as well as between and within states.

Wright furthermore discussed the role of domestic public opinion within a state which involves the community level of analysis. His model assumed that any significant change in one of the factors involved in peace balance would require corresponding changes in other factors to restore the balance. For example, Robert Oppenheimer, the much-misunderstood "father of the atomic bomb," adopted the view of Wright when he insisted on continuing to develop the bomb so that a global political institution, the United Nations, would have to be created to help control the new global military technology.

(C) Peace as negative peace (no war)/positive peace (no structural violence)

Galtung (1969) further modified the view of Wright, using the categories "negative peace" and "positive peace" that Wright had first put forward some 28 years earlier. Galtung developed a third position and argued that negative peace was the absence of war and that positive peace was the absence of "structural violence", a concept defined in terms of the numbers of avoidable deaths caused simply by the way social, economic and other structures were organized. Thus, if people starve to death when there is food to feed them somewhere in the world, or die of sickness when there is medicine to cure them, then structural violence exists since alternative structures

could, in theory, prevent such deaths. Peace under this rubric involves both positive peace and negative peace being present.

(D) Feminist peace theories

During the 1970's and 80's, a fourth perspective was ushered in by feminist peace researchers, who extended both negative peace and positive peace to include violence and structural violence down to the individual level (Brock-Utne, 1989).

The new definition of peace then included not only the abolition of macro level organized violence, such as war, but also doing away with micro level unorganized violence, such as rape in war or in the home. In addition, the concept of structural violence was similarly expanded to include personal, micro- and macro-level structures that harm or discriminate against particular individuals or groups. This feminist peace model came to include all types of violence, broadly defined, against people, from the individual to the global level, arguing that this is a necessary condition for a peaceful planet.

(E) Holistic Gaia-peace theory

The 1990's has seen the emergence of two types of holistic peace thinking. (Dreher, 1991; Macy,1991; Smoker, 1991) Here, as with the feminist model, peace between people applies across all levels of analysis from the family and individual level to the global level. In addition, Gaia-peace theory places a very high value on the relationship of humans to bioenvironmental systems on the environmental level of analysis. Peace with the environment is seen as central for this type of holistic peace theory, where human beings are seen as one of many species inhabiting the earth, and where life of the planet is seen as the most important goal. This type of holistic peace

thinking does not have a spiritual dimension, peace being defined in terms of all forms of physical violence against people and the environment.

(F) Holistic inner peace-outer peace theory

This sixth view of peace sees inner, esoteric (spiritual) aspects of peace as essential. Spiritually - based peace theory stresses the interactive relationships, the mutual co-arising between all things and the centrality of inner peace. In addition to the relationships of human beings with each other and the world including the environment, a spiritual dimension is added to Gaia-peace theory. This dimension is expressed in different ways by peace researchers, depending on their cultural context. As in the Tao of Physics, where new paradigms in physics resonate with worldviews found in Eastern mysticism, this new paradigm in peace research resonates with much thinking in world spiritual and religions traditions. Peace has truly become indivisible. Sue McGregor (2001) concluded Groff and Smoker's work of the previous six stages of peace concept evolution in table (1.1).

Sue McGregor in his analysis of table (1.1) reveals that the concept of peace evolved from: (A) single to multi-factored definitions; (B) single to multiple (micro, meso, macro, and exo) levels; (C) negative to positive conceptions; (D) structural to include interactions and relationships; and, (E) outer peace only to outer, inner, and ecological peace. Outer peace can be found on the level of family, individuals, community, states, the globe and environment. We are very fortunate to live at a time when peace is seen as such a broad, holistic concept because this conceptualization provides a powerful approach to working with families, societies, and world structures at a time when the integrity of each is in jeopardy.

Table (1.1) The **Evolution of Peace Concept (Extracted from Groff & Smoker, 1997)**
Source: MacGregor, Sue, "Leadership for The Human Family: Reflective Human Action For A Culture Of Peace", 2001
http://www.kon.org/leadership/peace.html

Stage	Peace Concept
1930's ***Absence of War***	Peace defined as **absence of war** between nations or *within nations*
1940-50's ***Balance of Forces***	Peace defined as **balance** between political, social, cultural, and technological factors. This balance was between nations and between *people and community*
1960's ***No Structural Violence***	Peace defined as **negative peace** (absence of war) and **positive peace** (presence of justice and structures that respect values of peace). Scope of peace expanded beyond nation and community to include *institutional structures* (social, economic, political, and cultural) and *global structures* arranged in such a way that structural violence was taken into account.
1970-80's ***Feminist Peace***	Definition of peace expanded beyond the organized macro level (war) to include **peace at the unorganized micro level** (individual and family relationships). Concern for peace expanded beyond organized war to unorganized violence *within the home and at the personal level (family, women, children, elders).* Also, structural violence expanded to include **systemic discrimination** against particular individuals and groups.
1990's ***Holistic (Gaia) Peace (Outer and Inner)***	Definition of peace now includes **peace within the environment** and **peace within oneself** (spiritual inner peace) as well as the previous conceptualizations a very holistic and contextual approach to understanding peace.

1.2.4 Reframing from Negative to Positive Peace Concept

In the previous explanation, it is clear that peace is a word of so many meanings and definitions that people hesitate to use it for fear of being misunderstood. It is presented that the concept of peace has both positive and negative aspects. On the positive side, peace signifies a condition of total comfort, spirituality, orderly resolution of conflict, harmony associated with mature relationship, and love. On the negative side, it is conceived as absence of something – absence of war, tension, hatred and conflict.

Western peace research has defined peace in terms of particular aspects of outer peace, such as Wright's conception of peace as a balance of macro forces in the international system or the Galtung formulation of peace in terms of negative peace (absence of physical violence) and positive peace (absence of structural violence). The evolution of the outer peace concept in Western peace research has contributed much to our understanding of peace and conflict issues. However, it is important to recognize that Western peace research has concentrated its effort almost entirely on outer peace and has not to date included the spiritual inner peace dimension in its philosophical framework.

Two important issues in the evolution of the Western peace concept are concerned with the various interpretations of "positive peace" (which, following Galtung was expressed in terms of absence of structural violence) and "nonviolence" (the verbal construction of which suggests an "absence of violence" framework, i.e. nonviolence somewhat parallel to the peace as absence of war perspective).

Schmidt, in his critical Marxist analysis, "Politics and Peace Research," (1968) argued that value positive concepts of peace were doomed to failure within peace research, because it would not be possible for peace researchers to achieve a consensus on what constituted a positive view of peace. Galtung's positive peace concept, the absence of structural violence like his negative peace concept the absence of war, did not include an inner or spiritual dimension. There is little doubt that positive images of peace have been the exception, rather than the rule, in Western peace research.

This has not been true in futures studies, where a focus on alternative futures has contributed towards the development of both negative and positive conceptualizations. There is a sizable group of people within the Western futures community but by no means all futurists whose visioning of positive alternative futures is based, in part at

spiritual, holistic, perspective. The emergence of holistic peace paradigms in peace research whether spiritual and/or environmental has included an increasing emphasis on positive conceptions of peace. In part, this is because of our realization that, regardless of our nationality, culture or religious tradition, we are all interconnected and interdependent. Viewed from space, planet Earth is a blue-green sphere, we cannot see national boundaries, but we can see the land and the water, ice caps, deserts and forests. The Earth is clearly a completely complex system, a living being perhaps, but we as individuals and groups are but a part of the planet as the planet itself is a part of the solar system, galaxy and universe. The new thinking, it can be argued, represents a return to wholeness, not in the sense of uniformity, but in the sense of complexity dynamically balanced in interaction, the whole as integrated synergy, syntigration. This mindset enables an appreciation of the interdependence of species in the global ecosystem, of particular cultural meanings in the context of the total global cultural system, and of particular faiths in the rich diversity of global religions. The whole is more than the sum of the parts, and the greater the variety of the parts, the richer the expression of the global whole.

Holistic peace paradigms that include spiritual and/or environmental concerns resonate with our positive peace experiences and, as a result, are better able to add value positive images to their intellectual frameworks. Positive peace can therefore be seen as an evolving concept, a concept that does not yet exist in the initial "peace as absence of war" definition, but a concept that subsequently takes on different meanings as the peace concept expands. (Groff and Smoker's, 1997)

From different studies about peace, it can be concluded that Western peace research has focused almost entirely on outer peace, but that in future it needs to deal with both inner and outer aspects of peace and their interrelationships in a more balanced way

1.3 Peace as a Dynamic Organic Process

The research has showed previously that several studies and researches were discussed and addressed the definitions of peace and its concepts. However, Betty A. Reardon in her research "Toward a paradigm of peace" (1989) was one of the pioneers who introduce the concept of peace as a dynamic organic process. She explains that there might be no more significant responsibility and challenge to peace studies than the engagement of learners in the search for a new paradigm of peace to replace the present paradigm of war, which delimits all thinking and determines our culture. That search is the great intellectual adventure of our time. Several assumptions and assertions point to peace as a dynamic, organized process. These assertions pertain to notions of peace, concepts of what peace is and should do, and concerns about the way the present paradigm impedes the purposes of peace education, and is a virtually insurmountable barrier for peace. So long as this paradigm prevails, there will be no authentic peace.

There are perhaps as many reasonable and useful definitions of peace as there are approaches to peace studies. Betty A. Reardon's definition has become more open, wider in scope-an organic concept of peace. As Warren Wagar asserts, ***"peace is life."*** If we define peace in its fullest, most varied sense, it reflects pastoral images. If we need to think of peace in structural or political terms, then we may say that peace results from social and economic structures, and public policies which sustain and enhance life; hence, the notion of harm and injury as primary policymaking criteria.

Organic peace is a source of energy for development, the breath of life which impels action. It does not exclude conflict as is well argued by Dean Pruitt, but it governs and guides it to become a source of growth and change rather than harm and destruction.

Dynamic peace is, above all else complex as are life processes in general. It is not so easily reduced in static structural terms.

Critics of the present paradigm, such as Douglas Sloan and Jeremy Rifkin, attribute much of the reduction of the reductionist character of contemporary thought to the initial intellectual separation of philosophy from sciences. Other critics, particularly separation of the sciences, see the drive would for control of nature as patriarchal, and a primary cause of the evolution of a dehumanized technology which produces nuclear weapons and isolates genetic material. However, this drive would seem to be far more deeply rooted in our history and our psyches than in Cartesian science or even patriarchy. It may be as much a cause as a consequence of patriarchy, other forms of repression, militarism and war itself.

The liner thinking which has been the dominant mode of thinking not only in the sciences but also in all of academe is the most serious impediment to us who seek peace through education.

Clearly, within the present paradigm, the primacy of a negative peace notion can not be replaced with that of a positive one.. So long as this and the present forms of empiricism are our dominant intellectual values, we will not be effective learners about, or partners with, the complexity that is life. While some physicists and biologists are revealing startling notions about apparent randomness reflecting a beautifully choreographed pattern of interrelationships and repetitions from the smallest to the largest bits of creation, and proposing through the Gaia hypothesis that the earth itself is a living system.

Integration of diversity in a mutually enhancing relationship is a fundamental process for maintaining life and for achieving peace. Our present emphasis on analysis has encouraged separation at the cost of integration. The reluctance to see things

wholistically also may well contribute to the current alienation of individuals and to the disintegration of society. Rather than try to heal and reintegrate it, we have attempted to simplify it to better manage and control the conditions of separation and alienation, conditions largely responsible for the high degree of personal and social insecurity from which we suffer.

1.4 Peace Building Models

1.4.1 'The Peace Pie' Model

(http://www.peace.ca/macropeace.htm)

Achieving peace is called 'a problem of convergence'. That is to say, the converging of many different issues impact upon peace. Often, each one is a dilemma in themselves. 'Problems of convergence' are the most difficult to resolve. The solutions, therefore like the problems, are complex and are the most challenging. Unfortunately, this presentation gets a bit technical as a result.

Humanity (whether at the community level or world level) has not achieved a culture of peace because the methodology leading to a solution has not been well understood. We call the science of gaining this understanding and knowledge about peace solutions 'Macropeace'.

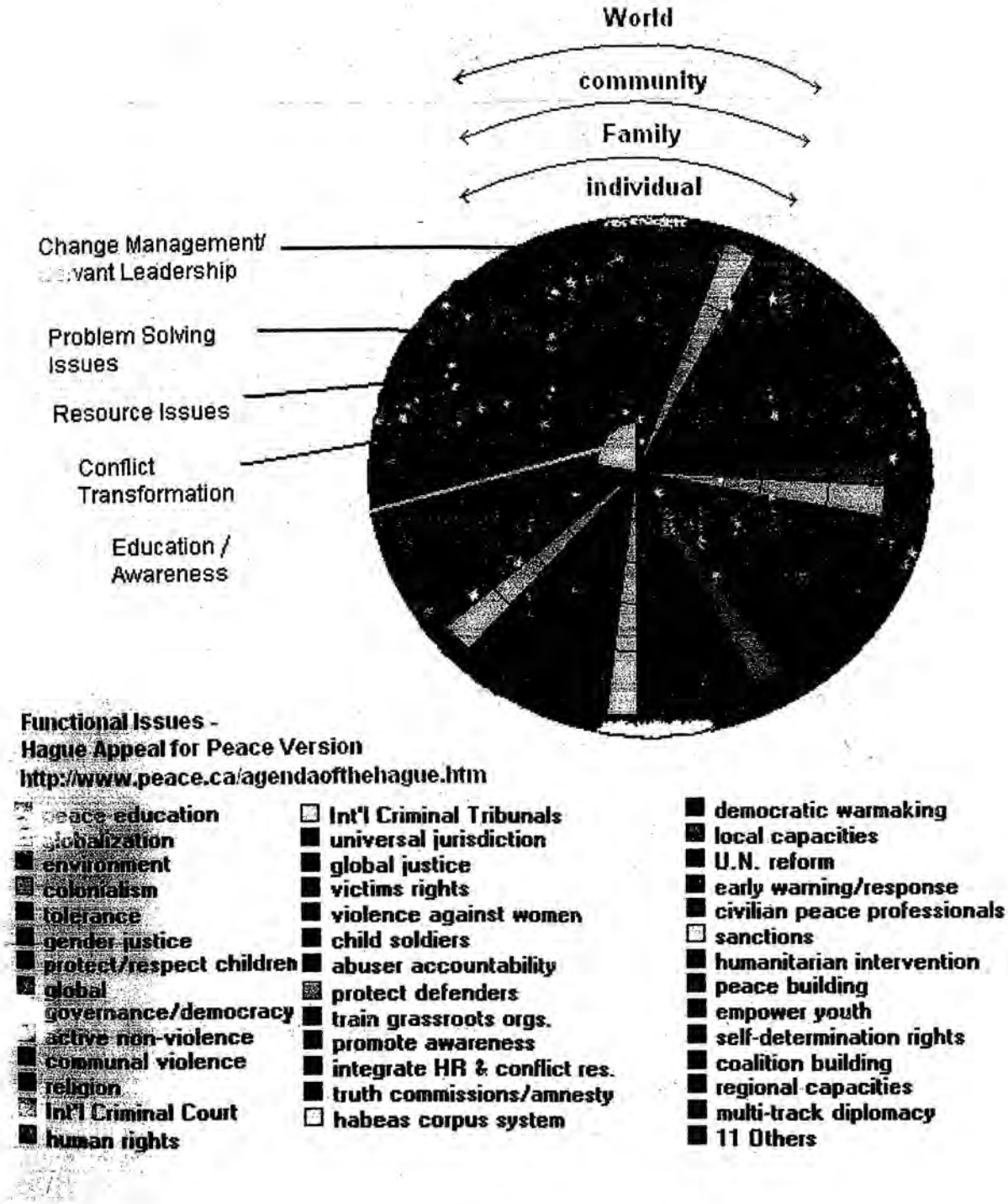
Macropeace can be described as seeing the 'Big Picture' of Peace. The purpose of this presentation is to communicate the 'Big Picture' of Peace, as simply as possible (not an easy task or it would have been done before). The benefit of understanding 'Macropeace' is the ability to prioritize key factors necessary to achieve peace.

The model which illustrates the 'Big Picture' of Peace was described as 'The Peace Pie', attempting to get the many elements that impact upon peace into one picture. Indeed, a picture that is worth a thousand words. This picture is arrived at by

applying a typical problem solving methodology. There is a hierarchy to the conceptual map that is best understood by the following four stages which were illustrated in figure (1.5):

- ***Stage1*** shows the three major typical issues that first impact upon peace and must be understood to start to arrive at a solution: resource issues, problem solving issues, and functional issues.
- ***Stage 2*** represents the elements of resource and problem solving issues in more details. ***Resource issues*** can be broken down into the management of the major types of resources; namely, information, people (human resources and the network of organizations), money and time resources. ***Problem solving*** issues can be broken down into: problem identification, action planning, action implementation, monitoring/evaluating/adjusting.
- ***Stage 3*** shows the functional issues in more details. As previously described, these are the converging of many different functional issues that impact upon peace. Often, each one is a dilemma in themselves. Each is a discipline unto itself - highly specialized. It has borrowed from the "Hague Appeal for Peace" agenda which identified 50 major functional issues. Then, it was added a catch-all 'Other' category for the many other issues which include media, conflict impact of policies, global action plan to prevent war, demilitarization, nuclear weapons, proliferation of conventional weapons, landmine ban treaty, new weapons, biological and chemical weapons, state and corporation accountability, civil society movement to abolish war. (Undoubtedly more will be added to the list.)

- ***Stage 4*** shows the complex interaction of all these issues required to build peace at the individual, family, community and world levels or 'strata'. At the core are peace information, awareness, knowledge and human spirit.



"EVERYTHING FITS TOGETHER"

Fig (1.5) The 'Peace Pie' Conceptual Mapping
Source: http://www.peace.ca/macropeace.htm

'Building Wheel' Model

Peace building can be defined as a dynamic process, a continuum of development that involves the construction of new relationships and different aspects such as education, trauma healing, security, humanitarian assistance and development, architectural design, leadership, religion and spirituality, conflict transformation, justice, identity and world view.

Catherine Morris, 2000, in her article "What is Peacebuilding? One Definition" suggested that peace building involves a full range of approaches, processes, and stages needed for transformation toward more sustainable, peaceful relationships and governance modes and structures. Peace building involves a long-term commitment to process that includes investment, gathering of resources and materials, architecture and planning, coordination of resources and labor. (Lederach, 1997)

"Peace Building Wheel" is one of the models which explains peacebuilding process illustrated in figure (1.6)

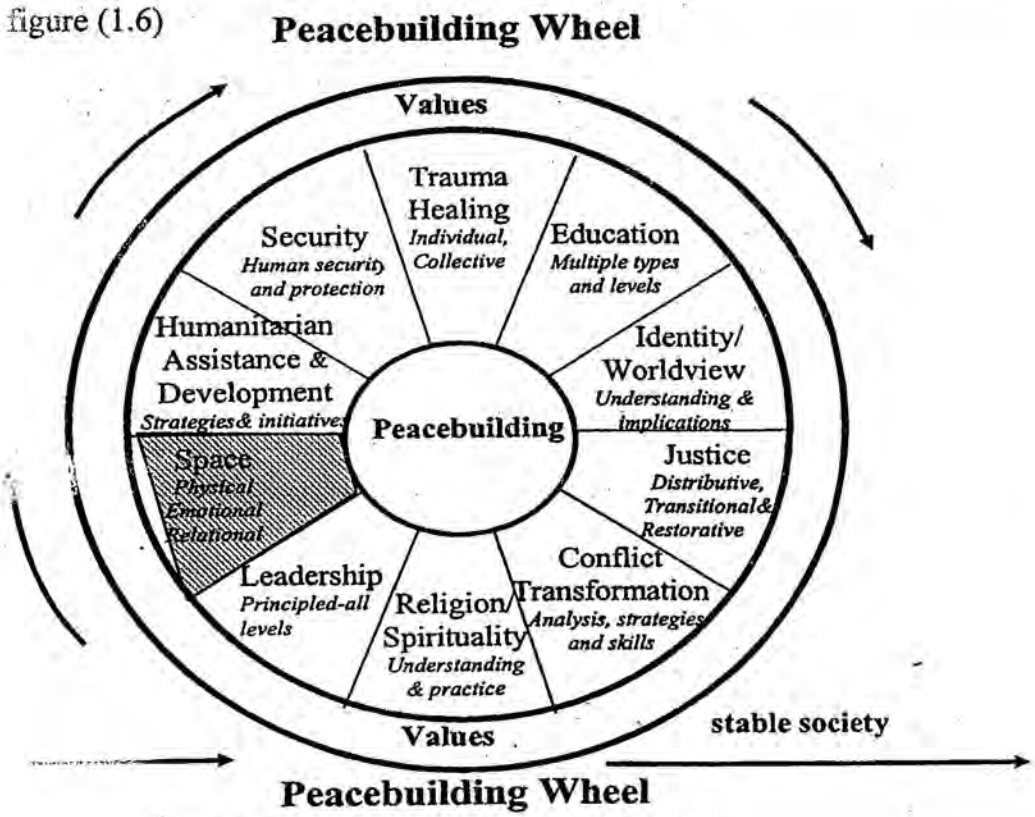


Fig (1. 6) 'Peace Building Wheel' Model

Source: Mani, Banu, Manual of conflict transformation, cauxscholar program, Switzerland, 2006

in peace building 'Wheel Model ', Barry Hart presents the following:

- Culture and context (social, political, economic and environment) inform this model.
- The values that related to human security in the form of human needs, rights and dignity as well as beliefs. Reconciliation can also be seen as an underlying value, as part of the peace building process and/or a potential outcome of this process.

  The peace building wheel can be used as a "template" for complex conflicts in order to see what is required to build peace. Coalition building is a critical factor in the peace building process.

  Each section is a potential "entry point" to peace building. One or more of the sections may be the starting points for this process but peace building toward a more stable society requires the (inter)action of all sections of the wheel.
- Society stability refers to safety, economic and social justice, good governance and the ability to build and constructively maintain relationships and social systems.

It is clear in this model "'Peace Building Wheel" that Barry Hart has integrated space with its physical, emotional and relational aspects as one of the required section for peacebuilding process. This idea has not been elaborated enough in this model to introduce the multidimensional aspects of architectural and urban context in peacebuilding process and to extend this idea to the built environment. Taking into consideration that the idea of peacebuilding process can happen physically on three levels: architecture, urban design and environment which be illustrated in figure (1.7)

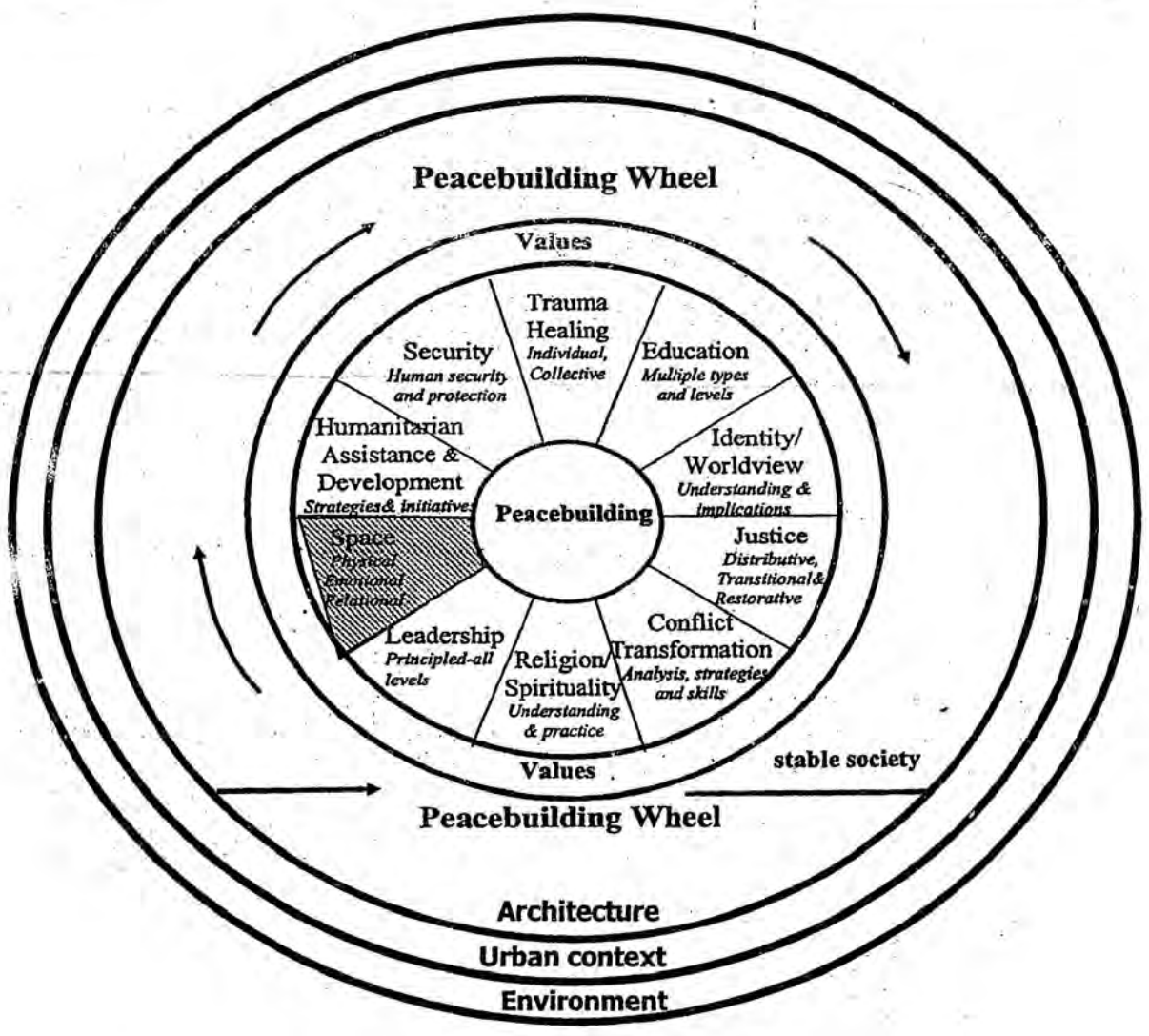


Fig (1. 7) 'Peace Building Wheel' Model & Its Relation with Architecture, Urban and Environment

Source: Researcher

1.5 Peace Conceptualization in Architecture

Architects tried over ages to achieve peace through six concepts: sacred sites; concept of habitation; symbolism; context and functions; movements and alliances; and concept of environment.

1.5.1 Sacred Sites

Since the dawn of human time, people have described certain places as being sacred, holy or magical, as having a concentrated power or presence of spirit. They

discovered that some places have the power to heal the body, enlighten the mind, awaken the soul, and spread peace. On the other hand, they found that there are some locations are not desirable to build. (Gray, Martin, 2007)

It was proved in some research and measurements carried on recently that primitive people developed an integrated concept and used primitive techniques applying materials and natural forms like dolmen, henges, standing stones as shown in figure (1-8), (1-9), to shape their built environment and create their peace in their living spaces. Searching for sites of peace and power is considered the beginning of peace concept in architecture.

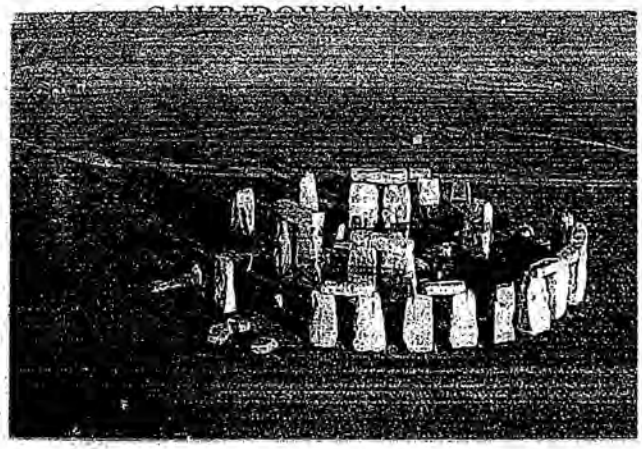


Fig (1.8) Stonehenge, England, 3100 BC.
Source:http://members.aol.com/stoneequation/stonehenge_files/mon.jpg

Fig (1. 9) "The Praying Hands of Mary"
Source:http://www.leyman.demon.co.uk/Standing_Stones,_Ley_Line_and_Power_Points.html

Moreover, human consider that buildings for religion are sacred sites and places for peace on the earth. Temples, churches, cathedrals and mosques are always places that human can find his lost peace there. This could have, further, led to the sacred sites and the selection of these places. Human used towers of churches and cathedrals and minarets of mosques to connect these places of peace to the whole

Fig (1. 10) Sacrada Familia, Gaudi Cathedral, Spain
Source:http://www.greatbuildings.com/buildings/Sagrada_Familia.html

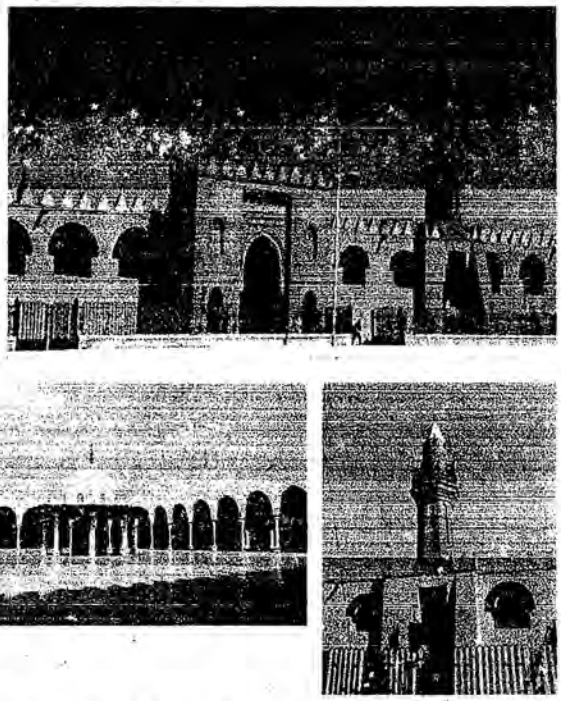


Fig (1. 11) Amr Ebn Alas mosque, Egypt
Source:http://www2.aclille.fr/arabe/mosquees.htm

Different research studied the locations of these places of peace and its relation with the world. Some studies in this field were carried on "Kaaba" and its location as the most important place for Muslims, which represents peace. There have been studies, which have shown that the Holy Kaaba is the center of the whole world. They have also said that Makkah Mukarrama and Kaaba are a center for a circle with a radius of 8000 kilometers encompassing all the centers of civilization in Asia, Africa and Europe. They likewise pointed out that Holy Kaaba is the center of all the cities in the radius of 13000 kilometer, including North and South America, Australia and the South Pole. The study further indicated that the Holy Kaaba was actually the center of all the land, which later on merged with each other due to the Oceans.

Arnold Keyserling and R.C in his research "The unique potentials of the earth and the ten directions" proved his hypothesis that Kaaba is approximately at the center of the

land mass of the world using different tools, mathematics and computer programs. Figure (1.12) shows a new world map with Kaaba at the center of the world, a conventional map contains distortions because the world is round and a map is flat. Such maps can give a very inaccurate idea of the direction and distance to Kabba from other places in the world.

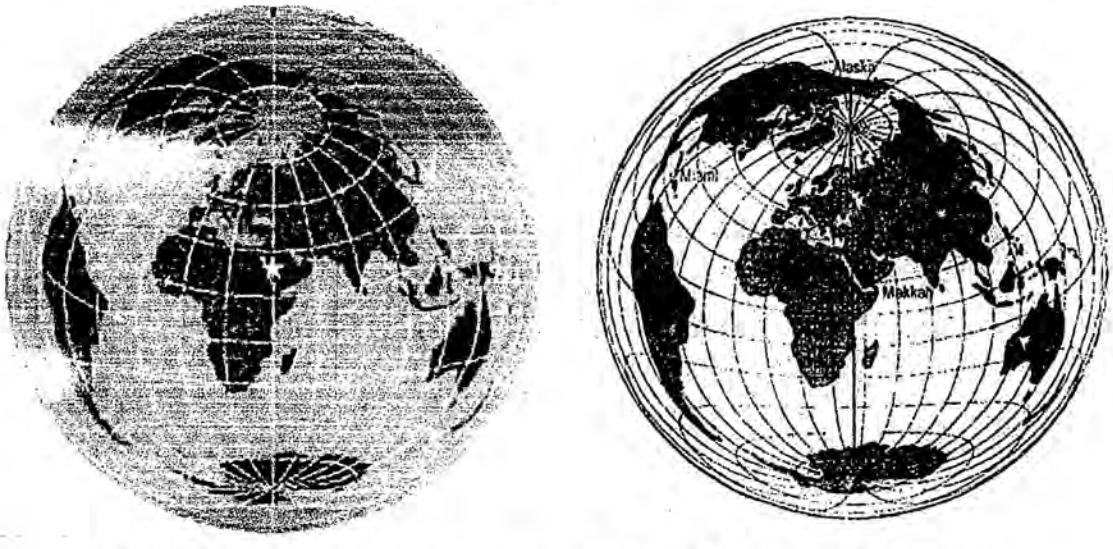


Fig (1. 12) Kaaba "Place for Peace at the Center of The World
Source:http://www.aljame3.net/ib/lofiversion/index.php?t5216.html
http://odt.org/mcart/index.cgi?code=3&cat=1

The concept of sacredness in architecture and its relation with peace will be explained in more details in chapter three.

1.5.2 Concept of Habitation

Place is one of the most important requirements of habitation for human beings. Architects have tried over ages to connect habitation with peace and express about that in different ways and approaches. The most famous example of habitation buildings, which express and represent peace, is Alhambra Palace in Spain.

Alhambra is universally considered to be the masterpiece of Spanish-Muslim art. It is fortified; as such, citadel-palaces had to be protected from enemies. Alhambra was

ntury and served as the royal palace for the Khalipha, Abd-el-
center or focus to emphasize power. "Instead," "it is a maze of
courtyards, of passages and corridors, of water basins and canals that link
the open and covered spaces, of fountains and of decorations that are undoubtedly
most extraordinarily complex and technically accomplished in all Islamic
architectural design. See figure (1.13).

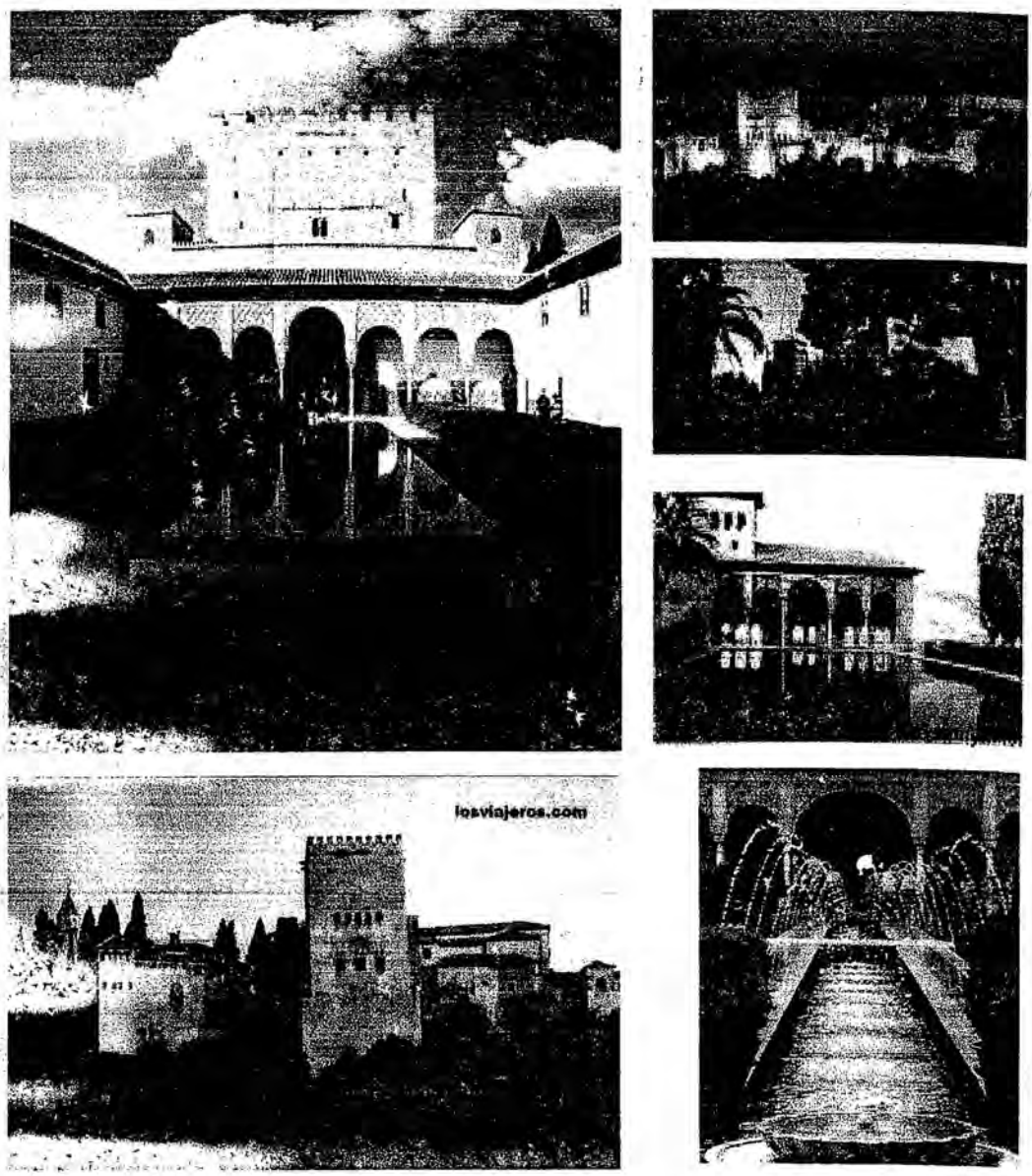


Fig (1. 13) Alhambra, **UNESCO World Heritage Site**

Source: http://en.wikipedia.org/wiki/Alhambra

The famous beauties of the palace are: The Gate of Justice, The Court of Alberca; The Court of Lions, with its fountain, its alabaster basin shedding diamond drops; The Hall of Ambassadors; The Tower of Canaries; The Court of Myrtles; The Hall of Justice; and the many gardens, fountains, panoramas, chambers, towers and balconies. All this merges nature with architecture using running water, pools, windows framing vistas, ever-present gardens, and carefully placed lookout points. This meeting of nature and sublime architecture was suggestive of the paradise described in the Quran.

1.5.3 Symbolism

The definition of Symbolism in Wikipedia is the applied use of symbols: iconic representations that carry particular conventional meanings.

The term "symbolism" is often limited to use in contrast to "representationalism"; defining the general directions of a linear spectrum - where in all symbolic concepts can be viewed in relation, and where changes in context may imply systemic changes to individual and collective definitions of symbols. "Symbolism" may refer to a way of choosing representative symbols in line with abstract rather than literal properties, allowing for the broader interpretation of a carried meaning than more literal concept representations allow.

Symbolic architecture refers to the classical view of the architecture of the mind. In this approach, the mind is viewed as a process in which symbols are manipulated. Symbols are moved between memory stores such as long term and short-term memory and are acted upon by an explicit set of rules in a particular sequence. The symbolic architecture is the manner in which memory stores are related and the set of rules applied to the system. (http://penta.ufrgs.br/edu/telelab/3/symbolic.htm)

Peace Tower and Hiroshima peace memorial are good examples of peace symbolism in architecture.

1.5.1.1 Peace Towers

In Wikipedia, "Peace Tower" is the name of a number of structures erected in response to wars, such as:

- Peace Tower is a clock tower of the Canadian Parliament Building in Ottawa, Canada, built to commemorate the end of World War I. The Peace Tower is the tallest and most prominent symbol of the Canadian Parliament Building. It replaced the 55-metre Victoria Tower, which burned down in the 1916 Parliament Hill fire. The current tower is 92.2 meters tall, as shown in figure (1.14).
- The Island of Ireland Peace Park in Belgium contains a Peace Tower as a memorial to Irish veterans of World War I, see figure (1. 15). The 110-foot tower is in the traditional design of an Irish round tower and is partially built with stone from a former British army barracks in Tipperary, the remainder of the stone from a workhouse outside Mullingar, County Westmeath. The design has a unique aspect that allows the sun to only illuminate the interior on the 11th hour of the 11th day of the 11th month, the anniversary of the armistice that ended the war and the time for the minute's silence on Remembrance Day.
- Peace Tower is an art installation by Mark di Suvero and others. It was first conceived and constructed in 1966 as The Artists' Tower of Protest in Los Angeles, California to protest the Vietnam War. Forty years later, di Suvero collaborated with Rirkrit Tiravanija to construct a new installation, called

2006) at the Whitney Museum of American Art in New York protesting the Iraq War.

- The Imagine Peace Tower is a memorial to John Lennon from his widow, Yoko Ono, located on Videy Island, off the coast of Reykjavík, Iceland. It consists of a tall "tower of light", projected from a white stone well which has the words "Imagine Peace" carved into it in 24 languages, see figure (1.16).

Fig (1. 14) Peace Tower, Canadian Parliament, Ottawa, Canada
Source:http://www.hanifworld.com/OttawaViews.htm

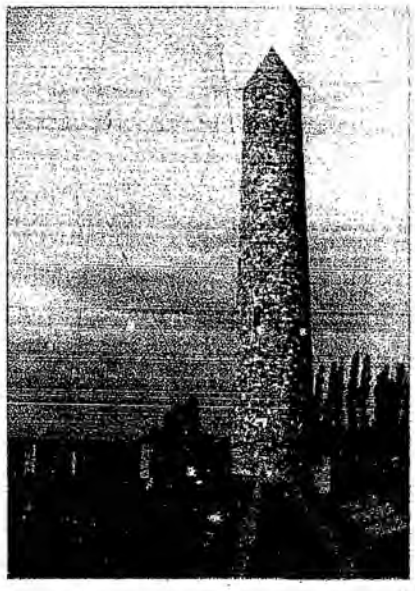


Fig (1. 15) Peace Tower, the Island of Ireland, Peace Park in Belgium
Source:http://en.wikipedia.org/wiki/Island_of_Ireland_Peace_Park

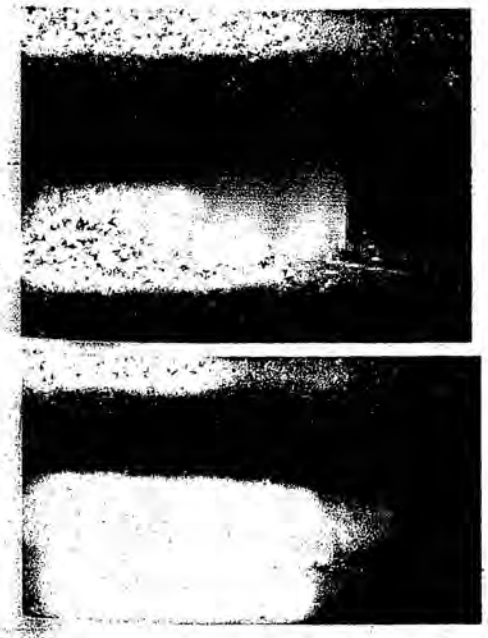


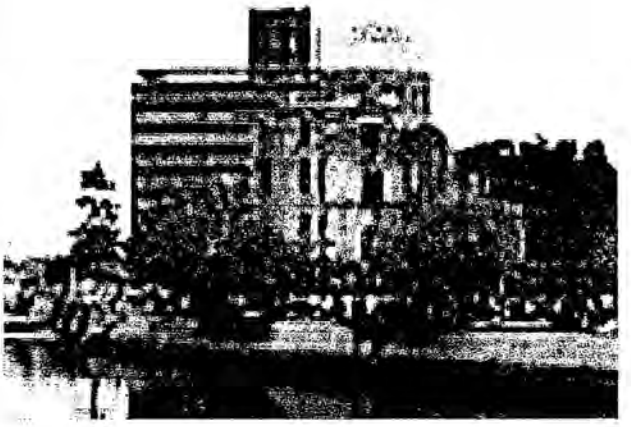
Fig (1. 16) Peace Tower , Videy Island, Iceland
Source:http://en.wikipedia.org/wiki/Imagine_Peace_Tower

Fig (1. 17) Peace Tower, International Peace Garden, USA & Canada
Source:http://www.peacegarden.com/What%20to%20see.htm

The Peace Tower located at the "International Peace Garden" between North Dakota United States and Manitoba, Canada. This sculpture, 120 feet, is situated half in the United States and half in Canada. It straddles the international border at North Dakota with a pair of columns in each country. The four columns represent people from the four corners of the earth, coming together to form two similar but distinct nations as shown in figure (1. 17).

1.5.3.2 Hiroshima Peace Memorial

The memorial is a UNESCO World Heritage Site located in Hiroshima, Japan. It was established as such in 1996. The site is part of the Hiroshima Peace Memorial Park. See figure (1.18). The building was originally designed by Czech architect Jan Letzel. It was completed in April (1915), and the new building was named the Hiroshima prefectural commercial exhibition (HMI).



Side Views of the Hiroshima Peace Memorial

ace Memorial in 1945

Fig (1. 18) Hiroshima Peace Memorial

Source:
http://en.wikipedia.org/wiki/Hiroshima_Peace_Memorial

the 9 August 1945 nuclear explosion was almost directly above the building (the hypocenter was 150 meters) and it was the closest structure to withstand the explosion. The building has been preserved in the same state as immediately after the bombing, and now serves as the reminder of nuclear devastation and as a symbol of hope for world peace and elimination of all nuclear weapons.

1.5.4 Context and Functions

In the last 20 years, few buildings were designed from the beginning specially to promote peace and stability around the world. The most two famous buildings are "Palace of Peace and Reconciliation" in Astana, Kazakhstan and "United States Institute for Peace" Headquarters project in Washington DC, USA.

These two buildings are clear examples of peace concept in architecture through context and functions.

1.5.4.1 Palace of Peace and Reconciliation

Country: Astana, Kazakhstan

Architect: Fosters & Partners

Consultant: Turkish construction company, Symbol Construction

Date: It was opened on September 2006

Area: 27.500 m2

Budget : 69.000.000 USD

- **Background**

Foster and Partners was commissioned to design a permanent venue for Kazakhstan "The Palace of Peace and Reconciliation". The building is conceived as a global centre for religious understanding, the renunciation of violence and the promotion of

faith and human equality. In addition to representing all the world's religious faiths, the Palace houses a 1500 seat opera house, a university of civilization, and a national centre for various ethnic and geographical groups of Kazakhstan.

- Concept

According to Foster and Partners "as a non-denominational contemporary building form, the pyramid is resonant of both a spiritual history that dates back to ancient Egypt as well as a symbol of amity for the future.

It is primarily a cultural centre - but because it will host a peace congress of 18 religions, it becomes something else. It is about religion, peace and co-existence"

A pyramid that is to be a global centre for religious understanding, a symbol of world

- **Description**

- Pure form of a pyramid, 62 meters high with a 62 x 62-metre base as shown in figure (1.19). Clad in stone, with glazed inserts that allude to the various internal functions, the pyramid has an apex of stained glass by the artist Brian Clarke.

- It is organized around a soaring central atrium, which is animated with spectacular cast light patterns.

- The assembly chamber is elevated at the top, supported on four inclined pillars the hands of peace as shown in figure (1.20). Lifts rise up the inward leaning walls to take delegates to a reception space lined with vegetation the hanging gardens of Astana - from where they ascend to the chamber via a winding ramp.

- A broad glass lens set in the floor of the atrium casts light down into the auditorium of the opera house and creates a sense of vertical continuity from the lowest level of the building to the very top, see figure (1.21).

- **Climatic Diagnosis**

The climate is a problem. Temperatures in Astana range from minus 40 Celsius in winter to plus 40 Celsius in the heat of summer. It is not just a matter of insulating the building - it's coping with the yearly expansion and contraction of the huge steel and stone structure. It is being made in prefabricated sections during the winter, to be assembled in summer. Self-supporting as it rises, it will need no temporary props. Its cost is guarded as a state secret.

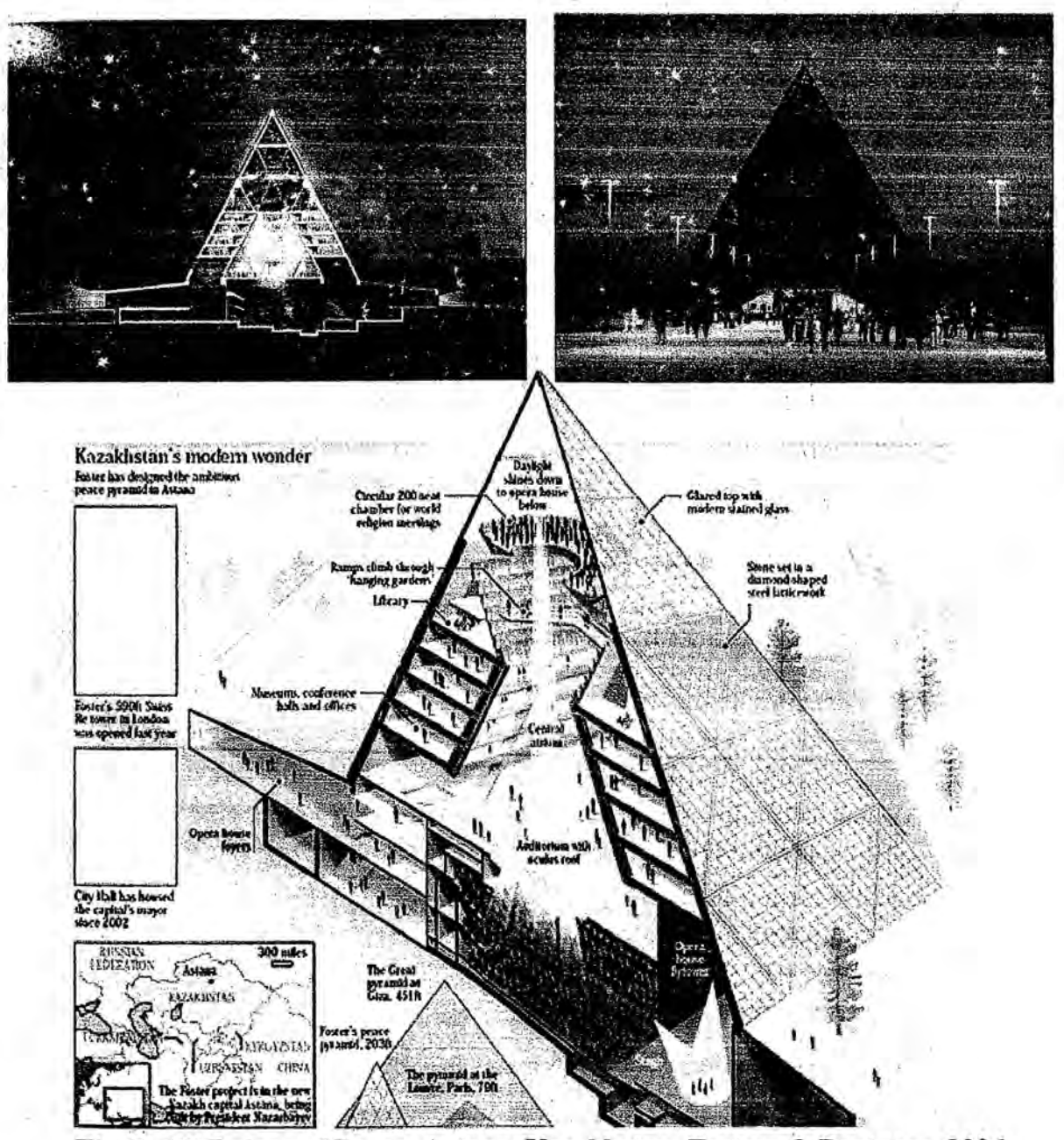


Fig (1. 19) Palace of Peace, Astana, Kazakhstan, Fosters & Partners, 2006
Pure form of a pyramid

Source: http://www.fosterandpartners.com/Projects/1322/Default.aspx

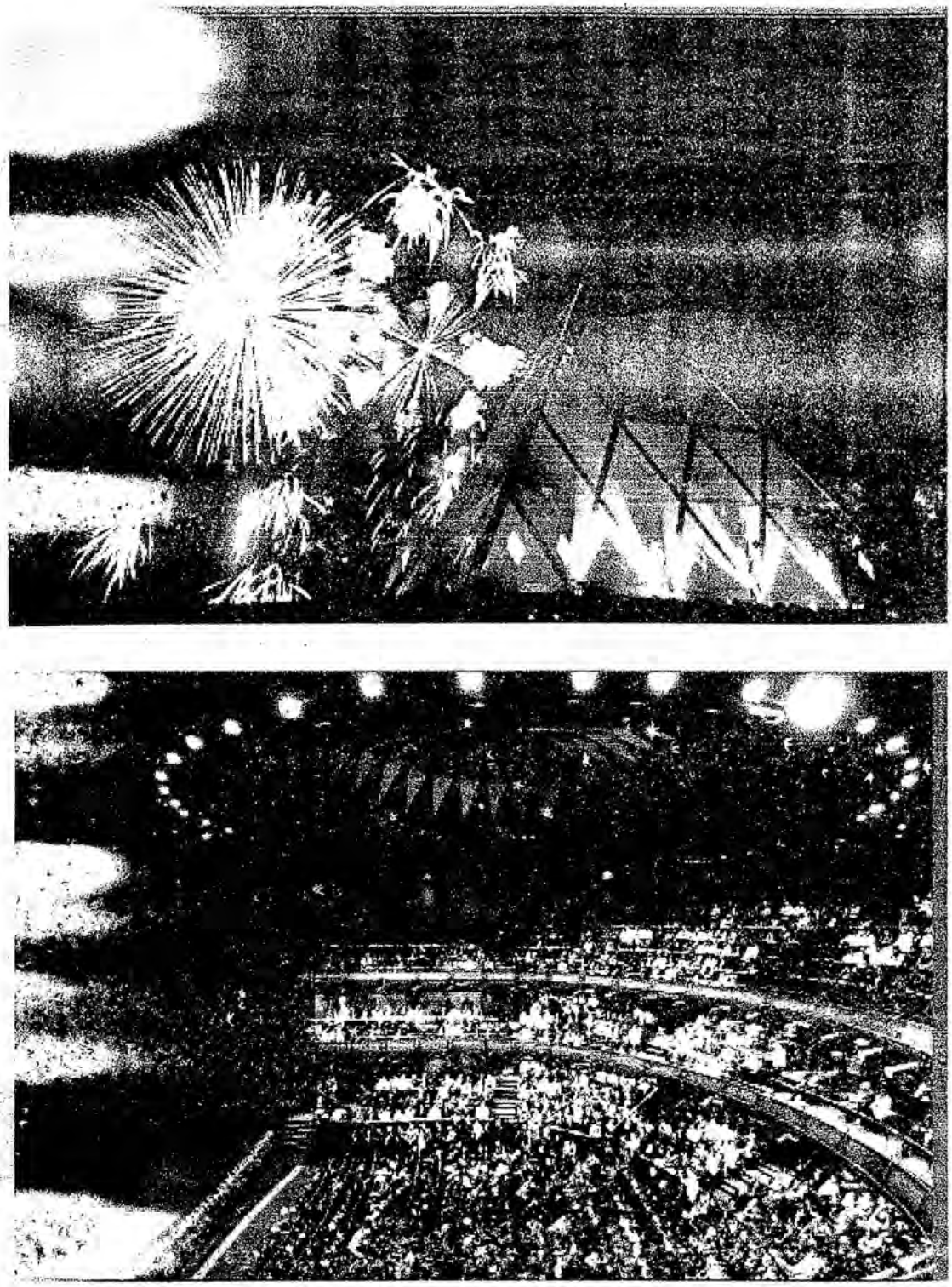


Fig (1. 20) Palace of Peace, The Opera House
Source: http://www.fosterandpartners.com/Projects/1322/Default.aspx

The pyramid is raised on a low artificial hill - making it even taller - inside which is ***the*** *[illegible] house. The auditorium has a circular glass oculus ceiling set into* ***the*** *[illegible] pyramid's gargantuan central atrium. From the floor of the sunken opera [illegible] peak of the pyramid is nearly 250 feet. Lifts rising up the inwardly-leaning [illegible] like the legs of the Eiffel Tower - carry you up to a middle level.*

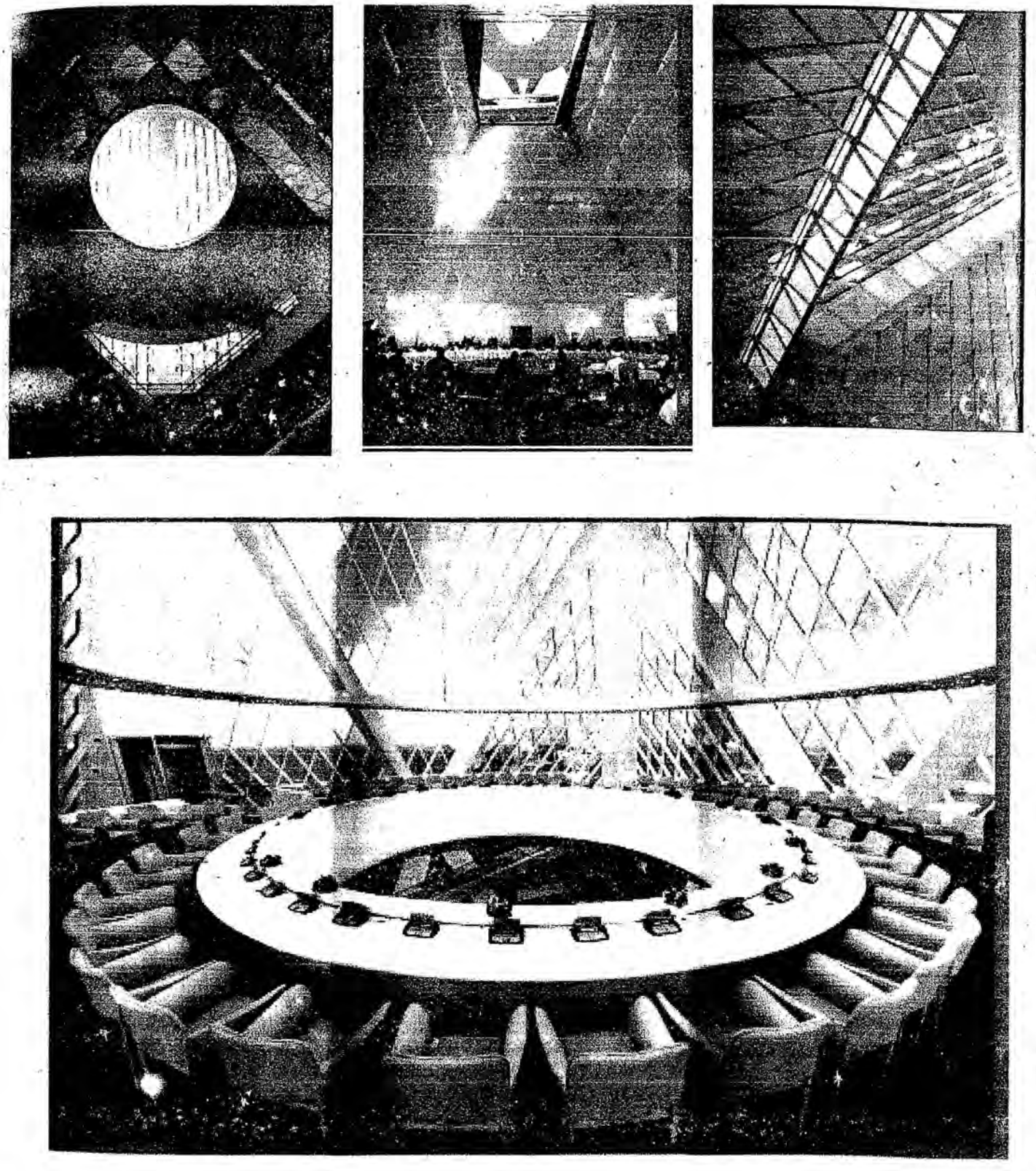


Fig (1. 21) Palace Of Peace, the Assembly Chamber

Source: http://www.fosterandpartners.com/Projects/1322/Default.aspx

1.5.4.2 United States Institute for Peace Headquarters (USIP)

Country: United States of America

Architect: Moshe Safdie and Associates

Date: break ground in early 2008 and complete construction by the first quarter of 2010

Budget: Congress has provided $100 million to the institute for construction of the facility. Private funds are being raised to complete the project.

- **Background**

USIP headquarters occupies the last remaining site on the National Mall facing the Lincoln Memorial as shown in figure (1.22). The building will contain administrative offices, research facilities including a library and archives, a public conference center, and an interactive education center dedicated to the themes of international conflict prevention, management, and resolution

- **Concept**

Americans see it as both a symbolic and substantive presence at kind of a new war and peace corner, they think peace has a place and deserves a place on the National Mall, which will be devoted to promoting peace and stability around the world

- **Description**

The building is organized around two atria fanning out from a corner entrance, see figure (1.23). The first, facing the Potomac, serves as the centerpiece for the spaces devoted to scholarly research, while the other, facing the Lincoln Memorial, acts as a focus of public activity and conferences. The public spaces in the building are roofed by a series of undulating spherical and toroidal segments, constructed of steel frames and white translucent glass. The roofs form a series of wing-like elements as shown in

figure (1.24), white on the exterior during the day, and glowing from within at night, and will be visible from across the bridges from Virginia.

Fig (1. 24) United States Institute for Peace, Washington Dc, USA, Moshe Safdie and Associates, 2010

The location of USIP, the last remaining site on the National Mall

Source:
http://www.msafdie.com/a.html

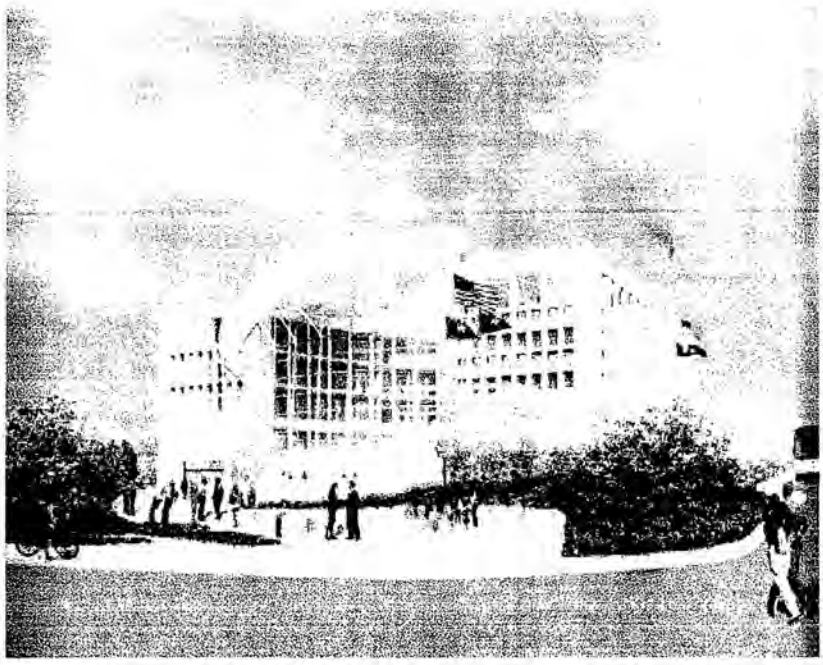


Fig (1. 23) The Entrance of USIP Headquarter

Source:
http://www.usip.org/building/index.html

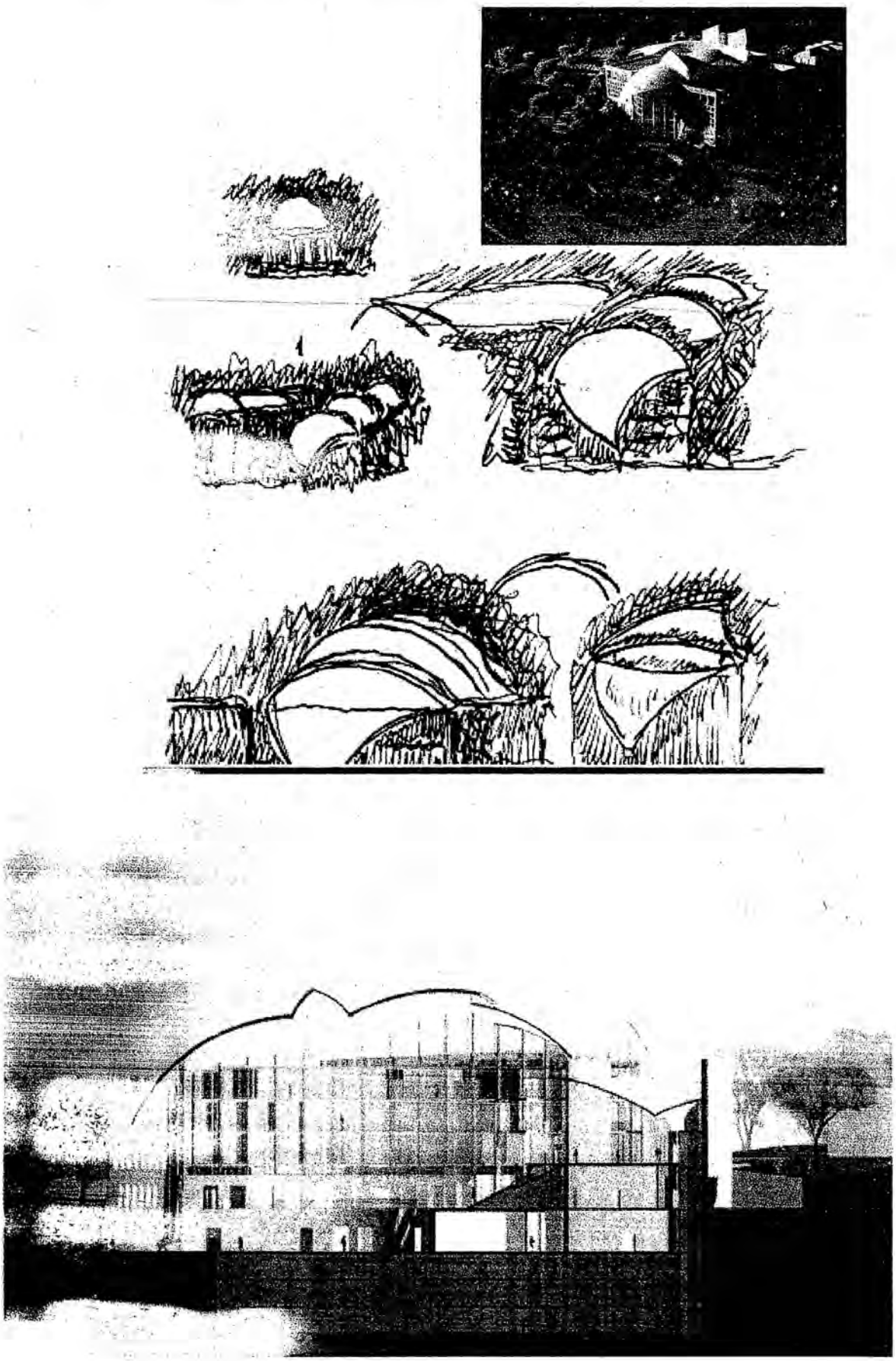


Fig (1. 24) USIP, The Roofs Form a Series of Wing

Source: http://www.msafdie.com/a.html

1.5.4.3 Peace museums

Through exhibitions and educational activities, peace museums aim to help build a 'culture of peace' in the here and now. One of the strengths of peace museums is that they can reach out to and involve a broad public, many of whom might not be involved in the peace movement.

The International Network of Museums for Peace is a worldwide network of peace museums that share in the same desire to build a global culture of peace. There are many members of peace museums around the world (See Appendix A), such as Hiroshima Peace Memorial Museum, Kyoto Museum for World Peace and Dayton International Peace Museum.

- **Hiroshima Peace Memorial Museum**

In Wikipedia, it is located in Hiroshima Peace Memorial Park, in central Hiroshima, Japan, see figure (1.25). It was established in August 1955 with the Hiroshima Peace Memorial Hall, now the international conference center Hiroshima. The museum exhibit presents the facts of the atomic bombing, with the aim of contributing to the abolition of nuclear weapons throughout the world, and to the achievement of the world peace. The main building was designed by architect Kenzo Tange.

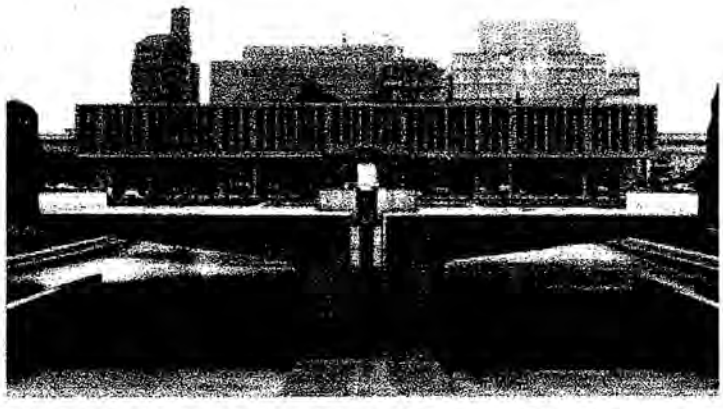


Fig (1. 25) Hiroshima Peace Memorial Museum, Japan

Source:http://www.9engineer.com/Study%20Visit/Japan_2/hiroshima_peace%20museum.GIF

...m for World Peace

...neikan University in Kita-ku, Kyoto, Japan. The gallery supports exhibits promoting peace, human rights through nonviolence, the victory over ...campaign, a healthy global environment, the abolition of war, global citizenship, and other organizations dedicated to peace, health care and education for all people. Although an increasing number of universities have established peace studies departments, peace research institutes, and conflict resolution centers, ...University can take pride in the fact that it is the first and the only university worldwide that has created a peace museum. This makes the Kyoto Museum for World Peace especially noteworthy in the growing family of peace ..., see figure (1.26).

Fig (1. 26) Kyoto Museum for World Peace, Kyoto, Japan
Source: http://en.wikipedia.org/wiki/Kyoto_Museum_for_World_Peace

- **Dayton International Peace Museum**

Dayton Peace Museum Inc was incorporated as a non-profit corporation in the State of Ohio in 2004. The historic Pollack House in Dayton houses permanent and rotating exhibits, a host of peace activities, and special events that focus on ...the culture of violence to a culture of peace, see figure (1.27).

The mission of Dayton peace museum is to contribute to a local, national, and international culture of peace through exhibits, activities, and events that focus on nonviolent choices. The slogan of the museum is "A space to make peace".

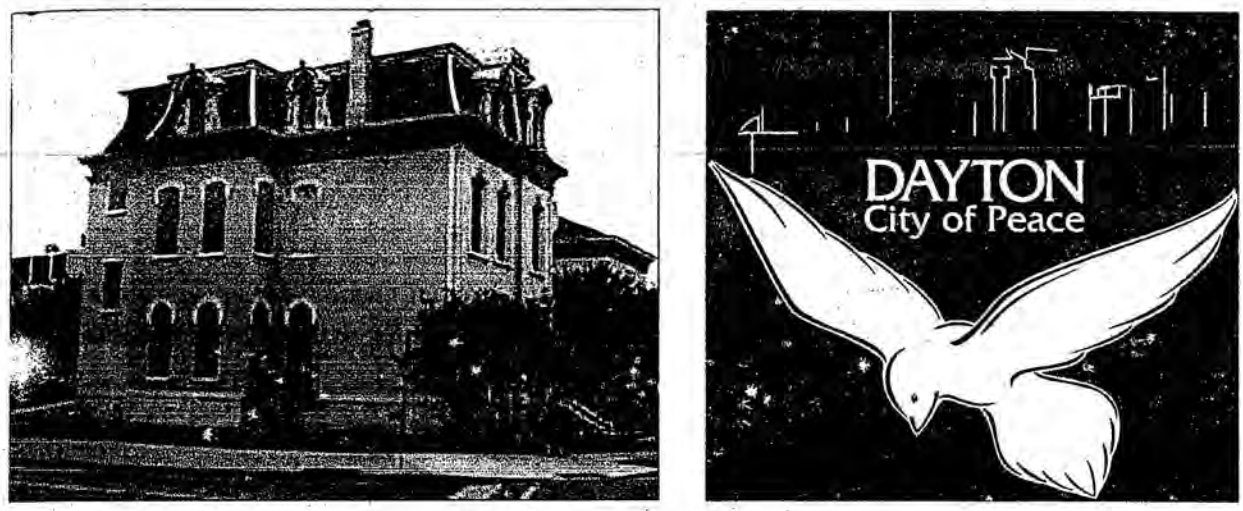


Fig (1. 27) Dayton Peace Museum, Dayton, Ohio, USA
Source: http://www.daytonpeacemuseum.org/

1.5.6 Movements and Alliances

In the last ten years, some architectural movements appeared to emphasis the relation between architecture and peace, such as:

1.5.5.1 ARC. PEACE

http://www.infra.kth.se/bba/arc_peace/arcpeaceframes.htm

The purpose of ARC.PEACE is to be the global network of architects, design and planners committed to building in a socially responsible way a peaceful, just and environmentally sustainable future. It was revised and adopted in Chicago 18 June 1993 and Stockholm 13 June 2000 and it has a status as a Non-Government Organization (Category II) with the Economic and Social Council of the United Nations. Architects, designers and planners of many countries have organized internationally against weapons of mass destruction and for non-violent conflict resolution among nations, for the protection of our natural environment and for responsible development of our built environment.

ARCHPEACE encourages the following fundamental principles in the creation, development and protection of human environments at all levels of society, including individual, community, city, state and global levels. They emphasize that peace is far more than the absence of war:

- Creating cities that encourage harmony and reduce conflict through design;
- Opposing use of nuclear, biological and chemical weapons or other means of military coercion;
- Promoting a culture of peace.

1.5.5.2 Architects for Peace
http: //www.architectsforpeace.org/

Architects for peace is a humanitarian, non-profit professional organization for architects, urban designers, engineers, planners, landscape architects and environmentalists, seeking urban development based on social justice, solidarity, respect and peace. It was established in the weeks preceding the bombing of Iraq, 2003. Their aim was to prevent Australian involvement in this war. Architects for Peace (arch-peace) aims to provide an alternative forum for debating political, environmental and social issues in the professional urban context. They are involved in different projects, such as South Sudan Education Aid Project, Bush Camp, Bunyip State Park and Bird Hide at Westgate Park.

1.5.5.3 Architects Without Borders (AWB)
http://www.awb.iohome.net/

It is an international NGO which started as a result of economic crisis, natural disaster and human conflict. Many people are facing emergencies and crisis without adequate resources for long-range recovery. AWB is committed to helping communities

develop self-directed sustainable recovery and reconstruction programs for maintaining peace. Their slogan is *"Together we can make a world of difference"*

AWB promotes multi-lateral, intercultural, participatory programs that foster good will and peace building through sustainable development programs. Its approach is holistic and interdisciplinary, relying on the wealth of knowledge and wisdom inherent in progressively multi-cultural, appropriate technological, environmentally, social and economical equitable strategies.

They think that natural disasters, human conflict, and inequitable economic disparity lead to conditions such as malnutrition, lack of suitable housing, lack of safe drinking water, unstable communities, further perpetuation of conflict, and deepening crisis, to mention but a few. They recognize that development and reconstruction that strives to integrate, to the greatest extent reasonable, the principles of sustainability, peace building, inter-cultural collaboration, and inclusionary/participatory consensus represents an opportunity for communities in crisis all across the planet to live fulfilling lives, to achieve their aspirations in the face of present realities. They further recognize that in order for such development to be successful for the future strength of our communities, they strive to preserve, and where possible, enhance opportunities, environmental quality, and availability of renewable resources for those future generations.

AWB is located in Brazil, Italy, Portugal, Seattle, Denmark, Argentina, North America, Spain, Australia, France, Peru, Uruguay, and Mexico.

1.5.6 Concept of Environment

This concept explains the factors governing peace of both human behavior and interactions with environment in its various forms. Too often environmental concerns

have been framed as issues of resource scarcity that in turn lead to conflict. Instead, this concept attempts to understand how environmental concerns can be used as a means of peace building and improving ties between nations (Saleem H. Ali, 2003). Unlike more "traditional" approaches to creating peace, environmental peace employs an action-oriented approach, intent on solving problems through the application of scientific knowledge and research. A central understanding is that all facets of nature are interconnected, and thus, change in any one system will bring about change in related systems.

The Definition and Conceptual Basis of Environmental Peace approach are related to several factors (Biswajit Ganguly and Roger Hansell, 2003):

- First: mankind was currently in a state of hostility with the environment;
- Second: the environment's essential services and it's capacity to renew resources were being destroyed;
- Third: mankind's hostile behavior to other people is aggravated by tensions caused by failures in the supply of environmental services; and
- Fourth: mankind's capacity to improve the condition of the environment is curtailed by his own violence which arose from the very tensions caused by the lack of resources and by climate extremes.

These factors imply that there is a very complex interaction between humankind and the environment and that both negative and positive effects are acting in a reciprocal manner. The implications were clear: we must find viable pathways towards a condition of peace within the environment in which the human capacities will have full expression in an environment developing to its full potential. In that sense, different organizations and movements were found around the world such as Green Peace, Environmental Peace, Environmental and Peace Education Center... etc.

Meanwhile, the notion of environment became the common sound in contemporary architecture. Many designers and planners studied "environmental design" and they tried to suggest many strategies for each trend attempting to protect our environment, reducing resources consumption especially energy and water and using renewable resources, creating ecological balance and harmony between buildings and nature as shown in figures (1.28), (1. 29).

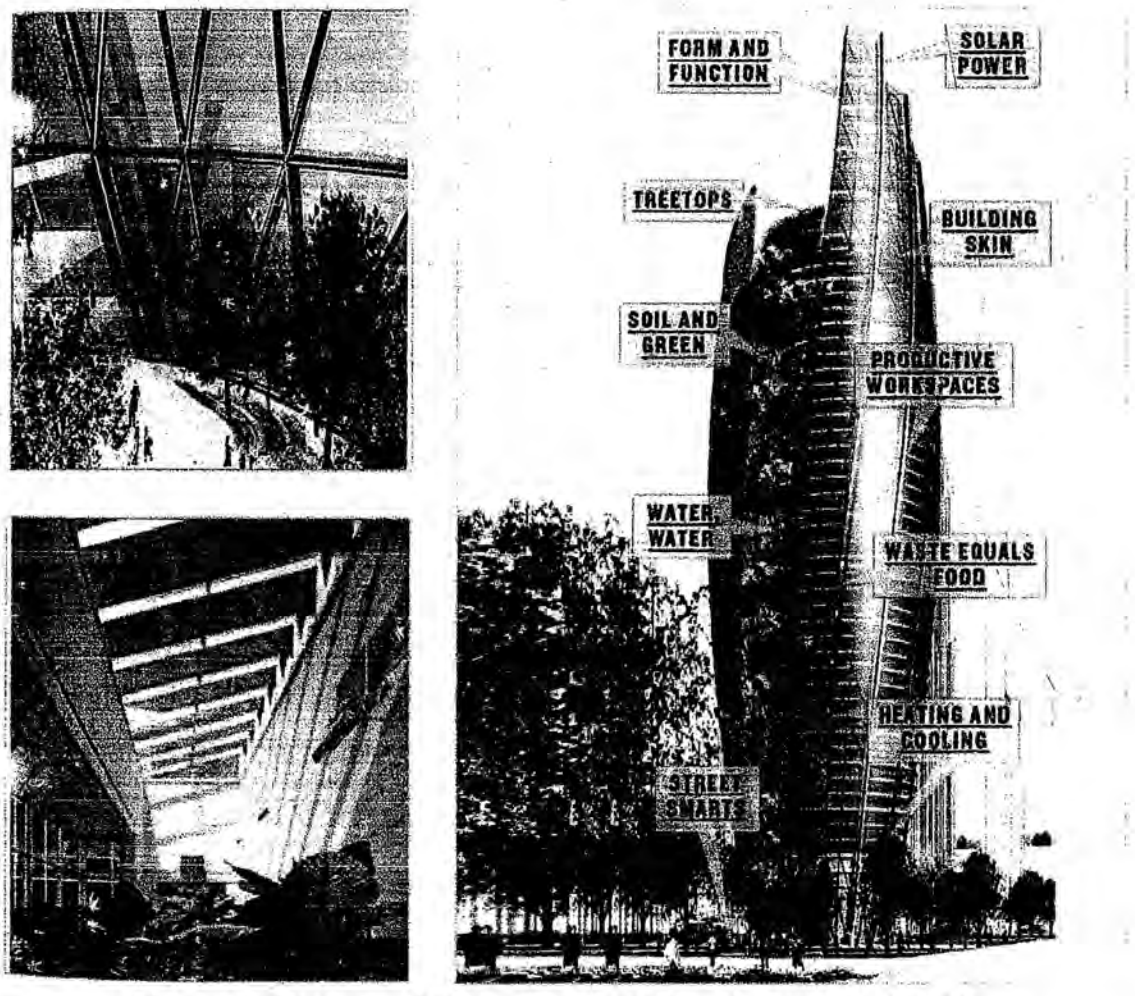


Fig. (1. 28) Tower of Tomorrow, William McDonough, 2007
Source:http://www.inhabitat.com/2008/01/02/the-building-of-tomorrow-that-works-like-a-tree/

A skyscraper that works as if a tree, makes oxygen, distills water, produces energy, and changes with the seasons. Perhaps it is time to propose a new word tree scraper! Biomimicry- the art of drawing inspiration from nature's designs

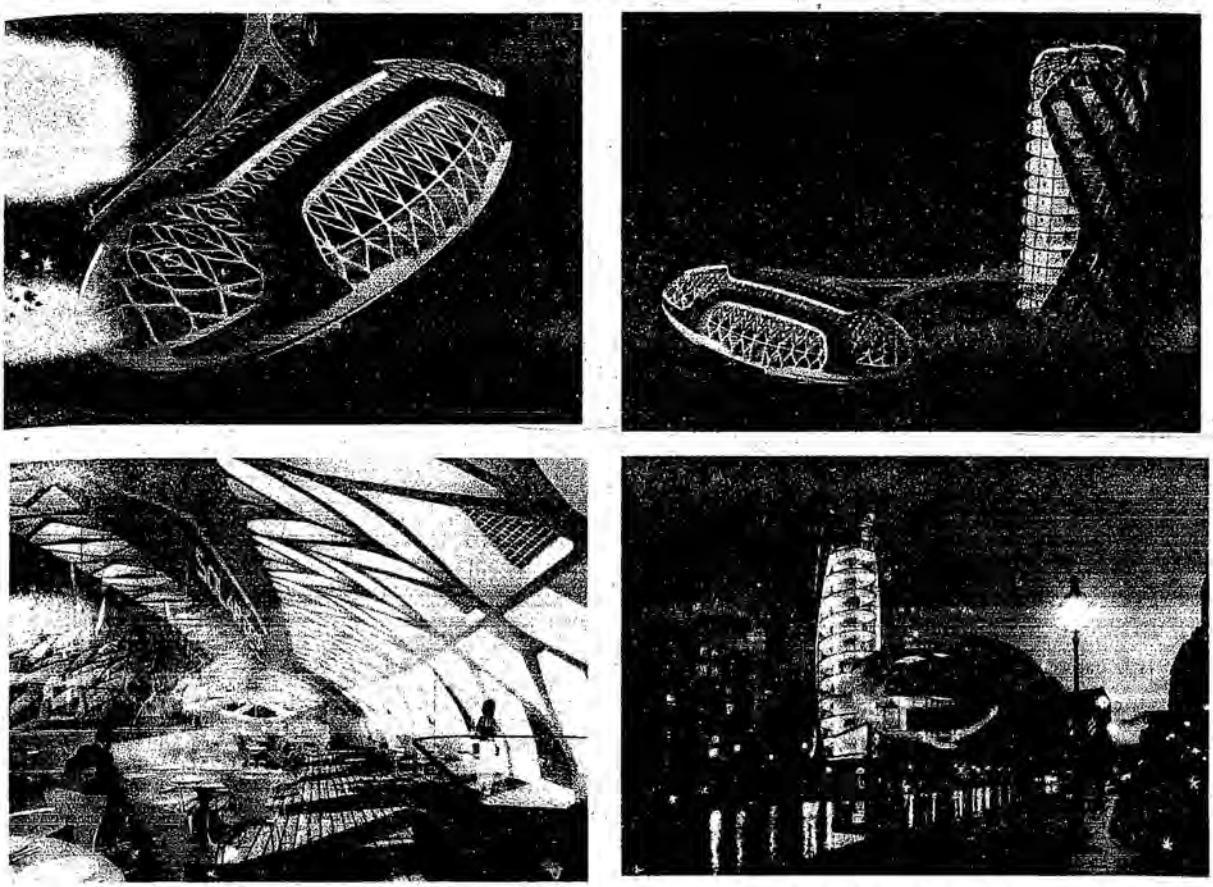


Fig. (1. 29) Anti Smog Architecture: A Catalyst for Cleaner Air in Paris, Architect Vincent Callebaut,Paris, France, 2007

Source: http://www.inhabitat.com/2008/01/28/anti-smog-architecture-a-catalyst-for-cleaner-air-in-paris/

The exterior is fitted with 250 square meters of solar photovoltaic panels and coated in titanium dioxide (TiO2). The PV system produces on-site electrical energy while the TiO2 coating works with ultraviolet radiation to interact with particulates in the air, break down organics and reduce air born pollutants and contaminants.

Callebaut describes the process as an intention to "absorb and recycle by photo-catalytic effect the cloud of harmful gases (Smog) from the intense traffic near Paris." Under the smog eating exterior, the building houses public spaces with a central courtyard and natural lagoon, a place Callebaut envisions for teaching opportunities about urban ecology and renewable energy. The Solar Drop also harvests rainwater from green space on the roof for use inside the building.

It can be said that these trends of environmental architecture tried to achieve peace through creating ecological balance and harmony between built environment and natural nature.

The previous directions of peace in architecture can be concluded in table (1.2)

Table (1. 2) Peace Directions in Architecture

Source: Researcher

Approach	Peace concept
Sacred Sites	In prehistoric time, people developed an integrated concept using primitive techniques for searching for sites of peace and power applying materials and natural forms like Dolmen and Stonehenge, to shape their built environment and create their peace in their living spaces. Moreover, human considers that buildings for religion are sacred sites and places for peace on the earth. Temples, churches, cathedrals and mosques are always places that human can find his lost peace there.
Concept of Habitation	Peace is one of the most important requirements of habitation for human being. Architects have tried over ages to connect habitation with peace and express that in different ways and approaches. The most famous example of habitation buildings, which express and represent peace, is Alhambra palace in Spain.
Symbolism	This concept is the most common one especially after wars. In this concept, the mind is viewed as a process in which symbols of peace and wars are manipulated. The architects use iconic representations of peace that carry particular conventional meanings such as Hiroshima Peace Memorial and "Peace Towers" in different areas erected in response to wars.
Context and Functions	In the last 20 years, few buildings were designed from the beginning specially to promote peace and stability around the world though activities and functions, exhibits, and events that focus on culture of peace, such as Palace of Peace in Kazakhstan, US Institute for Peace in USA, and many Peace Museums around the world.
Movements and Alliances	In the last 10 years, some architectural movements appeared to emphasize the relation between architecture and peace. Creating cities and buildings encourage harmony, reduce conflict through design, and promote a culture of peace, such as Arc. Peace, Architects for Peace and Architects without Borders.
Environmental Peace	This concept explains the factors governing peace of both human behaviors and his interactions with environment in its various forms. This concept attempt to understand how environmental concerns can be used as a means of peace building and improving ties between nations instead of conflict. Meanwhile, many designers and planners studied the "Environmental design" and they tried to suggest many strategies for each trend attempting to protect our environment, reduce resources consumption especially energy and water use renewable resources and create ecological balance and harmony between nature and buildings, etc. which lead to peace.

Redefining Peace

not just a state of mind, nor an attitude. Peace is a philosophy. Peace is life. Mark Siegmund. 1998 in his research " Peace: A new paradiem, part 1 " defined peace as

> *"...that human condition which is a general and normal human biological behavior, and accompanied by altruism and the capacity for cooperativeness as driving forces of human progress and success and which rejects war, armed conflict or violence between or amongst parties as an acceptable or normal biological human behavior for the attainment of personal or communal gain".*

Next, he checked the United Nations Charter and its purposes for explication, refinement to practice, expansion and clarification of the meaning and definition of peace. Then he presents a more inclusive definition of peace as follows:

1. Minimally, peace is that human condition which is a general and normal biological human behavior, accompanied by altruism and the capacity for cooperativeness as driving forces of human progress and success. It includes the absence of, and rejection of war, armed conflict or violence between or amongst parties as an acceptable or general and normal behavior for the attainment of personal or communal gains.

2. Attainment of peace requires at least: maintenance of international peace and security, development of friendly relations between states, achievement of cooperation in solving international economic, social, cultural and humanitarian problems, and hope for the realization of the equality of all humans and the continuing expansion of basic freedoms to all of humanity;

3. "...the understanding that peace is both inner and outer. It is a condition of consciousness, a state of being and becoming which involves cognition, conation and affection. In its integral stage, it has a contentment and fulfillment because it is its own witness and has a calm and a repose and a balance of the intelligence of the head and the heart. It is an intuitive understanding that is born of wisdom and compassion, a harmony that transcends opposites or contraries and says without speaking, knows without looking, and is without doing. Peace in the integral being is consciousness of love and light." (contributed by Dr. Vasant V. Merchant, Editor, The International Journal of Humanities and Peace).
4. To be enduring, peace must include minimally the following attributes: resource sufficiency, cooperation, freedom from ignorance and illiteracy; personal and communal opportunities, compassion and caring for others, behaviors and actions that result in all parties "winning", renewable, sustainable energy sufficient hope, love and prosperity for all, and prospects for the "good life" for all.

In view of the above, here an expanded (albeit, not exhaustive) global, spiritual, meta-physical, physical, philosophical, biological, anthropological, economic, social, political, natural and operational definition of peace. *Peace is defined as being a normal, natural and essential condition for the continued and continuing progression of all humanity toward 100% success.*

Then Mark Siegmund, 1998 in his second research " Peace: A new paradigm, part 2" presented the beginning or a new age of peace, occurs as humanity sheds its belief in scarcity and embraces the reality of nature's plenitude. He argued that the root cause, the very foundation of war, greed, conflict and disease is humanity's ancient and

institutionalized that scarcity is nature's plan and design. This view that there "is not enough to go around" has created both a basic sense of insecurity, and techniques, methods and systems for dealing with that insecurity, e.g., war, competition (for resources), political, social and economic hierarchies. Under and within this context of scarcity, the desire and quest for an enduring and fruitful universal peace cannot be realized. Peace will always remain partial and transient. Fortunately, for all of us, science, during the 20th century, has proven irrefutably that plenitude is nature's plan not scarcity. Mark Siegmund proposed the following basic "tools" to implement the paradigm shift for peace:

1. ***The discovery and demonstrations of cosmic, universal plenitude.***
2. A strategy of "doing more with less".
3. Continuing and accelerating employment of this strategy to the benefit of all.
4. Applying knowledge as "wealth" for investment in a new future for humanity.
5. The option to participate and cooperate in assisting and accelerating the paradigm shift from scarcity to plenitude.
6. Emerging concepts and practices as both hallmarks of a paradigm shift and supporting "instruments", e.g., ***wholism;*** holographic; *systems thinking*; synergy; *Synergetics*; anticipatory thinking/planning; *systems design*; Information Theory; *Relativity*; cosmic web; *web-of-life*; Spaceship Earth; *satellite communications*, earth viewing, *earth mapping*; resource mapping, *earth trendings*; ***many dimensioned matter*** as energy, *conservation*; ***sustainability; paradigm shift; Futures; ecology;*** nosphere; *world wide web--Internet*; de-centralization; *lateral management*; equity; *Alternatives*; utopia; ***peace through development***; altruism; *cooperation*; conflict resolution; ***success for all humanity***; personal involvement/commitment; *cooperation*; define resources; *living systems*; general systems theory; *grassroots*; micro-enterprise;

social entreprenuerialism; hypertexting and hyperlinking; *information access*; plentitude, *microcosm-macrocosm*; *entropy and antientropy*; quantum mechanics; ***space-time***; geodesic; ***energetic geometry***; *leisure time*; design science; *personal computers*; global communications; *global thinking*; global data; *Game Theory and gaming*; cybernetics; ***renewable resources/energy***; production engineering; *transnational*; strategic planning; *computer modeling*; non-simultaneity; *critical mass*; real time; *virtual reality*; doing more with less; *precessional effect*; scenarios; **wave and frequency; gravity and radiation;** *omnidirectional*; ***metaphysics***; *prototyping*; "Liberating the Future from the Past"; *cross-discipline*; generalists; *distance education/learning*; eduction; non-hierachical; *self-organizing*; "trimtab"; *homeostasis*; etc..

Each, while discrete, is functionally related within the context of "transitioning" to a new age taken *collectively, a powerful synergy of ideas, energies, resources, goals and applications--awaiting coalescence and the definition of a unified purpose.*

Conclusion

In this chapter, it was obvious that peace is a word of so many meanings. Different definitions of peace from different point of view, different concepts in literature and in architecture, and tools were discussed to deepen the understanding of peace.

The conclusion of this chapter could be summarized in the following points:

- Peace is an essence. The forming process of its context and concepts changes as the world around us has changed through different fields of knowledge. It conforms to the changing economic, social, political, and cultural factors of our time.

- The uterus of the mother is the first space to encompass human being and provides the embryo with peace, security, and tranquility. It affords life-supporting system for his basic survival. The two concepts of space and peace develop hand in hand in each of us through our first interaction with it, in the uterus darkness of our mothers where the first architectural morphogenesis was created.

- Since leaving the uterus, the concern of humanity has been seeking peace in the man-made environment. Therefore, there will be no fear and all biological, physiological and psychological needs will be met. The initial habitat was the cave. From this beginning, architecture was born to serve as a means of creating peace through our abode and to bring us closer to the security we felt within the uterus of our mothers.

- Eventually humanity has made a correlation between architecture and peace; architecture has become the symbol and embodiment of peace.

- The whole universe has been fulfilling its function in total harmony with its divine plan. Peace is not an external commodity to be artificially imposed upon human being. Peace is inherent in nature and environment itself. The system of nature set up by God already rests on basis of peace.

- Since Allah created humanity, people have been searching for peace and have tried to create it in their everyday lives.

- Western peace research has focused almost entirely on outer peace. In the last ten years, there has been a trend in peace research away from the traditional idea that peace is simply the absence of war towards a more holistic inner and outer view. In future, research should deal with both inner and outer aspects of peace and their interrelationships in a more balanced way.

- The field of peace studies requires a further integration of the interpersonal systems-oriented approaches through the contribution of a variety of disciplines or fields of specialized study.

- Architects have tried to achieve peace through their design by different concepts: sacred sites, symbolism, context and functions, movements and alliances, and integral environmental concept, but they do not consider the whole picture. We are seeking nowadays the integral parts and a holistic approach.

Peace Thy Source!

Peace is the law of nature
When that law is broken
Peace loses its stature
Society's limbs so swollen

Peace! Where is thy source?
From me and within me of course
World to take to recourse
To improve quality of human resource!
Love and peace beginning or end
Peace, the mother of plenty
Man needs to comprehend
Means to peace that ends in prosperity!

Peace is the frame of mind
Peace dwells in heart
Peace blossoms from the mind
Peace from every one to start!
Peace in society myth or reality
In our scheme may the theme be a specialty
Build up peace with all sincerity
Spread the fragrance in all our fraternity!

Subbaraman N V

Source: http://www.poemhunter.com/poems/peace/

Peace, Energy and Environment for Architectural Morphogenesis
Introduction
Peace, Energy and Architecture
Chapter 1
Peace... The Hidden Dimension in Architecture
Chapter 2
A Journey into Fields of Energy in Architecture
Chapter 3
Peace in Architecture as a Qualitative Energy Concept
Chapter 4
Towards a Conceptual Peacenergy Environmental Studio
What Is Energy?
Sources of Energy
Anatomy of the Earth Energy
Geopathic Stress
Electromagnetic – Deep Understanding
Subtle Energy
Human Energy Anatomy and Architecture
Energy Quality Measurement Tools
Conclusion

Introduction

> *"There is a general growing awareness and concern about the limitations of contemporary science to explain the many faces of the phenomena we observe in life. Our present way of thinking has produced a split in our worldview. We consider only what is objective, measurable, repeatable, and quantifiable as scientific. Arts, humanities and religion are all considered unscientific based on their qualitative subjective nature.*
>
> *This point of view is based on the fact that today's traditional science does not deal with all levels of energy in nature. Only what can be quantitatively measured, categorized and labeled is considered scientific; not recognizing that what cannot be measured is a limitation in our measurement instruments". (Karim, Ibrahim, 2005)*

In view of the above quotation, this chapter will deal with the concept of energy and its relation with our built environment and architectural spaces. It will discuss meaning and essence of energy from different point of view, sources of energy and our earth energy budget. Then, it will explain the anatomy of earth energy and anatomy of human energy field and its effect on architecture through discussing different types of energy grid lines, definition of geopathic stress and its effect on human through our built environment, electro magnetic fields and how it works and the definition of subtle energy. Finally, it introduces different energy measurements tools, which could be used in architecture. This chapter will be concluded with decoding energy and architecture to broaden the definition of energy.

2.1 What is Energy? The Metaphysical Question

Until now, in research and theses, the meaning of energy is still debated between different points of view and there is no agreement on what energy is or what the physical or metaphysical dimensions of energy.

- The famous American Physicist Richard Feynman talked about the meaning of energy in his famous 1960s lectures on physics:

  "...In physics today, we have no knowledge of what energy really is! We know energy through its manifestations in different forms: heat, magnetism, electricity... etc. We know how to use certain formulas to quantify and use the different forms of energy that ultimately gave us modern technology, but we still do not know the essence of the energy that can take one form or another".

- In an answer to the question, what is energy? the late Nobel laureate Richard Feynman said'

  "In physics today' we have no knowledge of what energy is ... it is an abstract thing." That was in 1963.

  At a profound epistemological level, it is no doubt true. In the same philosophical vein, it is equally true of matter but for practical purposes that answer is not much help.

- Turning to more mundane sources, dictionaries and the Wikipedia usually define energy as ***"the ability to do work"***, which is hardly a standalone definition. To be complete, it requires a definition of work. From the same source, the definition of work is "energy transferred to or from a body.... It involves an applied force moving a certain distance." This circularity is unavoidable: in simple terms, work requires the expenditure of energy, and energy spent performs work. (Pielou, E.C, 2001)

The general scientific definition from the Wikipedia Britannica: "***energy is the ability to produce action or effect***" defines energy not in what it really is but through one of its attributes. Besides, the traditional types of manifestation of energy in form of heat, motion...etc, many other 'effects' can actually be defined as manifestations of energy. We must include vitality, emotions, and thoughts, into the energy repertoire. A completely new picture arises which would need a completely new physics to grasp it (http:// www.biogeometry.com).

- Enstein suggested that all measurements (and hence the "laws" derived from them) are relative to the observer and the system he happens to be observing. To put it another way, ***"energy is an awareness of change of state in an observed field"***. One might add that the observer and observed are the products of transactions with each other. Some of these transactions can be quantified when they are, in our language, called "energy" (Don Fabun, 1971).

- *Energy produces the "primary motion"*, although anything we do produces different types of *"secondary motion"* that transforms energy into the different forms by which we perceive it. *The only difference between "nothing "and "everything "is just motion.* Nevertheless, what is it that moves we do not know. All what we can know is *that this motion creates the duality of opposites*, and that this motion is balanced in a way that we could call " geometrical ", a balance that creates complementarities out of opposites, which gives the possibility of all levels of creation, including our physical reality. Furthermore, this balanced motion creates time and space that manifests on many levels according to its mode and level of perception. *All attributes can only exist within time and space, because we need their opposites to perceive them.* The actual essence of energy beyond time and space is therefore not possible through the attributes (http:// www.biogeometry.com).

Bahaa Bakry (2007) defined energy as a flux of information carrying meaningful messages, which can be de-signed through human beings.

2.2 Sources of Energy

Energy reaches Earth in the form of solar radiation from the sun. The Earth's radiation budget is the balance between the incoming radiation from the sun and the outgoing reflected and scattered solar radiation plus the thermal infrared emission to space as shown in figures (2.1), (2.2).

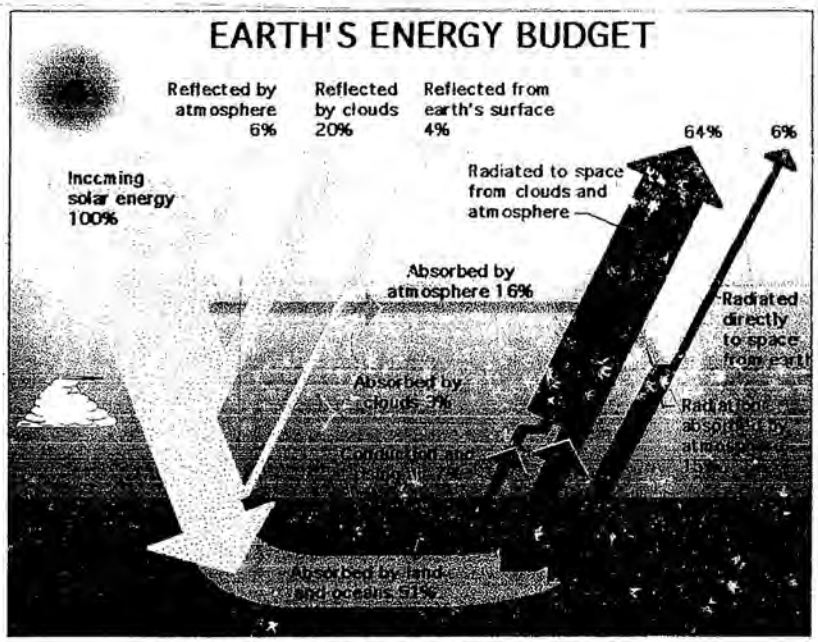


Fig (2.1) The Earth Energy Budget

Source: http://www.nasa.gov/centers/goddard/news/topstory/2007/polar_climate_prt.htm

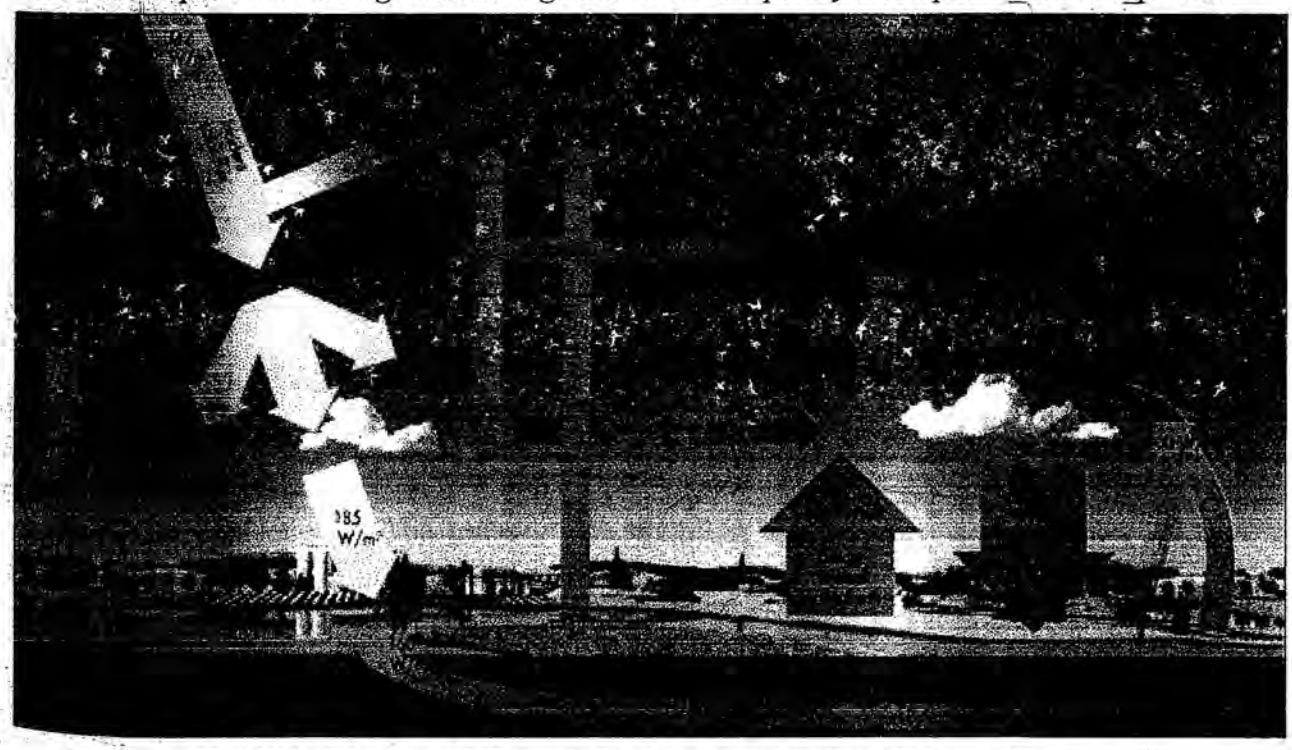


Fig (2.2) The Earth Energy Budget and Average Energy Fluxes
The numbers indicate the average energy fluxes over one year, at a global scale

Source: http://www.eohandbook.com/eohb05/ceos/part3_1_pop4.html

Energy exists in many forms. Electrical energy, electromagnetic energy, chemical energy, heat energy, and nuclear energy are only a few. Humans use energy from many different sources. They harness the power of wind, water, and sunlight. They eat plants and animals. They burn coal, oil, and natural gas. They get nuclear energy from atoms as shown in figure (2.3).

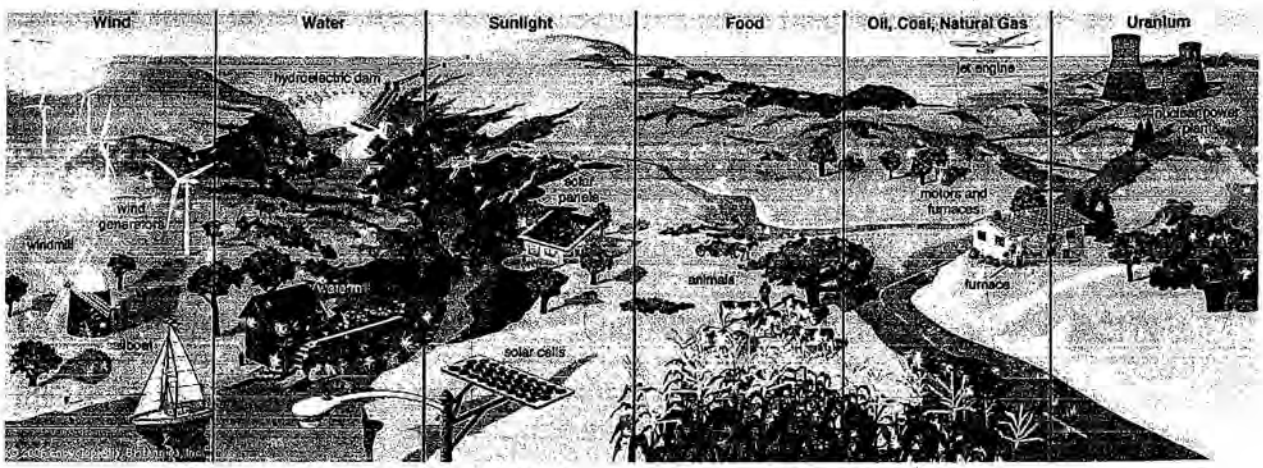


Fig (2.3) Different Sources of Energy for Humans
Source: http://www.student.britannica.com/eb/art/print?id=87271&articleTypeId=0

Moreover, any form of energy is convertible into any other, though not necessarily at a single step. Most of the actions going on in the world involve several energy conversions. Here is an ecological example. The sun generates its energy by nuclear fusion, which yields enormous amounts of radiant energy (light, heat, and ultraviolet rays). This energy leaves the sun in all directions as electromagnetic energy, a small fraction of which strikes the earth. Suppose some of this solar energy falls on a tract of grassland. The grass uses the solar energy to create sugars by the process of photosynthesis. That is, the chlorophyll in the grass converts electromagnetic energy into chemical energy. The grass grows entailing a whole series of conversions of chemical energy until some of it is eaten by a jackrabbit. Chemical energy in the jackrabbit's muscles has been converted into kinetic energy, the energy of movement. Eventually a coyote catches and eats the jackrabbit; this requires a lavish conversion

of chemical energy into kinetic energy by the coyote, since the jackrabbit will no doubt resist. Both the animals are warm-blooded, and to keep their temperatures at the physiologically correct level, they must convert some of their chemical energy into thermal energy. Death finally claims the top predator, the coyote; scavengers, and what has left decays- it is consumed by decay organisms, chiefly bacteria and fungi, consume some of its remains. These, thought not warm-blooded, still produce heat as a by- product of their activities. In the end, the solar energy that was first captured by the grass is finally dissipated as waste heat. (Pielou, E.C, 2001)

A fascinating parallel between plant and animal life is in the use of tiny energy factories within the cells to handle the energy transformation processes necessary for life. In plants, these energy factories are called chloroplasts. They collect energy from the sun and use carbon dioxide and water in the process called photosynthesis to produce sugars. Animals can make use of the sugars provided by the plants in their own cellular energy factories, the mitochondria. These produce a versatile energy currency in the form of adenosine triphosphate (ATP) as shown in figure (2.4).

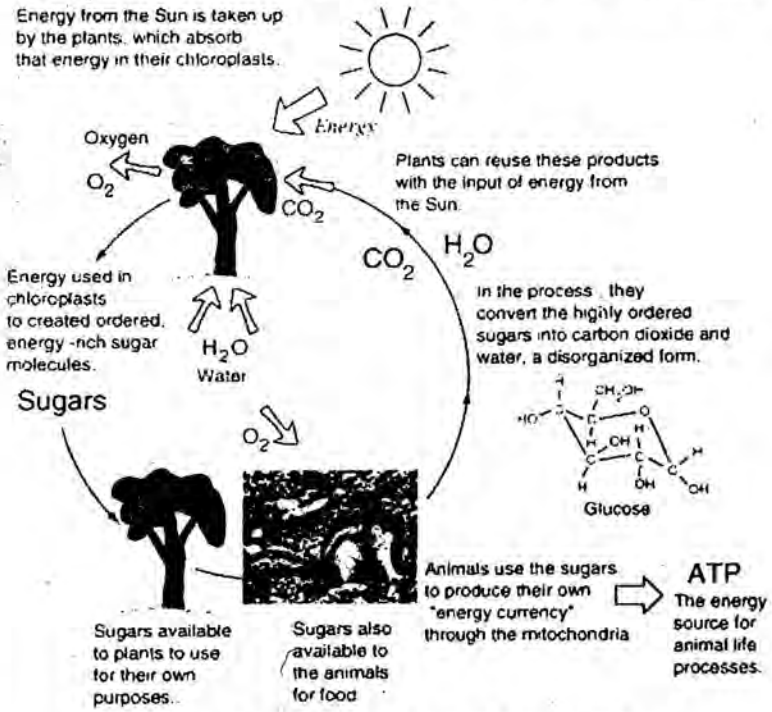


Fig. (2.4) Energy Cycle in Living Things
Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

A high-energy molecule stores the energy we need to do just about everything we do. The energy cycle for life is fueled by the Sun. The main end product for plants and animals is the production of highly energetic molecules like ATP . These molecules store enough immediately available energy to allow plants and animals to do their necessary work.

2.3 Anatomy of Earth Energy

The earth is actually a living body. It has a natural life force "energy" that runs through it. This energy often runs in lines that were known and felt by our ancestors.

The Earth's energy grid can be thought of as a web that holds or links the Earth together. The energy grid is effected by many influences - electricity, magnetism, light, color, heat, sound and matter.

The planetary energy grid operates through certain geometrical patterns that follow a specific symmetry. The grids meet at various intersecting points forming a kind of matrix, see figure (2.5). This is equivalent to the acupressure points on our bodies. These grid points can be found at some of the strongest power places on the planet. (Ibrahim Karim, 2002)

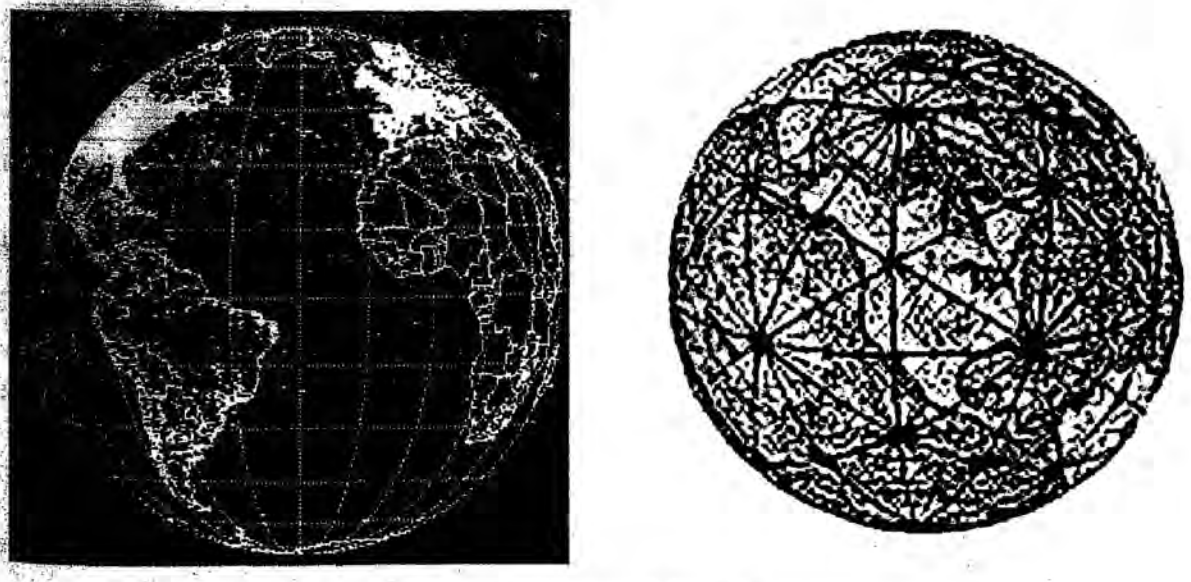


Fig. (2.5) Anatomy of Earth Energy
Source http://www.crystalinks.com/grids.html

The grids are electromagnetic in physical reality, thus creating polarity or duality of experience, always seeking to restore balance. Several different grids have been dowsed, each with their own characteristics:

- Curry Lines
- Hartmann Net or Hartmann Lines
- Schumann Waves
- Black Lines
- Ley Lines
- Planetary Grid System

The best known ones are the Hartmann (N/S, E/W) and Curry (diagonal) grids. R. Schneider discovered two others called the 3rd and 4th (diagonal) grids. The distance between lines in a specific grid form appears to vary according to latitude and form a rectangle rather than a square. Each grid form has a different orientation. There are different types of energy gridlines. Each one of these gridlines will be explained in details in the next point, geopathic stress.

2.4 Geopathic Stress

2.4.1 Origin of the Term

Geopathic comes from two Greek words: geo means the earth, and pathos means 'suffering' or 'disease'. The word 'geopathic' literally means suffering or disease of the earth. Geopathic stress (GS) is the general term for energies emanating from the earth that cause discomfort and ill health in human beings. Because of their detrimental effect, they are often known as negative earth energies.

Some people use the term geopathic stress only to describe Ley lines (man-made energy lines), or only to describe energy disturbances caused by underground water. However, others use the term in a way that includes both energy disturbances from the earth and man-made electromagnetic pollution such as power lines, radio waves, and

so on. People who restrict the meaning to either ley lines or underground water will miss many energies that have a destructive effect on people's health. On the other hand, widening the concept of geopathic stress to include electromagnetic pollution can be misleading and confusing. (Read, Jane T, 2006)

2.4.2 Types of Geopathic Energy

Even if there is little agreement about the exact nature of geopathic energies, there does seem to be more agreement about the different sub-categories. There are many different aspects of energy in its different forms that can be described in scientific terms (frequency, coherence, amplitude, direction, spin, etc).

Following is a description of different types of geopathic energy, (Read, Jane T, 2006). Some of these types can be illustrated in figure (2.6)

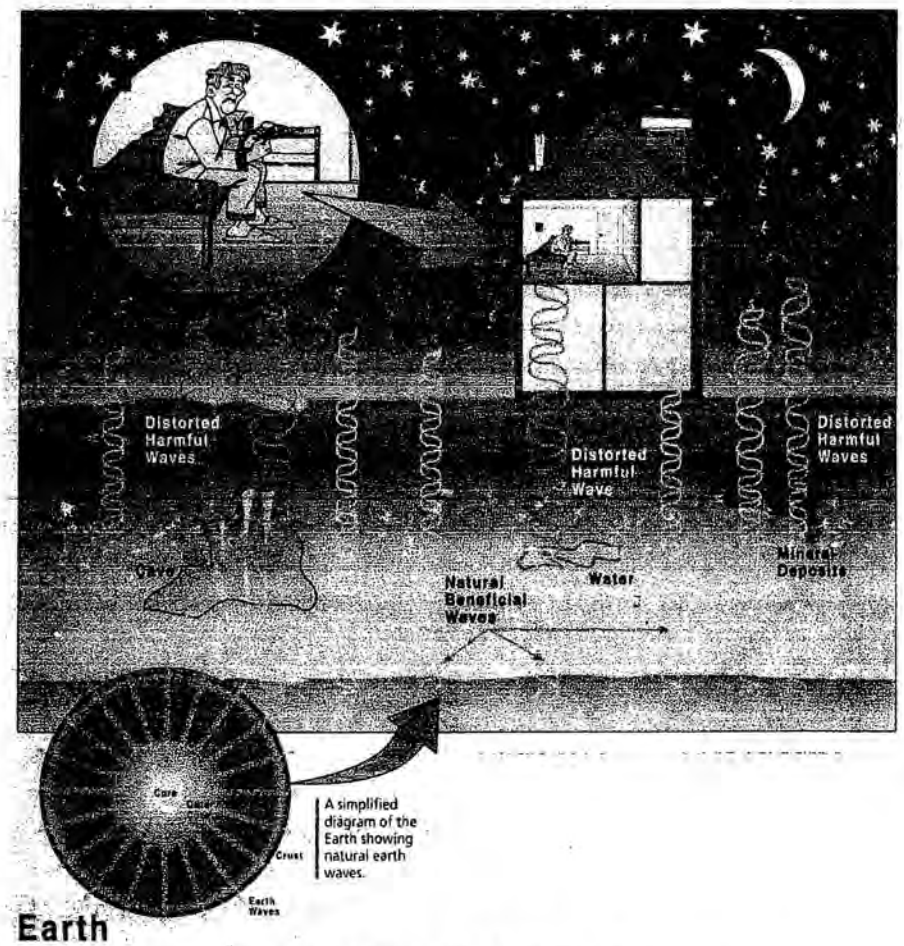


Fig. (2.6) Geopathic Energies
Source: http://www.daly-health.com/wp/geopathic.html

2.4.2.1 Water

Water is undoubtedly an important phenomenon but not the only one. Usually underground water is the cause of the problem. Surface water, for instance a river or a lake, not usually seems to cause problems. In general, the faster the water flows, and the greater the volume of water flows, the greater the geopathic effect is. Where water suddenly changes levels, as happens where there are changes in geology, geopathic problems are likely to increase.

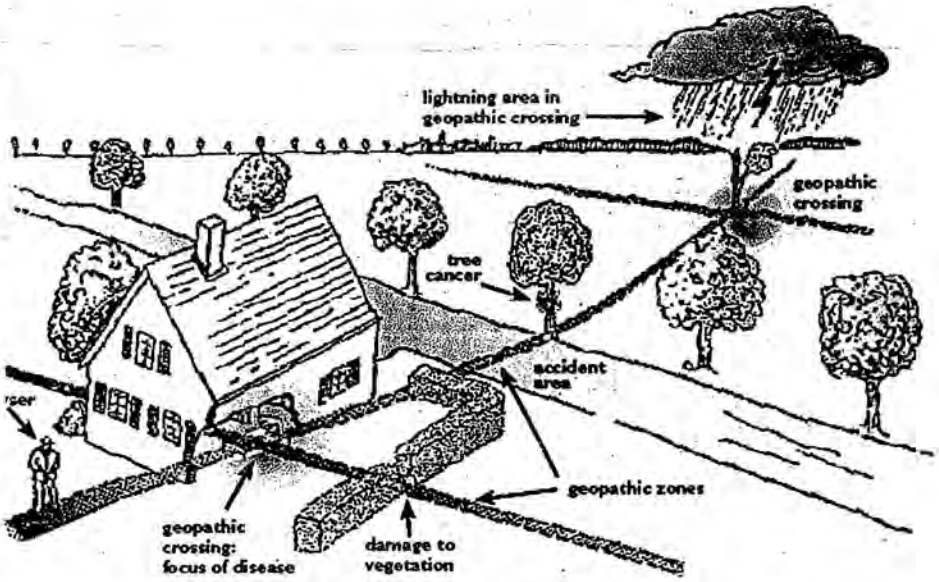


Fig. (2.7) Various Effects of Underground Water Veins as Illustrated by Dr. Joseph Kopp
Source:http://www.geomancygroup.org/geopathic%20stress/richard_gs_01.htm

The problems are likely to be particularly intense at sites over a spot where two underground streams cross, even if there is a considerable depth variation between them as shown in figure (2.7).

Underground water does not always cause problems.

2.4.2.2 Curry Lines

Curry lines are a global grid network of electrically changed lines of natural origin. These lines were first discovered by Dr Manfred Curry and Dr Wittmann.

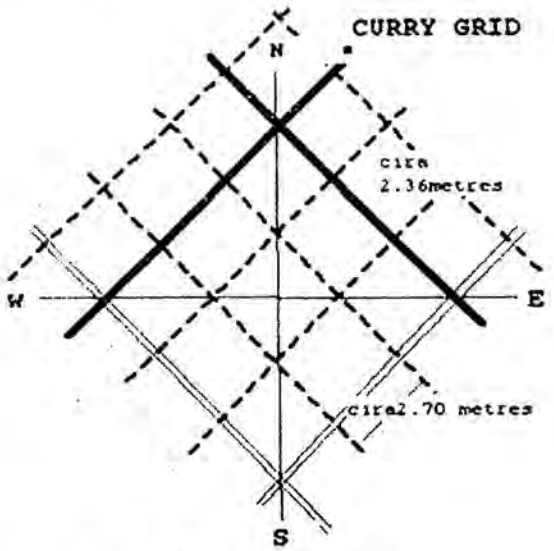


Fig. (3.8) Curry Lines
http://www.britishdowsers.org/EEG_site/Glossary/page2.html

run diagonally (NE to SW and SE to NW). There is some disagreement between different authorities as to how wide apart these lines are, but the consensus seems to be approximately three meters. However, this can vary according to location and can vary from 2.5 x 3.5 m. In England, they are approximately at 2.36 x 2.7 m as shown in figure (2.8). It is thought to be more biologically damaging than the Hartmann, especially the double lines that occur at approximately every 50 metres.

2.4.2.3 Hartmann Lines

The Hartmann grid was named after Dr Hartmann who is thought was the first to observe earth grids. It is a world wide grid in accordance with the earth's magnetic field, i.e. approximately N/S, E/W. Double Hartman lines are the most common. The average distance between each line is about 20 centimeters wide and spaced about 2-2.5 meters apart. The distances differ from area to area because there are considerable variations in the grid spacing dependeng on local conditions and the degree of latitude. In Greenland, a spacing of 1.05m x 1.20m is found. In England the average spacing is 1.60m x 1.68m while in the Canary Islands, it is 2.00m x 2.50m. The straightness of the grid lines can be affected by high voltage power lines and radio stations. The relation between Curry lines and Hartmann lines can be showed in figure (2.10)

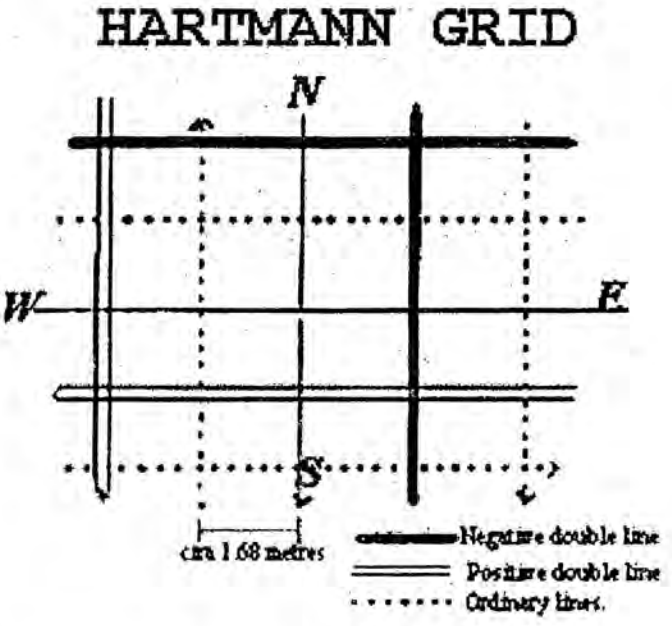


Fig. (2.9) Hartmann Lines
Source:http://www.britishdowsers.org/EEG_site/Glossary/page2.html

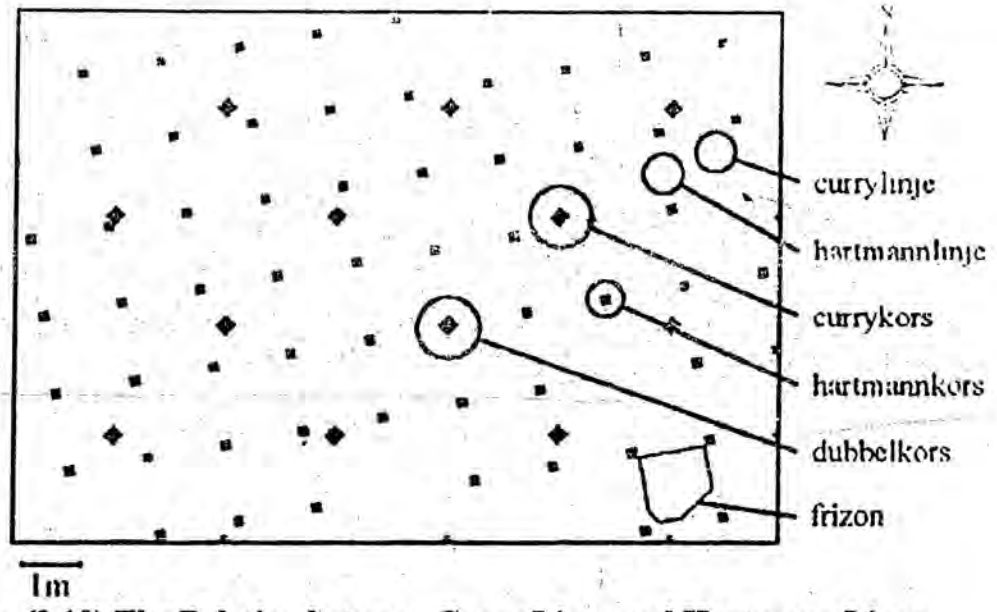


Fig. (2.10) The Relation between Curry Lines and Hartmann Lines
Source: http://www.lysator.liu.se/~rasmus/skepticism/dowsing.html

2.4.2.4 Schumann Waves

Schumann waves are naturally occurring, beneficial electromagnetic waves, which oscillate between the earth and certain layers of the atmosphere.

At about 100 kilometres above the surface, the earth is surrounded by the ionosphere. The vast space between the ionosphere and the earth's surface acts as an enormous electromagnetic resonance cavity, like the sound box of a musical instrument. These resonating electromagnetic waves are known as Schumann waves as shown in figure (2.11). They were first identified in 1952 by Professor W. O. Schumann, a German scientist. He found that these waves have almost the same frequency as brain waves and follow a similar daily pattern. The basic waveform (first harmonic) has a frequency of 7.8 Hz.

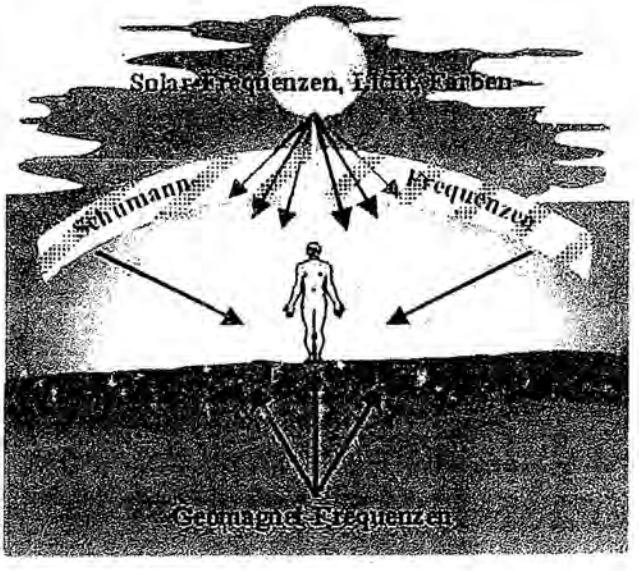


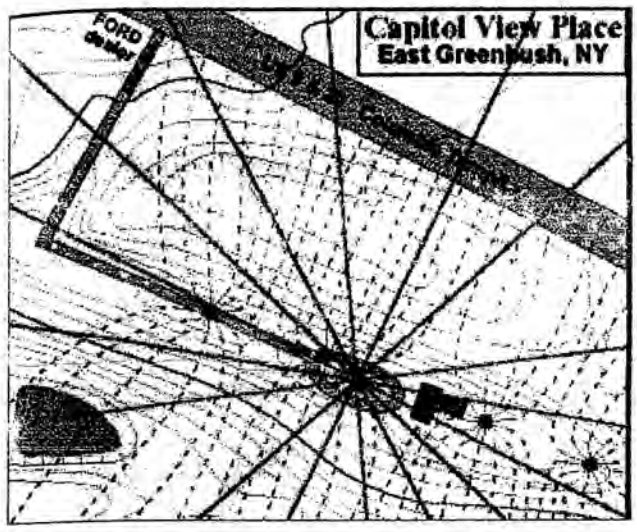
Fig. (2.11) Schumann Waves
Source: http://www.heilpraxis-namibia.com

It has been suggested the these waves help regulate the body's internal clock, so affecting sleep patterns, hormonal secretions, the menstrual cycle in women and so on. Some modern buildings using reinforced concrete and metal roofs can shield the occupants from these beneficial waves. It may be that part of the reason people suffer from jet lag is that the Schumann waves are much weaker at normal aeroplane altitudes and that the effect is further weakened by the metal fuselage.

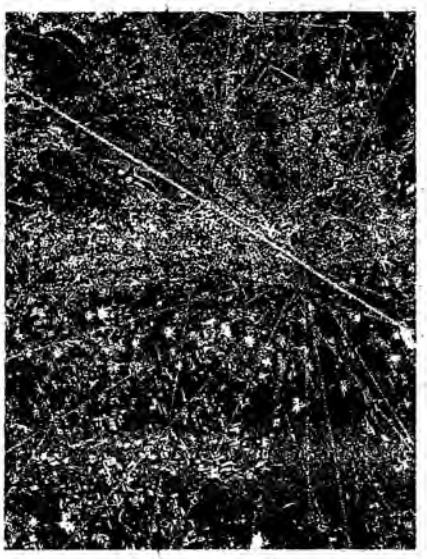
2.4.2.5 Ley Lines

Some people refer to all geopathic energies as Ley lines, but this is usually regarded as incorrect. Ley lines are path of energy, which transport energy around the earth. Today, most often, a Ley line is a dowsable channel of earth energy. In particular, it refers to long wave, extremely low frequency beams of earth energy that connect local, regional and continental nodal points in the landscape grid, usually tens even hundreds of miles apart, see figure (2.12). It is always straight and invisible itself. In its most fully evolved definition, a "ley line" is an energy channel in the nervous system of the Earth. (David Yarrow, 2003)

Ley lines are thought to be magnetic in nature, the same "lines" that birds, mammals, insects and bacteria use to migrate across long distances. Many ancient and more recent man-made structures are thought to be built on Ley lines, or at the point where two or more Ley lines interconnect. Examples include Stonehenge, mounds, churches, roads, and so on. The points where the lines meet often coincide with an energy vortex. These sites are considered sacred. Famous occultist Dion Fortune explained her idea that ley lines were "lines of power" that linked prehistoric sites. Others have suggested that Ley lines followed the lines of cosmic energy in the Earth and could be dowsed.



Ley Lines (red) & Water Domes (blue) at an Earth Mound, East Greenbush, New York



Ley Lines, Onondaga Valley, Syracuse, New York, USA

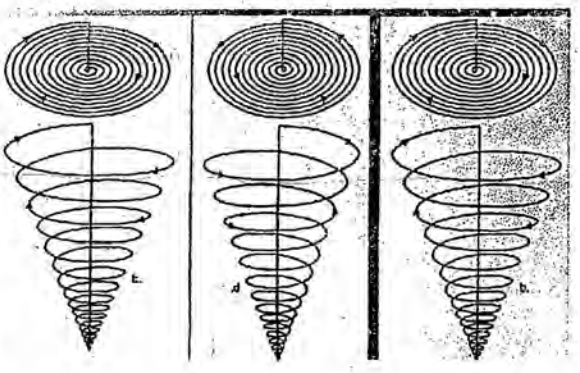
Fig. (2.12) Ley Lines
Source:http://www.championtrees.org/sacredspace/leylines.htm

2.4.2.6 Black Lines

Black lines seem to be naturally generated. They may be localized and do not form a network in the same way as Hartmann and Curry lines. This could be similar in nature to the "sha", or deadly energy lines of Chinese Feng-Shui. They may well be a subtle energy phenomenon rather than an electromagnetic one. These lines can be straight or curved, at ground level or even above ground level, so that they can be evident on the upper floors of the buildings but not on the lower ones. They can also come out of the ground at angle, so that they miss some rooms entirely or are only present in one upper corner of the room. An unskilled person may miss these lines if they are only looking at the ground to find energy disturbances. There seem to be several different types of black lines. Someone who "sees" these types of energies described one lines as black and depressed, and another as shiny, black, hard and sharp.

2.12.7 Spots And Spirals

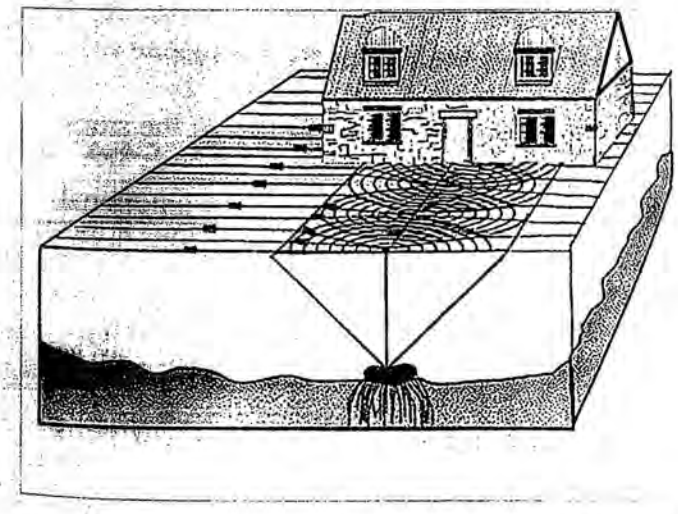
Spirals can have the energy flowing towards the centre or out towards the periphery. They can be spiraling into the ground or out of it as shown in figure (2.13). Although the shape of the spiral is the same, the energy effects are different, see figure 2.13b.



(Above) Combined unhealthy clockwise and anti-clockwise spiral.
(Centre) healthy anti-clockwise spiral
(Right) Unhealthy clockwise

Fig. (2.13) Types of Spirals
Source:http://www.leyman.demon.co.uk/

Spirals usually occur in pairs, although only one of the spirals may be found when looking at a particular site because the other is a little away and not within the perimeter of the site. Spots are usually randomly located on their own. Some practitioners relate spots and spirals to changes in geological structure affecting the electromagnetic field of the earth.



The healthy energy stream from the left focuses into the beneficial anticlockwise spirals above an underground stream, like energies attracting like (for simplicity waves are shown as single lines).
Unhealthy spirals are similar, but double with black (unhealthy) leys.

Fig. (2.14) Spirals and its Effect
Source:http://www.leyman.demon.co.uk/

2.4.2.8 Energy Or Clouds Or Fog

An energy cloud or fog seems only to occur inside buildings. They are usually about 3 meters wide. It seems that they occur when energy is trapped within a building in some ways, although it can go through walls and ceilings. Perhaps, it would be more accurate to describe it as a function of the building and the relationship between walls. Accordingly, it dose not emanate from the earth. It is caused usually inadvertently by man-made structures not allowing subtle energy to flow adequately. Therefore, energy clouds are not found in the open. Psychically, energy could have the qualities of an immature energy without clear boundaries and form. One person who can 'see' these things says they look like smoke or fog with a slightly fluttering quality to them. This does not seem to be a particularly detrimental form of energy, probably, at least partially, because they are often located in stairwells and similar places where people do not spend a lot of time.

2.4.2.9 Emotionally Charged Stones

The fact that stones can be energetically charged hitting them has possibly profound implications for houses built of stone. Do the houses built of dressed stone contain 'something' of the energy of the builder? It was found using kinesiology that the stone to build a client's house appeared in some ways to 'contain' a negative emotional vibration, which was affecting the health.

If this idea is correct, it is important to make sure that people who build houses are as happy and stress free as possible, or alternatively that the negative energy charge is from the building on completion. (Read, Jane T, 2006)

2.4.2.10 The Paranormal

Traumatic events, such as sudden and violent death, may have generated such intense emotions in the person experiencing them that the energy vibration of these thoughts and feelings become imprinted in some way on the building, surviving long after their death.

According to Mike and Maureen Rawles of Dragonstone who have been working with earth energies for 15 years, and geopathic stress problems for eight years: one of the biggest problems is the association between 'negative energy areas ' (GS) and 'entity energy'. They believe that the entity will feed 50% on the energy of the person and 50% on earth energy. If people experience depression, irrational anger and/or reclusiveness, there is likely to be negative entity energy within the house, associated with the negative earth energy that the entity feeds on. (Read, Jane T, 2006)

Although the previous different types of geopathic energies have been looked at separately, it is possible to have several of them together interacting, affecting each other, and generally making things worse than the sum of the individual energies present.

2.4.3 The Effects of Geopathic Stress

Peter Rivett in a short article in the Wessex Cancer Help Centre newsletter (June 1994) offers this possibility:

> *"The effect of geopathic stress shows up in the distortion of brain rhythms. The alpha brain rhythm increases to about 15 herg (sic) and the corresponding beta rhythm to about 30 herg – getting closer to the 50 hg (sic) magnetic field generated by our power supply system. Geopathic stress appears to affect the body's housekeeping in the production of new cells and the immune*

system is weakened. Many affected people complain of not getting a good night's rest and of not having much energy. Because their immune system is below par, they are hostage to health".

Geopathic Stress (GS) was described in this chapter as a distortion of geo-electromagnetic energies by other electromagnetic fields, subterranean running water, mineral concentrations, fault lines and underground cavities. These energies rise up through houses and buildings and affect the occupants in different ways. People can lose physical strength, energy, emotional stability and happiness. In fact, GS is one of the primary causes of serious and long-term illness and psychological conditions. Cancers, miscarriages, chronic ill health and personality changes have all been linked to geopthic stress. Unfortunately, because most people do not know about geopathic stress, they do not realize what is happening. They do not know that it is possible to make changes that can neutralize that effect of these negative earth energies and allow people to avoid serious ill health, or regain previous good health and well being.

In figure (2.15), it can be seen the three most common energy lines associated with ill health.

Underground stream (blue line)

Geological fault line (green line)

Hartmann grid lines (**red line**)

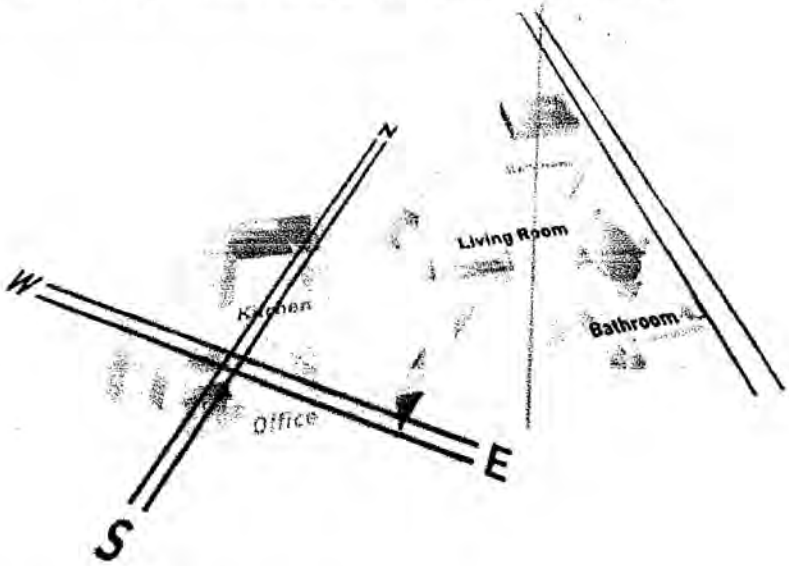


Fig. (2.15) Dowserable Energy Lines
The three most common energy lines associated with ill health
Source: http://www.suzimorris.co.uk/

In addition to the previous effects, different scientific research added sick building Syndrome (SBS). This term is used to describe situations in which building occupants experience acute health and comfort effects that appear to be linked to time spent in a building, but no specific illness or cause can be identified. The complaints may be localized in a particular room or zone, or may be widespread throughout the building. In contrast, the term "building related illness" (BRI) is used when symptoms of diagnosable illness are identified and can be attributed directly to airborne building contaminants (See appendix C). A 1984 World Health Organization report into the syndrome suggested up to 30% of new and remodeled buildings worldwide may be linked to symptoms of SBS. Research shows that indoor air quality problems and reports of the SBS generally are not caused simply by exposure to poor indoor air quality (IAQ), but rather they occur because of the combined effects of various physical environment and non-environment factors. Indoor air quality complaints and the SBS are the outcome of complex processes, initiated by a set of stressful multiple risks, which create personal, strain. (Read, Jane T, 2006)

Moreover, the Research Center of Baubiology is finding that there is a strong correlation between crime and geopathic stress as follows:

- In Denver, when the harmonizers were offsetting the geopathic stress lines going through the city, in the *first year the crime went down 36%* and the *second year it went down 51%*.
- Los Angeles and San Diego, as well as San Francisco areas where they are working with the harmonisers and clearing the geopathic stress in their areas. They all report reduction crime.
- In San Diego (the first year of the project which started there in March of 1997), there is a 28% decline in drive by shootings from the previous year.

- In Los Angeles, they are reporting the lowest crime rates in 20 years. The dropped 30% in the past three months. (There are 14 harmonisers operationa in L.A. area since 8/97) and many counties in LA are now cleared of geopathi stress, beginning in February of this year, which is when the greatest decreas has occurred in L.A. Homicides are down citywide 34% and rapes are dow 50%. It is an across the board decrease.
- In the San Francisco Bay area in a town called San Leandro, a fellow researcher there used his harmoniser and did the geopathic clearings for his area and reported that drive by shootings and gang violence dropped to zero just days after he did the process.

2.5 Electromagnetic ... Deep Understanding

Humans and many animals have highly developed senses; we feel vibrations in the ground, the slightest touch, the blowing of the wind, sound, smell, heat, and light. In other words, we are aware of almost every type of wave that reaches us; the wave can consist of mechanical vibrations in the ground, the wave can consist of mechanical oscillation of air molecules. It can be the electromagnetic wave that represents heat and the electromagnetic wave that represents light.

Hans Giertz (2007) in his article "Advanced Dowsing" said that the third most common electric or electromagnetic wave on Earth, next to heat and light, is the longitudinal electric wave. Humans and many animals have the ability to sense the longitudinal electric wave. It is always the longitudinal electric wave we sense when we dowse different energies.

2.5.1 Electromagnetic Field

The earth has a natural magnetic field. It acts as though it has a large magnet at its centre. The magnetic field is produced by the molten metals that are found within the earth's core. The rotation of the earth leads to electric currents being created in these metals, thereby producing a magnetic field. Human beings have evolved with this background magnetic field. They are accustomed to living in its presence. It is thought that birds use the earth's magnetic field for migration purposes, and whales may navigate great distances by monitoring it. There is some natural variation in the earth's static magnetic field brought about by changes in weather conditions. These changes are part of the natural diversity of the earth's magnetic field and so do not appear to cause problem. People are further exposed to time-varying magnetic fields, mainly brought about by changes in the sun's activity, but again this does not seem to have a negative effect on people. (Read, Jane T, 2006)

Electromagnetic energy is a combination of electrical and magnetic energy as shown in figure (2.16).

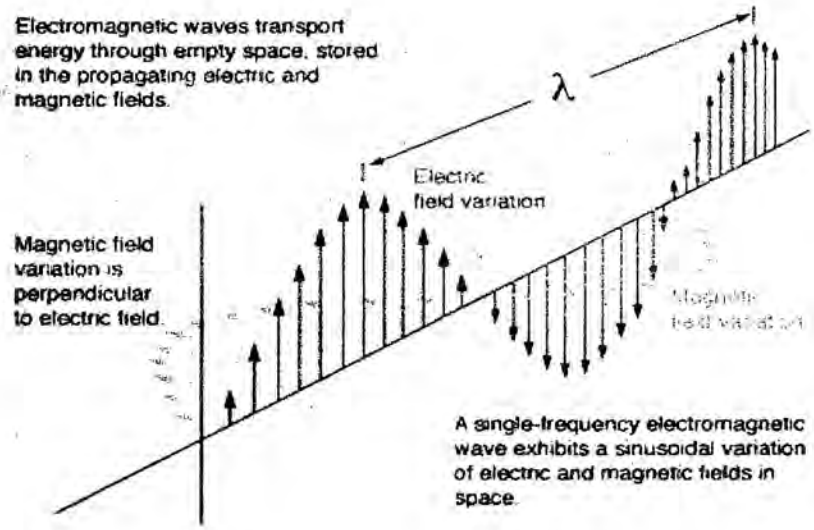


Fig. (2.16) The Electromagnetic Wave
Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

Electromagnetic waves consist of perpendicular coupled electric and magnetic fields that travel through space at the speed of light. These differ from mechanical waves (such as sound, water and so on), which are caused by disturbance in a physical medium (such as water or the string of a musical instrument).

Electromagnetic field can be described as follows:

- The electric and magnetic fields are both perpendicular to the direction of travel.
- They travel together at a speed very close to 300 million meters per second in air or vacuum (slower in water and tissue).
- The strengths of the electric and magnetic fields change periodically.
- The number of complete changes in field strength and direction/polarity is the frequency given in units of hertz (one hertz = one full change of strength and polarity in a second; abbreviated Hz). It is to be remembered, that a gigahertz represents one billion vibrations per second.
- The distance traveled during one full change of strength and polarity is the wavelength.
- Wavelength (in meters) 300 million divided by the frequency (in Hz) and frequency equals 300 million divided by the wavelength (in meters).

2.5.2 Electromagnetic Spectrum

All things, regardless of size, emit radiation, provided that their temperature be above absolute zero, and they are all radiating a wide range of electromagnetic waves. If we look at the amount of radiation given off by various objects, we obtain the Electromagnetic Spectrum. Visible light itself is an electromagnetic radiation. Part of the electromagnetic spectrum is shown in figure (2.17).

The frequency of a wave refers to the number of waves a vibration creates during a period. Frequency is inversely related to wavelength but proportional to energy. The higher the frequency, the shorter the wavelength, and the higher the energy emits. Taking into consideration that Quantum energies are measured by Electron Volts (eV), which is a convenient energy unit, particularly for atomic and nuclear processes, is the energy given to an electron by accelerating it through 1 volt of electric potential difference.

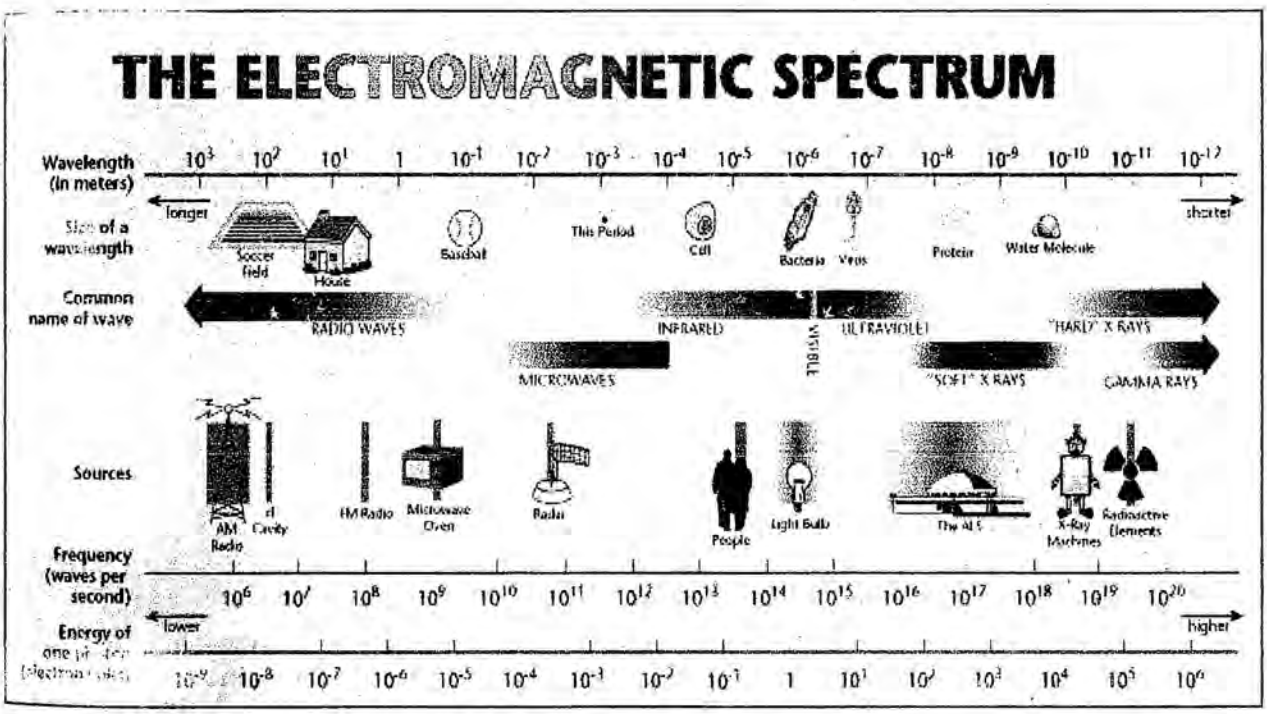


Fig. (2.17) Electromagnetic Spectrum
Source: http://snr.unl.edu/metr351-03/csetlak/radiation.html

The sun, whose surface is 10,500° F or 6000 K, emits radiation at almost every wavelength, but mostly shortwave. Most of the radiation of the sun is invisible wavelengths, but it is the shorter, invisible ultraviolet radiation that causes the most concern for health. Sunlight is just a part of the electromagnetic spectrum as are radio waves and microwaves. These waves are a combination of traveling electric fields,

carrying energy from one place to anther, from the source to a receptor. Waves can be seen as traveling packets of energy.

Different waves have different wavelengths. Waves with a shorter wavelength have a higher frequency, see table (2.1). The whole range of frequencies forms the electromagnetic spectrum as shown in figure (2.18).

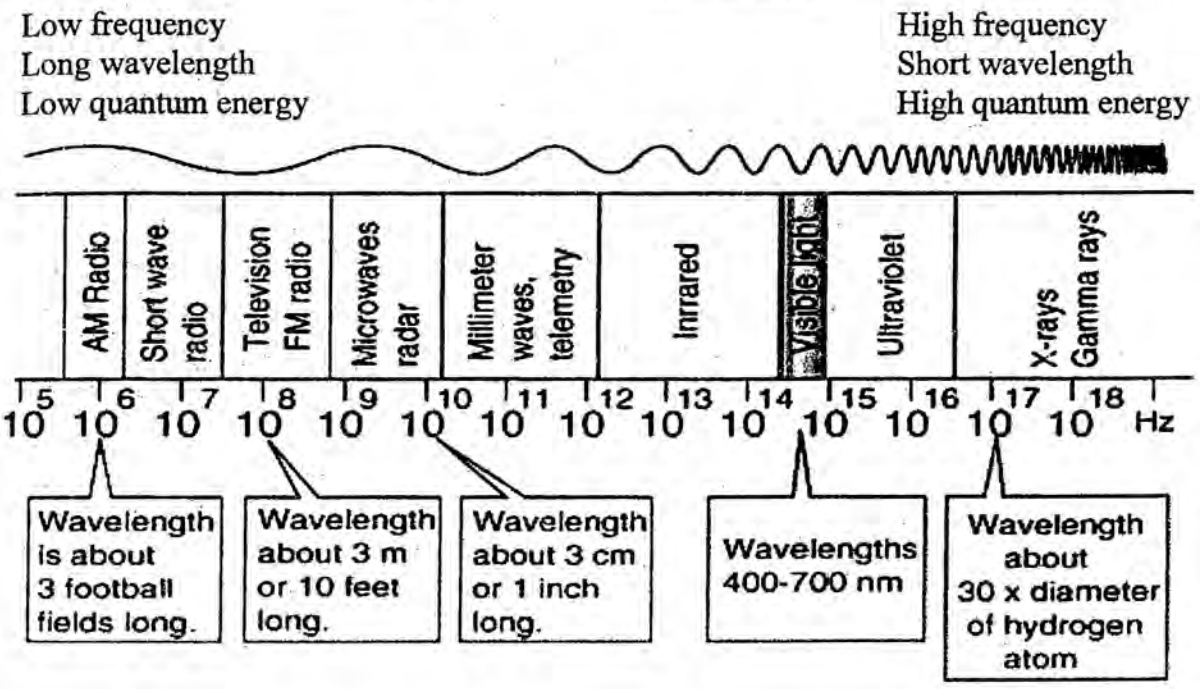


Fig. (2.18) Electromagnetic Spectrum and Wavelength
Source: http://snr.unl.edu/metr351-03/csetlak/radiation.html

We are aware of the infrared energy from a fire or an oven because of the heat that is given out. Modern technology can display waves on a monitor such as oscilloscope, giving a pictorial representation of their shape. Radio waves can be used to transmit sound and pictures in form of television. (Read, Jane T, 2006)

Table (2.1) Electromagnetic Waves Types

Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

Low frequency Long wave length

Type of wave	Example	Example of detector	Typical uses	Dangers of over-exposure	Frequency kHz	Wavelength M	Quantum Energy (ev)
Radio: lw Mw Vhf	Electronic Circuits (vibrating electrons)	Aerial+ electronic circuit,	Communications Radio, TV	safe unless very concentrated	500-1500 1.605 – 54 54-1600 mhz	600 – 200 m 187 - 5.55 m 5.55 m -0.187	$2 - 6 \times 10^{-9}$ 66×10^{-8} - 0.22×10^{-6} 0.22×10^{-6} - 0.66×10^{-5}
Micro waves	Electronic Circuits Cool objects	Aerial and electronic circuit	Communications: Satellites, telephony, heating water, food	Burning if concentrated	1.6 - 30 GHz	187 - 10 mm	0.66×10^{-5} - 0.12×10^{-3}
Infra red	Electronic Devices: Warn objects sun	Electronic detectors special film: blackened thermometer	Magic eyes' in security lighting: remote control (e.g TV)	Burning if concentrated	003 - 4×10^{14} Hz	1 mm - 750 nm	0.0012 - 1.65
Light	Electronic devices (LED, LASER) hot objects sun	Electronic devices (LED, laser) hot objects: sun	Seeing. Photography	Burning blindness if concentrated			
Ultra-violet (UV)	Gas discharge lamps: very hot objects sun	Film	Sun-tan lamp: making ions making vitamin D	Sunburn: skin cancer	7.5×10^{14} - 3×10^{16} Hz	400 nm - 10 nm	3.1 - 124
x-rays	Very fast electrons hitting a metal target	Film	Imaging defects in bones, hidden devices	Cell destruction cell mutation cancer	3×10^{16} Hz upward	10 nm- >downward	124 - > upward
Gamma (y) rays	Radioactive nuclei decaying	film GM tube	Medical tracers: killing cancer cells: Sterilization imaging defects in metal	Cell destruction cell mutation cancer	Typically > 10^{20} Hz	typically< 10^{-12}m	typically >1 M

High frequency Short wave length

2.5.3 Electromagnetic and Interaction with Matter

The different parts of the electromagnetic spectrum have very different effects upon interaction with matter, see figure (2.19). Starting with low frequency radio waves, the human body is quite transparent. (You can listen to your portable radio inside your home since the waves pass freely through the walls of your house and even through the person beside you!) As you move upward through microwaves and infrared to visible light, you absorb more and more strongly. In the lower ultraviolet range, all the UV from the sun is absorbed in a thin outer layer of your skin. As you move further up into the x-ray region of the spectrum, you become transparent again, because most of the mechanisms for absorption are gone. You then absorb only a small fraction of the radiation, but that absorption involves the more violent ionization events.

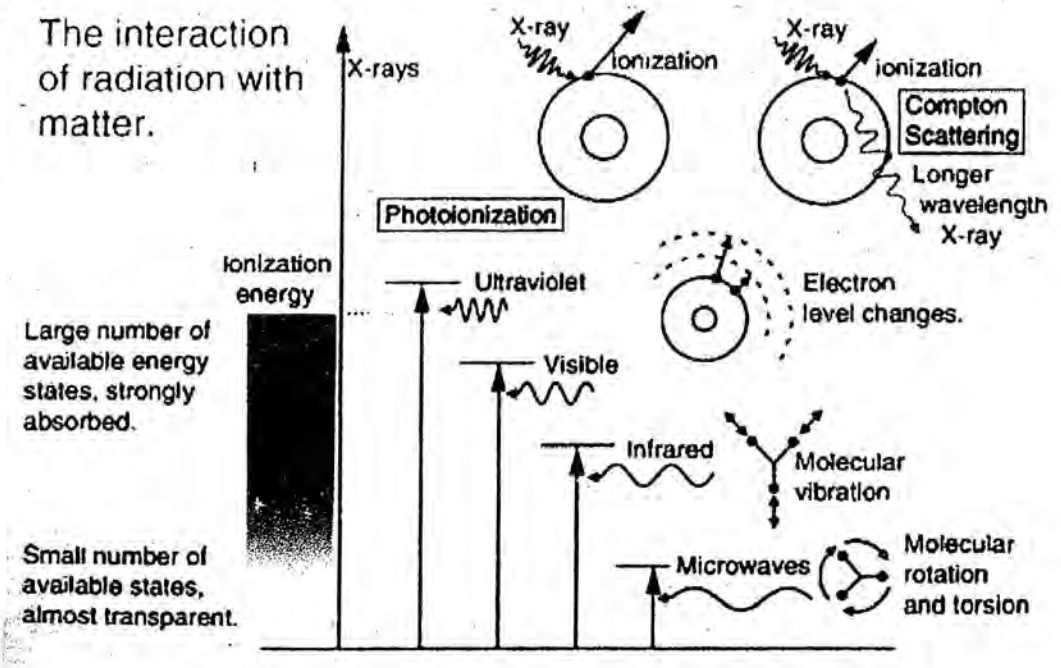


Fig. (2.19) Electromagnetic Radiation and Interaction with Matter
Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

of the electromagnetic spectrum has quantum energies appropriate for n types of physical processes. The energy levels for all physical

processes at the atomic and molecular levels are quantized, and if there are no available quantized energy levels with spacings, which match the quantum energy of the incident radiation, then the material will be transparent to that radiation, and it will pass through. *(Georgia University, hyper physics, http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html).*

2.6 Subtle Energy

The existence of a fundamental 'life energy' has been postulated for thousands of years in many different civilizations, and crops up independently from sources, which had little contact with each other. (Heselton, P., 1995)

The universe of subtle energy is both new and timelessly ancient. It is vision of the energy rather than material- basis of all Creation, of the intimate interconnectedness of all life. Verifiable through our own senses, giving deeper and more fecund power to our awareness of self and our relationship with our outer world, the contemporary rebirth of this vision is transforming all aspects of our perception, experience, and living. It is vision of the rhythmic iteration of sound, of song, of complex vibration, harmonics and overtones that give rise to and maintain all the complex interfolding structure of the universe. (Bender, Ton, 2000)

Subtle energy is used in this context as Einstein used it, that is, to describe a type of energy that is at present not fully understood or measurable with today's equipment. This is similar to how electromagnetism was viewed only 250 years ago. The effects could be seen but not directly measured. (Institute of Heart Math Subtle Energy Research, 1997)

Dr Lawrence E. Burkholder in his article "What is the subtle energy in energy healing?", 2003 defined "Subtle energy," as, "A general term denoting energy that

often exists outside the ordinary or positive space-time frame, i.e. magnetoelectric (ME) energy which moves faster than light."[5] In this approach, a person is typically seen as a web of interlacing energy fields; sickness and wellness are measures of how these energies function within a universe, which is itself a vast network of energy fields.

Dr. William A. Tiller, a pioneering researcher of subtle energy, and his colleagues at Stanford University developed a subtle energy detector, an ultra-sensitive Geiger counter-type device, with which they demonstrated the existence of an energy field that is not in the electromagnetic spectrum. With this special detector, Dr. Tiller demonstrated that this subtle energy field responds to intentional human focus. The combination of the instrument that detects the DNA phantom effect and the ultra-sensitive gas discharge detector represent two of the most advanced technologies known for the scientific study of subtle energy. Much of the basic research and the proof that these are workable technologies have already been completed. These instruments will provide the tools for careful study of subtle energy that will greatly advance our understanding of ourselves and the world we live in.

2.7 Human Energy Anatomy and Architecture

Throughout history, people of all cultures have assumed that places influence behavior. Now modern science is confirming that our actions, thoughts, and feelings are indeed shaped not just by our genes and neurochemistry, history and relationships but also by our surroundings (Gallagher, Winifred, 1993)

To understand our architectural effect on human body, we should study the human energy anatomy through the molecular biology science and morphological chemistry. In the entire history of science, there has been nothing similar to the dramatic

advances in the new realm of molecular biology, which occurred between 1945 and1965, and are continuing. We can now see in retrospect what a few pioneers anticipated and helped to bring about the fusion of mathematics, physics, and biology into a new integral science of biophysics, in which molecular biology, or the study of the changing arrangements of chemical atoms during organic processes, holds a central place. At no earlier time would such a convergence of techniques have been possible. What scientists had learnt in the challenges of the Second World War was here applied to the challenge presented by organisms: all available techniques, and new ones designed for the purpose, were applied to a convergent planned attack on organic ultra-structure. This paid off brilliantly in an entirely fresh vision of the structure of the basic life processes at work in all organisms. (Whyte, Lancelot L, 1968)

In order to understand the human energy anatomy, which is affected by surrounding environment and architectural space, the research in this point will study the following:

- Energy grid patterns
- Aura and human energy fields
- (ATP), energy currency of life
- Human body's electrical system
- Electromagnetic and human body
- Ionizing radiation and human body

2.7.1 Energy Grid Patterns

There are so many different energy grid patterns. Deja Allison in his paper "Multidimensional Griding" discusses an illustration representation of a "grid" of energy, see figure (2.20), saying that is the very essence and fabric of the universe. The energy connects all.

In this illustration, the grid has boundaries. It had to be drawn that way for the sake of explanation. It has no beginning, no ending. The grid shimmers with "current" or grid flux.

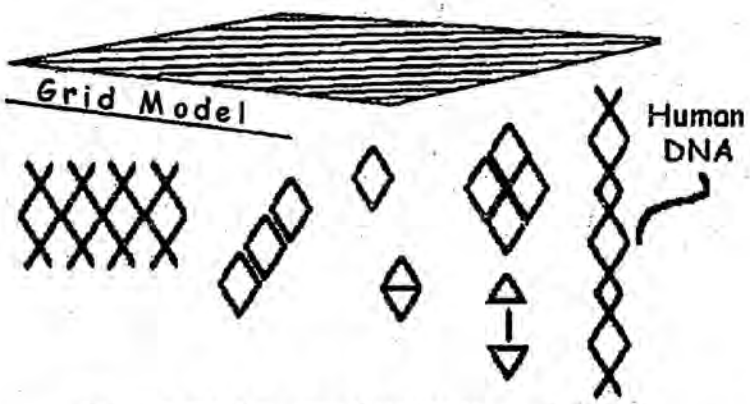


Fig. (2.20) Energy Grid Pattern & DNA
Source: http://www.crystalinks.com/gridmetaphysics.html

If you place the grid vertically, you will see it makes a four-sided diamond shape, following creational/sacred geometry. It is the interlaced woven matrix of Universal Essence. When energy flows unobstructed, the flux remains relativity even, though there is always intonation at all times. You can also see examples of how the shape forms other geometry for manifestation. Human DNA is configured by this geometry. In order for the flux to have different levels of intonation, there must be catalysis of some kind.

Space tells matter how to move. Matter tells space how to curve. Matter is the "densification" of energy. Thought and action are two of the different types of catalysts. There must be movement of some kind to effect change. Change as we perceive it differs universally. There are many "Laws" that govern the Grids. There

is a 'Law of Balances', 'Laws of Neutrality', and of course, there are immutable laws. Immutable laws are codes of energy that once put into motion can not be stopped and they must play themselves out to whatever conclusion. How it affects us is in equal ratio to our own energy patterns. Laws of Attraction apply here and what determine them are all our thoughts and actions and the types of experiences to which we have engaged whether it is this lifetime or another. Immutable energies can not be stopped, there are loopholes and they can be, in certain incidences, be alteration as to the way the event is channeled (to some degree) but not stopped completely.

There are so many different energy grid patterns, a few were represented in figure (2.21).

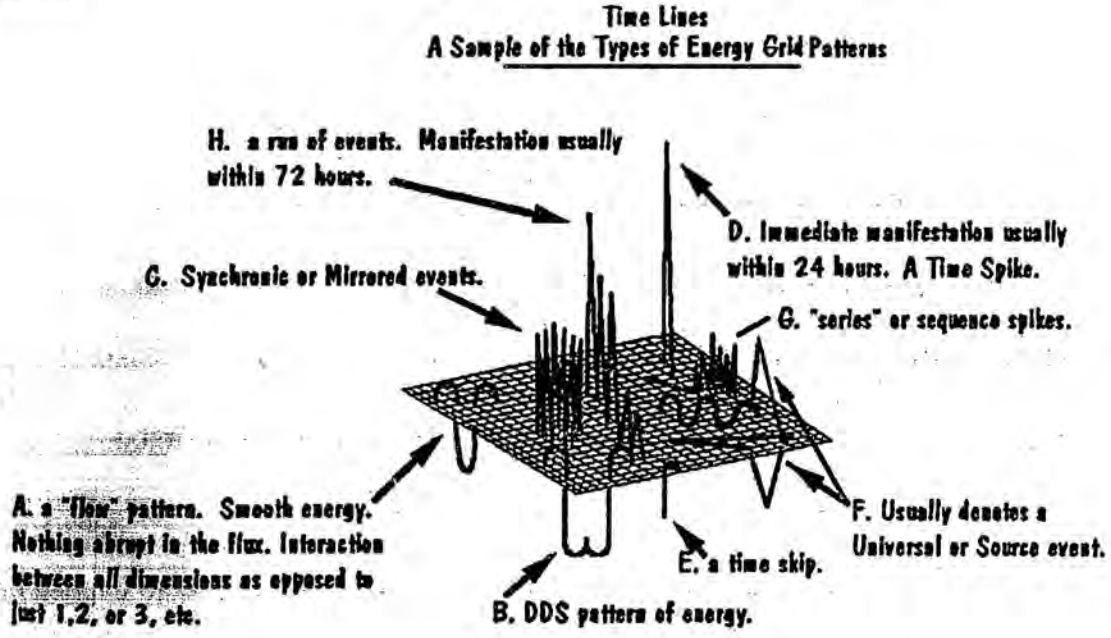


Fig. (2.21) Time Lines and Grids
Source: http://www.crystalinks.com/gridmetaphysics.html

- "A" is a Flow Line. It usually represents an even energy flux. If I see this, it means that expression is moving in harmony without much impedance.

- "B" demonstrates a DDS or Dynamic Dimensional Space Gird. This line usually signals the initiation of a telepathic or telekinetic event.
- "C" In a synchronic or mirrored event, it means that events have connection or are linked in ways other than regular sequence like flow lines are. Synchronicity is an event that singles itself out to have importance to us bridging the abyss from the unconscious to outer consciousness of reality in our everyday lives. It grabs our attention if you will. Synchronicity shows itself in creative manifestations, by images, sounds, or events that are all linked by one observation and it brings one to a higher level of awareness and reality about themselves.

The spike in the grid as illustrated in illustration "D" represents a twenty-four hour event. It is usually very high off the grid.

- "E" is a time skip that is to say these energies skip and go out of phase or pattern. They are somewhat more unpredictable than any of the other lines and karma plays an incredible amount in these types of grid markers.
- "F" tends to be a Universal event or connection. Sometimes events that are traditional religious, or spiritual comprised manifest this way first.
- "G" represents a series or 'sequenced" event. This means that there will be a repartition in the pattern or a string of events that will "appear" to happen one after the other.
- "H" represents a series of events that take about 72 hours to manifest on the physical earth plane. They are usually linked by similar resonance and follow a spiked pattern that shows intensity. Usual the more spiked the pattern, the more obtrusive the event upon the earth plane RT line.

2.7.3 Aura and Human Energy Fields

Over thousands of years, it has been recognized that human body has a non-physical component, and its striking that through all the descriptions there is a strong energy theme. Everyone recognizes that human beings are not just physical bodies, but many traditions and therapies have a complex theory of subtle to explain this addition 'something'. There is some disagreement about how many subtle bodies there are and what they are called. Most writers on this subject accept that, as well as there being a physical body, there is also an etheric body, an astral or emotional body, one or more mental bodies and a spiritual body. Many systems include additional bodies.

The physical body is the material body that we can see, composed of atoms and molecules, obeying the laws of physics, chemistry and biology. The etheric body is said to contain the blueprint for the physical body, determining how the fetus develops and how the body repairs itself when damaged. As the embryo develops, the single original cell divides and replicates itself many times. In some way, not yet fully understood by science, these cells eventually become specialist cells with a specific function in a particular part of the body. (Read, Jane T, 2006)

The modern science has increased awareness about our bodies' expanded energy boundary, which called "aura", or "human energy field" and this field of energy were painted on the walls of prehistoric caves and were known in ancient civilizations like the ancient Egyptian, which called it "PA", and the Chinese civilization, which called it "CHI". In addition, it was called "SHAKRA" in the Indian civilization.

Aura is a Latin word meaning "a breath of air", "a glow of light" or "fragrance", (Mikao Usui, 1920).

The "aura" or "human energy field" is a field of energy, which surrounds and penetrates the body. The body aura underlies and supports the functioning of the

body. Contained within the aura are the energetic aspects of every structure and function of the body, as well as all that we experience (physical sensations, thoughts, feelings, states of consciousness, etc.) In addition, we are connected through the energy fields with everyone and everything else that exists. (Maddux Richard and Mary, 2005)

In the temporary use of language, there is the world "Aura" but the meaning can be quite different. For most people, the aura is only the radiance of human beings, but for scientists it is a concrete, existing energy field around living creatures.

The aura is an energy body. Within it, energy is transformed to and from the physical body through the medium of the chakras. These are related to vitality and sensitive people can frequently see disease here before it manifests itself physically. Just as the blood is circulated through our physical body, so energy flows through and between the subtle bodies. (Heselton, Philip, 1995)

The aura is formed by subtle color radiances which surround the body of human being. These radiances can be perceived by psychics. Each color signifies a certain vibration which has different meanings. The aura which is connected with the activity of the charkas (Sanskrit: energy wheel) reflects the individual state of consciousness. Therefore, the colors of the aura give us information about the quality of consciousness, emotions, thoughts, abilities and vital energies of a person. The history of auras goes back far into the past. Natural tribes, the Christina mystics of the middle age, painters and artists of all ages showed the aura in a radiant, shining ray of lights around man, animal or plant. This information which can be perceived by sensitive and psychic people has been researched and proved scientifically in the last decades. Modern scientists measure the aura as an electromagnetic field around living creatures.

Barbara Ann Brennan presented the human auric energy fields in her book "Hands of Light". This representation is used as a standard paradigm for the etheric bodies or resonances for esoteric science as shown in table (2.2).

Ignoring the physical body on the left (which is included only for the sake of comparison), there are - in this paradigm - seven formative energy field bodies, as follows:

Table (2.2) Energy Field Bodies by Barbara Ann Brennan
Source:http://www.kheper.net/topics/subtlebody/ethericbodies.html

							
Physical body	Etheric body	Emotional body	Mental body	Astral body	Etheric template body	Celestial body	Casual body (Ktheric template) body
Physical Plane (Space and time; ordinary reality)				Astral Plane Gradations of light	Spiritual Plane (A reality far more beautiful, full of light, and loving than ours)		

Each of our outer body of energy field (or layer of aura) has different diameter e.g. the spiritual body has a diameter of 15-18 feet, the mental body has a diameter of up to 8 feet whereas the etheric body which radiates from the physical body has a diameter of up to 8 inches, see figure (2.22). These outer bodies may be photographed using a "Kirlian Camera" or PIP Camera (Polycontrast Interference Photography).

Out of our seven bodies, if the first three bodies; namely, physical, etheric and mental are in harmony, we have perfect health (physical as well as emotional).

- *Physical Body :* The body which we see with our eyes, where we feel the diseases. The modern medical system does diagnosis and treatment on this body.
- Etheric Body : It is like an armor which protects our physical body from negative vibrations. The seven major chakras are on this body. These chakras are also known as energy centers.
- Mental Body : All our thoughts are developed here, they go to our physical body via the etheric body. Normally, we have two kinds of thoughts, positive & negative. Positive thoughts are our divine power whereas negative thoughts are devilish power. Our life is molded by our thoughts.

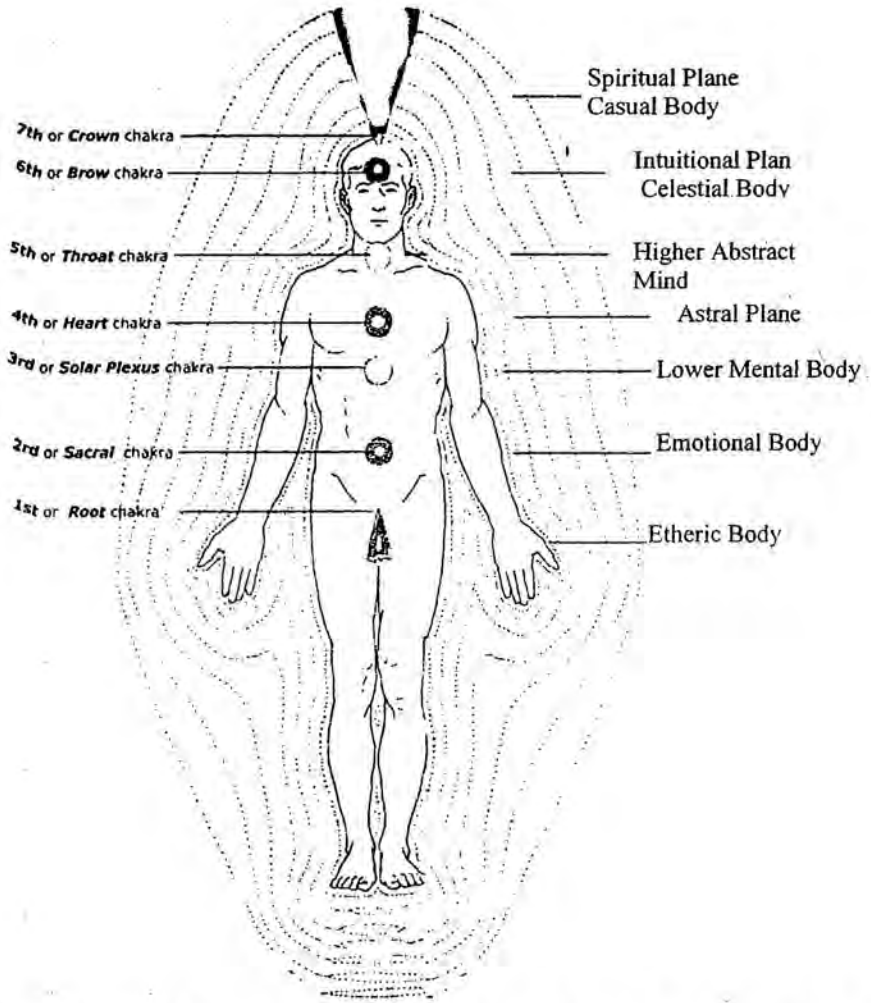


Fig. (2.22) Seven Chakras and Seven Energy fields of Human Body
Source: http://www.kheper.net/topics/subtlebody/ethericbodies.html

M.Alan Kazlev in his article "A new integral paradigm - cosmology, involution, and evolution", 2005 discussed the evolution of the subtle body. He represented that evolution involves progressive individualisations of "octaves" of the gross and subtle physical reality. In terms of occult planes and resonances, the Dense Physical plane or octave is "psychicised" and "spiritualised" by a number of resonances representing the embodiment of higher realities within the physical. In Theosophy and the new age, these are called the Etheric, Emotional, and Mental bodies as shown in figure (2.23).

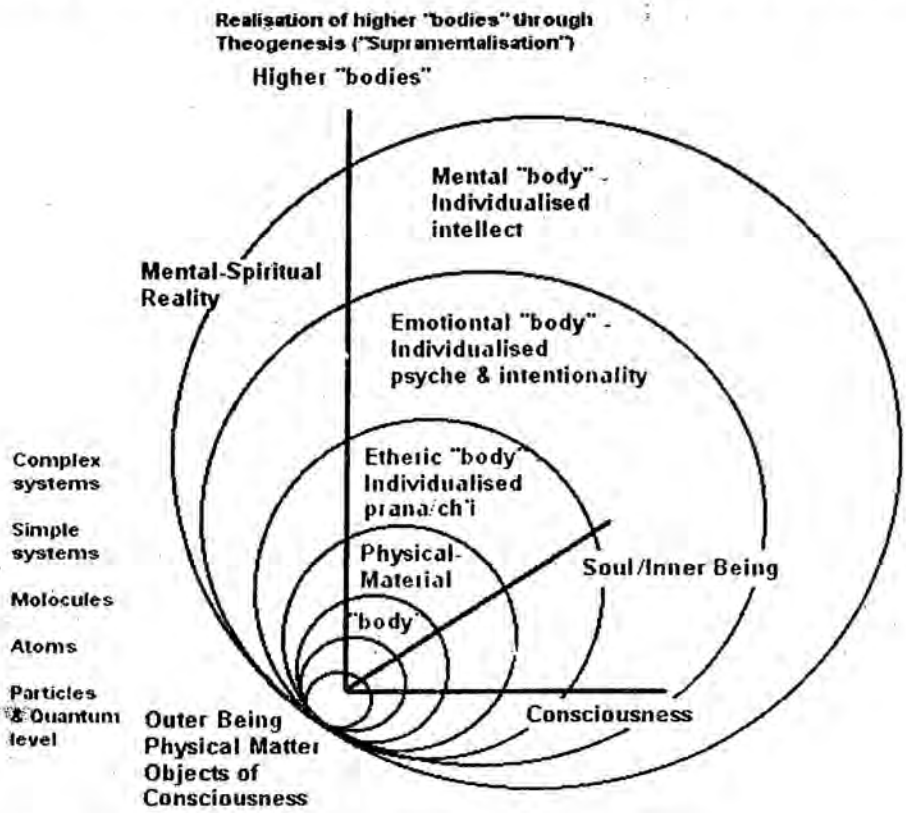


Fig. (2.23) Etheric, Emotional, and Mental Bodies
Source: http://www.crystalinks.com/gridmetaphysics.html

Each individualization is also accompanied by / generates / is caused by a collective etheric, emotional, mental, and supramental transformation, itself initiated by the activity of occult and higher spiritual hierarchies.

These subtler bodies, variously named etheric, astral and so on, can be seen by sensitive as an aura around the physical body. Dr Walter Kilner developed some

screens filled with a solution, which sensitized the eyes and made it easier for more people to see the aura. These are available today in the form of goggles.

Matter is changed by our conscious state. Every time we touch anything, we change it, so that if we are in a bad mood and touch something we will have a lowering effect.

In relation to the physical and etheric bodies, it is significant to cite the research of Dr Giuseppe Calligaris, professor of neurology and psychology. He discovered on the surface of the human skin a complex system of lines forming every kind of geometrical shape. The structure of these lines followed a general tendency in nature, the same patterns that are to be found in honeycombs, crystals, leaf structures and so on. Where the lines crossed they formed contact points, or what he calls 'plaques'. He estimated there must be millions of plaques on the human skin, which are all interconnected, each with a fixed relationship to a specific point in the brain and a particular inner organ in the body (these do not correspond exactly to the points acupuncture). Plaques, he claims, are through which vital radiations may stream in and out. Each respective radiation has a door through which it enters from outside space and a door through which it leaves. The stimulation of these plaques has the effect of opening the door so that the corresponding rays can stream through. A mechanism is released which gives a direct access to the subconscious; the normal sensory perceptions are bypassed and the person in question can go beyond the limitations normally experienced with the consciousness. The subconscious is lifted to the level of the consciousness and the person receives extrasensory perceptions beyond his usual realms. (Gallagher, Winifred, 1993)

All life functions are based on energy interactions, which consider the hidden dimension at the core of any perceivable physiological function. Well being is the

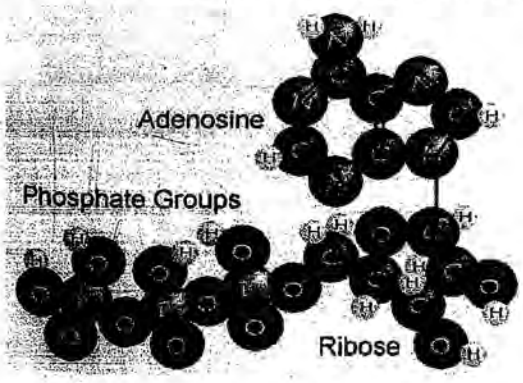
result of energy balance and resonance between objects. Any disturbance of that balance produces either over or under activity, which is manifested as a problem.

2.7.3 (ATP) the Energy Currency of Life

Adenosine triphosphate (ATP) is considered by biologists to be the energy currency of life. The high-energy molecule stores the energy we need to do just about everything we do. It is present in the cytoplasm and nucleoplasm of every cell, and essentially all the physiological mechanisms that require energy for operation obtain it directly from the stored ATP. (Guyton) As food in the cells is gradually oxidized, the released energy is used to re-form the ATP so that the cell always maintains a supply of this essential molecule.

The structure of ATP has an ordered carbon compound as a backbone, but the part that is really critical is the phosphorous part - the triphosphate. Three phosphorous groups are connected by oxygens to each other, and there are also side oxygens connected to the phosphorous atoms, see figure (2.24).

Under the normal conditions in the body, each of these oxygens has a negative charge, and as you know, electrons want to be with protons - the negative charges repel each other. These bunched up negative charges want to escape - to get away from each other, so there is a lot of potential energy here.



(2.24) The ATP (Adenosine Triphosphate)
Source:http://biology.clc.uc.edu/Courses/bio104/photosyn.htm

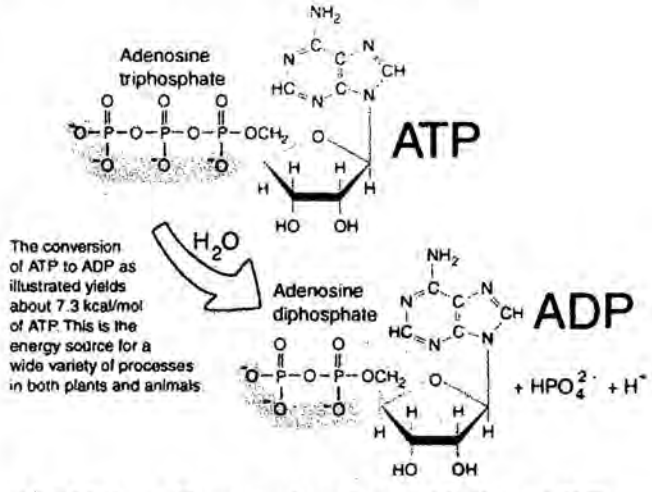


Fig. (2.25) The Conversion from ATP to ADP
Source:http://biology.clc.uc.edu/Courses/bio104/photosyn.htm

If we remove just one of these phosphate groups from the end, so that there are just two phosphate groups, the molecule is much happier. This conversion from ATP to ADP is an extremely crucial reaction for the supplying of energy for life processes, see figure (2.25). Just the cutting of one bond with the accompanying rearrangement is sufficient to liberate about 7.3 kilocalories per mole = 30.6 kJ/mol. This is about the same as the energy in a single peanut.

Living things can use ATP like a battery. The ATP can power needed reactions by losing one of its phosphorous groups to form ADP, but you can use food energy in the mitochondria to convert the ADP back to ATP so that the energy is available again to do needed work. In plants, sunlight energy can be used to convert the less active compound back to the highly energetic form. For animals, you use the energy from our high-energy storage molecules to do what you need to do to keep our self alive, and then you "recharge" them to put them back in the high-energy state. The oxidation of glucose operates in a cycle called the Krebs cycle in animal cells to provide energy for the conversion of ADP to ATP.

ATP is remarkable for its ability to enter into many coupled reactions, both those to food to extract energy and with the reactions in other physiological processes to provide energy to them. In animal systems, the ATP is synthesized in the tiny energy factories called mitochondria, which are considered the energy factories of the cells, see figures (2.26), (2.27), (2.28). Typical animal cell will have about 1000 to 2000 mitochondria. Therefore, the cell will have a lot of structures that are capable of producing a high amount of available energy. This ATP production by the mitochondria is done by the process of respiration, which in essence is the use of oxygen in a process which generates energy. This is a very efficient process for using food energy to make ATP.

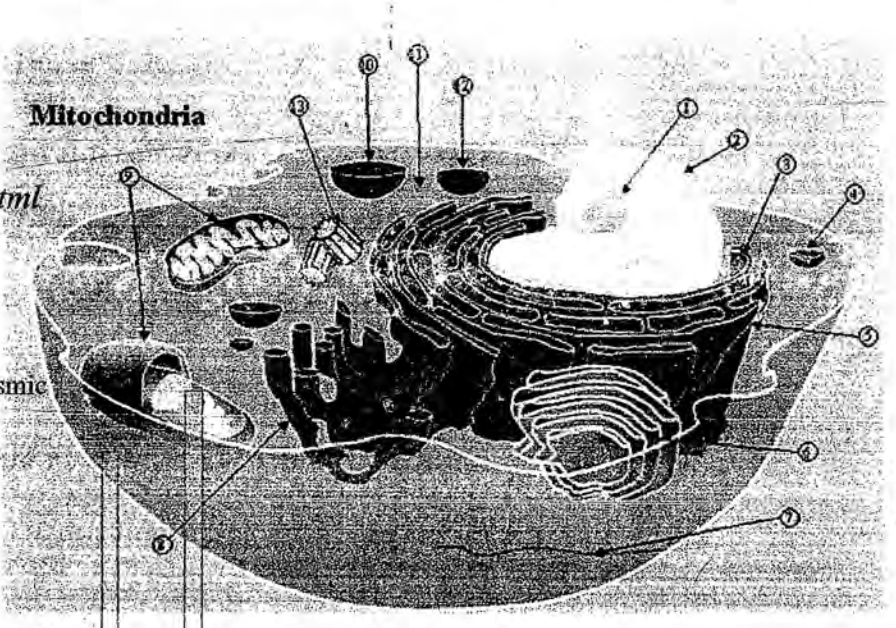


Fig. (2.26) A Typical Animal Cell

Source: http://www.argusbio.com/mtDNA.html

ganelles are labeled as follows:

Nucleolus, 2) Nucleus
Ribosome 4) Vesicle 5) Rough endoplasmic
culum 6)Golgi apparatus 7) Cytoskeleton
Smooth endoplasmic reticulum 9) Mitochondrion
0) Vacuole 11) Cytoplasm 12) Lysosome
3) Centriole).

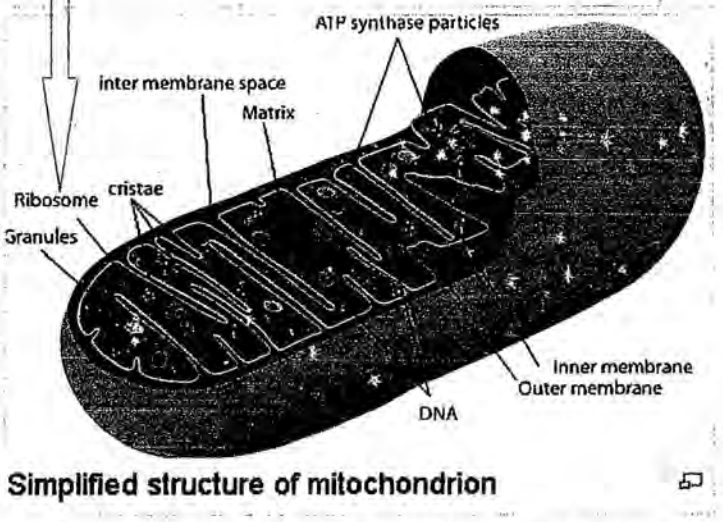


Fig. (2.27) Simplified Structure of Mitochondria

Source: http://en.wikipedia.org/wiki/Mitochondrion

Mitochondrion contains inner and outer membranes composed of phospholipids bi-layers and proteins.

All living cells and many of the tiny organelles internal to cells are bounded by thin membranes. These membranes are composed primarily of phospholipids and proteins and are typically described as phospholipid bi-layers

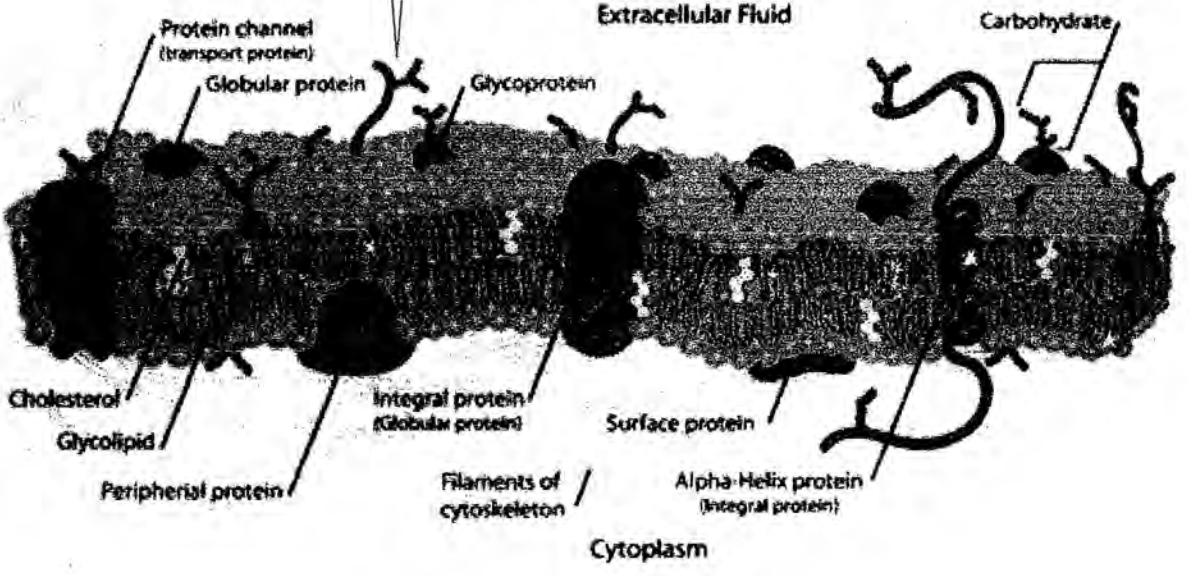


Fig. (2.28) The Cell Membrane

Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

2.7.4 Human Body's Electrical System

Every living cell maintains an electrical potential difference between its inside and the outside world. In cells specialized for conduction-nerve cells, activity is associated with a dramatic reduction in this potential difference and in the brain, the vast continually varying pattern of electrical discharge. These electrical changes are so diminutive that elaborate equipment must be used to detect them from the surface of the head, and devices that are even more intricate are necessary for exact measurement.

A record of the electrical changes in the brain is called an electro-encephalogram or EEG. In normal adult humans, the most prominent features of the EEG are usually rhythmic oscillations at about ten per second. These are called alpha rhythms. Now the size and regularity of the alpha rhythms greatly vary in different individuals and there is evidence that persons with mainly visual habits of thought exhibit smaller and less persistent alpha activity, while those who think in terms of sounds and movements rather than visual images have large , regular alpha rhythms. Furthermore, in nearly all people who show this alpha activity, the rhythms are augmented when the eyes are shut and the mind is tranquil. They are attenuated by opening the eyes or by mental effort. Analysis of these effects suggests that the important factor in arresting the alpha activity is the effort or compulsion to see and appreciate pattern. Most people who show large alpha rhythms with the eyes shut do not exhibit the attenuation effect if the eyes are opened to a completely featureless scene; the least trace of pattern-or the effort to find one- usually blocks the alpha activity. Conversely, opening the eyes in the dark may block the rhythms if the subject thinks there may or should be something to see. There has been much discussion about these alpha rhythms; the phenomenon may be a meaningless coincidence produced by the

relatively crude method of observation, which includes the activities of millions of nerve cells in one record. Alpha rhythms are by no means the only pattern of electrical activity seen in the normal brain. In most children up to the age of 10 or 12, there is commonly a rhythmic discharge at about six per second, not in the visual regions, but further forward toward the temples. This we have called theta rhythm; it is not markedly responsive to visual pattern but is associated in some delicate fashion with pleasure and pain. In a young child, theta activity can be evoked readily by contriving some degree of frustration as in snatching away a preferred sweet. In older children, the relation is less material; the suggestion or memory of humiliation or anger is more likely to evoke a theta response. In good-tempered adults, the theta component of the brain patterns is scarcely visible in ordinary circumstances, but in many people, it can be evoked by suddenly interrupting a prolonged pleasant stimulus, such as stroking the head. The provision of a disagreeable stimulus is adequate too, but is much harder to arrange in laboratory conditions when any attempt at provocation is palpably artificial. . (Whyte, Lancelot L, 1968)

The correct functioning of the body involves many electrical processes. As it was showed previously that our brains, governing so much within our body, are basically electrical. It can be concluded that brain waves are electrical signals with frequencies ranging from 0.5 to 60 Hz, which can be detected via electrodes attached to the scalp. Alpha waves with frequencies between 8 and 13 Hz are emitted when the brain is at rest. The nervous system uses electrical impulses that travel along the neurons to send messages throughout the body. Nerves and muscles are stimulated electrically: we are able to move our arms and legs because electrical messages are sent from our brains, via our nerves to our muscles. Even dreaming involves electrical activity

within the brain. The heart generates the largest electromagnetic field in the body. When our hearts beat, they produce small electrical pulses. (Read, Jane T, 2006)

In people with an abnormal tendency to aggressive behavior, the bad-tempered folk sometimes labeled psychopaths, theta activity is often prominent and may occupy quite a large area of the temporal and parietal lobes of the brain. Their childish intolerance, impatience, suspicion, and selfishness is mirrored in the juvenile appearance of their brain patterns. If the theta rhythms scan for pleasure as the alpha rhythms scan for pattern one may say that such people are constitutionally blind to the possibility of an agreeable situation.

This correlation of profound subjective impressions and attitudes with an apparently simple electrical discharge may well seem facile and superficial, but there is experimental evidence that the mental and electrical phenomena are in fact closely related. Using flickering light stimuli of high intensity, we have shown that visual stimulation at the frequency of a theta rhythm may evoke, even in a normal subject, a feeling of annoyance and frustration even when no stimulus with emotional content is present. Furthermore, when emotional aggravation is added to the theta flicker, the two effects summate, both electrically and psychologically, producing in a normal equable subject a transient resemblance to an aggressive psychopath. In contrast, if the subject is encouraged to control and suppress the feelings aroused by the flicker, the evoked electrical disturbance is quenched. (Whyte, Lancelot L, 1968)

All body fluids are excellent electrical conductors, as are our tissues. They have to be in order to allow the nerve messages, which are small bursts of electrical activity, to flow freely from the brain. It may well be that this internal electrical activity and the conductivity of tissues make us more susceptible to external electrical and magnetic forces. (Read, Jane T, 2006)

2.7.5 Electromagnetic and Human Body

Since human cells first began their evolution, they have been bathed in a vast sea of radiation, comprised of the earth's electromagnetic and electrostatic fields and its ionosphere, as well as the incoming electromagnetic energies from outer space, the sun, moon and major plants. The effects of the earth's GMF, and disturbances to it, are integral to the human experience, from conception to death. As our cells contain magnetite, we are prone to disorientation when changes occur in the GMF around us. The ear's GMF peaks at about 8-12 hertz. This happens to be the frequency of the alpha state of the human brain in a condition of quiet contemplation or sleep. It follows that our bodies and brains in resonance with the GMF and that variation in this field may, and sometimes do, biologically 'change' us. Doctor W. Stark from Switzerland has suggested that the field seems to act a 'pacemaker' to the brain. The earth also affects our bodies through the extremely low frequency (ELF) component of its geomagnetic field (GMF). Disruption to the GMF are greater where there is geological faulting and fissures have formed in the Earth's crust, releasing greater levels of radioactive gas from radon. Underground water can also increase the amount of radon released. This can have serious healthy consequences (Baggs, Sydney and Joan, 1996)

External electromagnetic fields can cause interference with television and radio reception. Therefore, it may be possible that it can also affect the workings of the human brain in some way. Disturbances in the outer magnetic field by geopathic energies could disturb our own inner electrical and magnetic processes, leading to illness and unhappiness as shown in figure (2.29). (Read, Jane T, 2006)

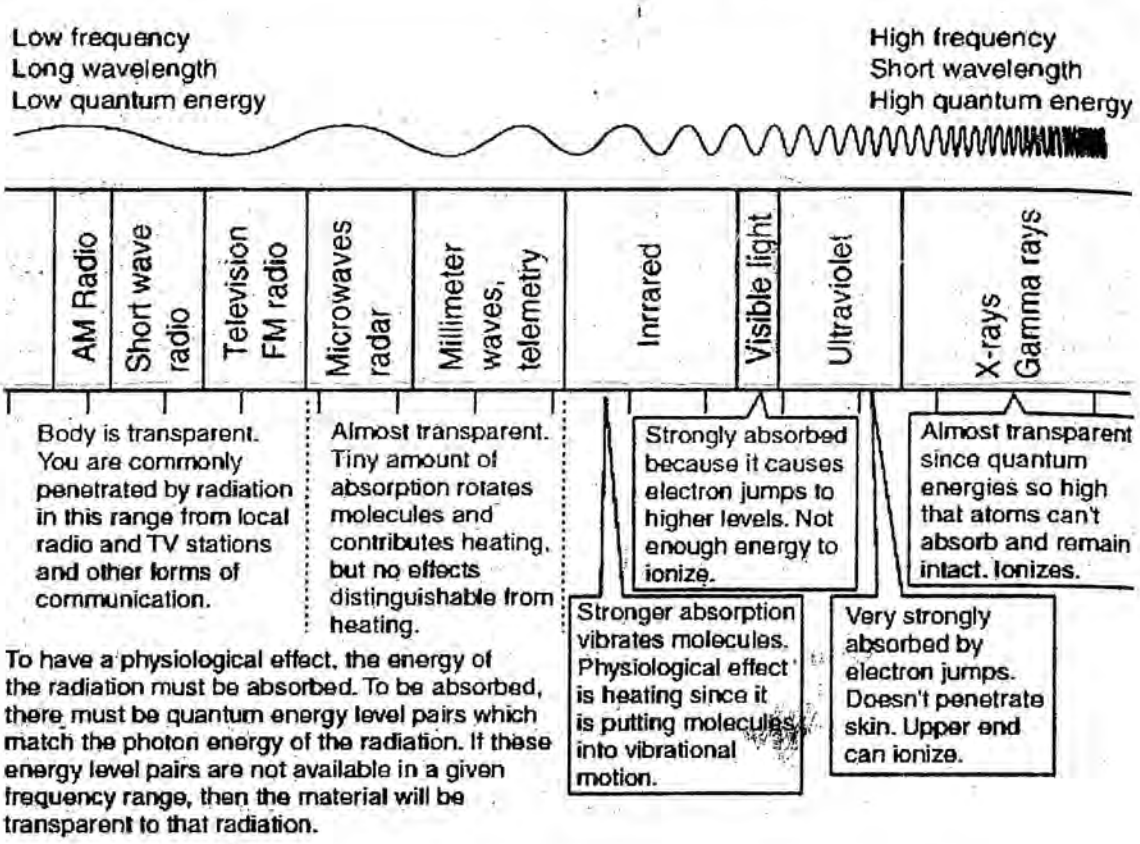


Fig. (2.29) The Electromagnetic Radiation and Human Body
Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

When a device, known as the superconducting Quantum interference Device (SQUID), is used to measure the extremely low electromagnetic forces within the human body, magnetic signal can be detected that are 50 million times weaker than the Earth's magnetic field. The body, furthermore, has a strong electric field of some 10 million volts per meter, far greater than that experienced near high voltage power lines. The whole of a person's body is like an antenna; the larger organism, the weaker the field it can detect. Human beings have an 'all-or-nothing' threshold of sensitivity for electromagnetic fields. A person who is allergic to electromagnetic forces may fee perfectly well until, through overexposure to environmental toxins tolerance threshol and suddenly become ill when exposed to electromagnetic pollution.

In the same way that the eye has evolved to be very sensitive to movement and hue the pineal gland in the brain has become sensitized to changes in the GMF of th

fields. The pineal gland is light sensitive and performs a time-keeping function for the body. When we come into contact with another living organism, an energy flux occurs between our fields and the organisms. This is expressed in the movement of the dowser's pendulum or rod. (Baggs, Sydney and Joan, 1996)

Earth energies may provide a guide to and underlie the essence of the health and well-being of the earth. In the same way, the energy flows and balance in the human body affect the health and well-being of the person. (Heselton, Philip, 1995)

We all need beneficial earth energies for our well-being. Unfortunately, planners, architects and engineers are not yet sufficiently aware of the need to consider earth energies when locating a building, widening a road or digging a tunnel. The earth's magnetic field is shown in figure (2.30). Average readings are shown here, not the anomalies that can affect the life and growth of humans, animals, insects and plants.

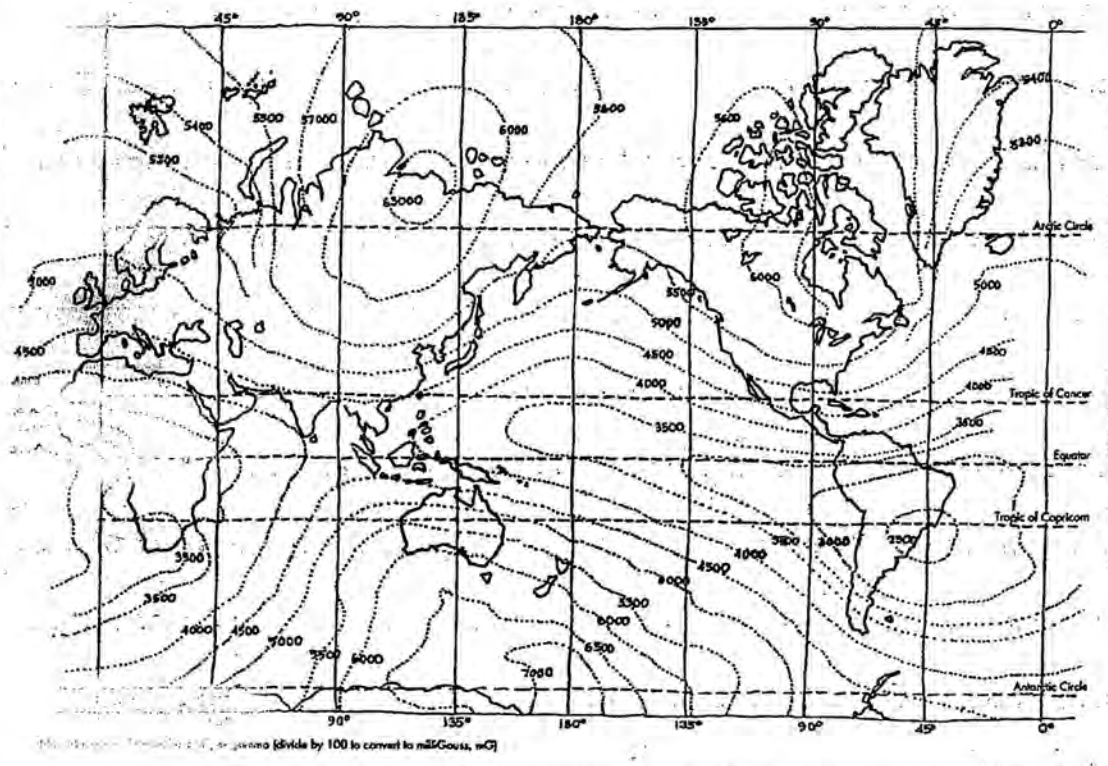


Fig. (2.30) The Magnetic Field of the Earth
Source: Baggs, Sydney and Joan, The Healthy House, 1996
(Redrawn from map by U.S. Navy Hydrographic office)

If some aspects of geopathic stress involve electromagnetic phenomena, they may be a continuation of the known electromagnetic spectrum. Electromagnetic radiation has always been part of man's environment. Cosmic radiation, sunlight and the earth's natural magnetic filed are part of this electromagnetic 'soup' we live in. The human species has evolved and developed in harmony with this background energy. In fact, it is essential for health. For example, many medical studies have shown that without adequate sunlight, people suffer from rickets, because of vitamin D deficiency. During winter, some people suffer from depression and lack of energy, and this has now become known as seasonal affective disorder (SAD). Treatment with full spectrum light has been shown to be beneficial, but sunlight with its ultraviolet component can also be a problem, with excess exposure leading to skin cancer.

Each energy type affects people in different ways. For example, substances such as uranium give out gamma rays, which are of very high frequency. These are very dangerous to human beings because they can damage our cells, causing chemical changes. These energies can cause severe illness and even death. Geopathic energies may possibly be vibrating at level beyond the electromagnetic spectrum currently detected and recognized by conventional science and technology. If geopathic energies are part of the electromagnetic spectrum, this makes them potently measurable by scientific equipment. It is simply necessary to develop equipment that is sensitive enough to that part of the spectrum. (Read, Jane T, 2006)

Electromagnetic fields (EMF), on the other hand, are proportional to load, and difficult and costly to shield. Both types of field reduce rapidly with distance. Double the distance, quarter the field.

A rule of thumb is a minimum of 1 m distance for every 1000 volts (after allowing for cable swing). Though these are the most visible sources of electromagnetic exposure,

most, in fact, originates within buildings from wiring and appliances. Just like thermal insulation, electrical insulation is not absolute. That is why it has to be thicker for higher voltages. A minute amount of leakage is inevitable, which means current, hence electromagnetic fields, even when appliances are switched off. Only disconnection stops them. 'Demand switches' sense load demand and break the circuit when there is not any. Autonomously, switching appliances need to be on separate circuits, otherwise all circuits become live whenever refrigerator or central heating pump switch on.

EMF exposure can also be reduced by simple design. Measure can also be reduced by simple design measures, particularly distance from source.

At 4 feet (1.2 m), most domestic origin fields are very low. As microwave ovens, main electric clocks, fluorescent lights, dimmers and other transformers can induce high frequency fields in wiring to which they are not connected, this means distance from cable as well as from distribution board and appliances. Most EMF exposure is brief, as we move around so much but not when we are in bed. When we sleep, we are in the same place for around eight hours. Moreover, the body is in 'cellular repair mode. Therefore, it is especially important that beds are distant from EMF sources. This means routing writing (including that in the ceiling below upstairs rooms) at least 1200 mm (4 feet) from beds. Sedentary work positions in front of or worse, behind the back of your neighbor's computer (or television) for around eight hours are also undesirable. For electrical and magnetic field reading/ high voltage, see table (2.3).

Table (2.3) Electrical and Magnetic Field Reading/ High Voltage
Source: Christopher Day, Spirit & place, 2004

Distance from power lines	Electric field (in kilovolts/ metre)		
	115 KV	230 KV	500 KV
Underneath	1.0	2.0	7.0
15m	0.5	1.5	
20m			3.0
30m	0.07	0.3	1.0
60m	0.01	0.05	0.3
	Magnetic field (in milligauss) : average (peak)		
Underneath	30(63)	58(118)	87(183)
15m	7(14)	20(40)	
20m			30(62)
30m	2(4)	7(15)	13(27)
60m	0.4(1)	2(4)	3(7)

2.7.6 Ionizing Radiation and Human Body

Ionization is the ejection of one or more electrons from an atom or molecule to produce a fragment with a net positive charge (positive ion). The classification of radiation as "ionizing" is essentially a statement that it has enough quantum energy to eject an electron. This is a crucial distinction, since "ionizing radiation" can produce a number of physiological effects, such as those associated with risk of mutation or cancer, which non-ionizing radiation cannot directly produce at any intensity.

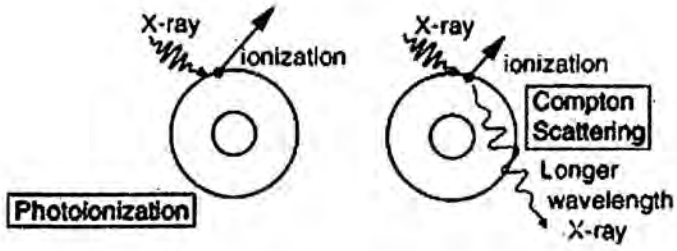


Fig. (2.31) The Ionizing Radiation
Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

The mechanisms of interaction for ionizing radiation in the form of x-rays and gamma-rays include the photoelectric effect, Compton scattering and at high enough energies, electron positron pair production as shown in figure (2.31). Although th

precise ionization energy differs with the atom or molecule involved, a general statement any radiation with quantum energy above a few electron volts is considered ionizing radiation. The threshold for ionization lies somewhere in the ultraviolet region of the electromagnetic spectrum, so all x-rays and gamma rays are ionizing radiation. All forms of nuclear radiation are also ionizing radiation because of their extremely high energies as shown in table (2.4).

Table (2.4) Energies in Electron Volts
Source: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

Typical temperature thermal energy of a molecule	0.04 eV
Visible light photons	1.5-3.5 eV
Energy for the dissociation of an NaCl molecule into Na+ and Cl- ions	4.2 eV
Ionization energy of atomic hydrogen	13.6 eV
Approximate energy of an electron striking a color television screen.	20,000 eV
High energy diagnostic medical x-ray photons	200,000 eV (=0.2 MeV)
Typical energies from nuclear decay: Gamma Beta Alpha	 0-3 MeV 0-3 MeV 2-10 MeV
Cosmic ray energies	1 MeV - 1000 TeV

Ions are molecules or atoms in the air around us that carry an extra negative or positive electrical charge. Each molecule of air consists of a core of positively charged protons surrounded by negatively charged electrons. When an electron is displaced from an air molecule, the molecule is left with a positive charge, forming a poison. When the displaced electron attaches itself to another molecule, that becomes negatively charged, forming a negion. This process is due to nuclear radiation emitted by certain materials within the earth's rocks and soil (radon) cosmic radiation from outer space; lightning; short-wave and ultraviolet radiation; and friction electrical charges from the movement of sand and dust through dry air or waterfalls, fast-moving streams and heavy rain. (Baggs, Sydney and Joan, 1996)

It was showed that not only are we affected by solar storms in the vast geomagnetic 'sea' that we inhabit' but also we create our own mini-storms with electronic devices. The effects of ionizing radiation, such as x- rays, gamma and ultraviolet rays, are well known. Such radiation can break down the chemical bonds of our cells and even rearrange the particles of our atoms, and kill instantly or cause cancer. However, we can also be affected by non-ionizing radiation such as that from radio, television, microwaves (emitted by CB radios, electrical security systems, telephone relays, computer terminals, sonar and satellites) and by extremely low frequency (ELF) radiation which occurs around power lines (50-60 Hertz) and electrical appliances. (Baggs, Sydney and Joan, 1996)

2.8 Energy Quality Measurement Tools

Architects and urban planners should understand 'Physics of Quality' to deal with energy quality measurement tools. 'Physics of Quality' is a revolutionary scientific approach where people use qualitative scales of measurements to asses how things affect each other on an unperceivable subtle energy level. The physics of quality; combines the qualitative aspects of sensory perception with the Pythagorean science of harmonic resonance to produce a system of universal qualities that serve as a method of categorization and communication throughout all the vibratory ranges of the sensory and the extra-sensory total reality. The use of qualitative measurement scales opens the door to the study of effects and interactions between all types of living energy systems.

Taking man in a holistic sense as the measure of all tings in architecture and design, the energy field of the human body is used as the measuring instrument upon which the effect of any other energy system of any object is assessed. Different types of

measuring tools are used in this methodology of qualitative assessment of the human body's energy system.

In the following, different types of energy measurement tools will be explained such as pendulums, dowsing-rods, Lecher Antenna, Acmos Antenna system and Biogeometry building materials energy balanced wheel.

2.8.1 Pendulums

Energy pendulums are constructed by observing the principle of the natural radiation of matter and its geometric form. Geometry and symmetry can be seen in the design of an energy pendulum as a whole, as well as in the structure of the materials used, such as crystals and minerals.

There are various theories about how and why the pendulum works, and why better for some than others. The reactions of the pendulum will vary depending on the length at which the cord is held. If the cord is long, then the pendulum will take more time to react. If the cord is held shorter or close to the pendulum, then it will react very quickly. The length of the cord will depend on the task.

In table (2.5) the most famous pendulums and their usages are showed.

Table (2.5) the Most Famous Pendulums

Source: Dabaieh Marwa, Design with energy, 2006

Kind of Pendulum	Shape	Usage
French universal		It emits all colors, including green minus. For therapeutic use by highly skilled dowsers. Aluminum universal pendulum comes in specially lined wood case.
IKBGI scepter and pendulum (universal)		It is a special and powerful device designed by Dr. Ibrahim Karim. It is useful in al types of energy and spiritual healing. It emits a carrier wave from its lower tip, called the negative green vibration. It is however important that this amulet has the designs engraved on it as shown in the picture. That plays a vital role in canceling the harmful vertical component of the negative green. This multi-purpose scepter is an emitter and receiver on all planes of nature.
Karnak		It is excellent for tuning in to mental questioning and analyzing. It can also enhance the sending of telepathic messages, making it very effective in telepathic communications.
Isis		Which is good for beginners as well as experienced dowsers. The Isis pendulum generates white light spectrum. It is self-cleansing by virtue of the white light emanations.
Osiris		It should be used with caution, and certainly not by those unfamiliar with the strong energies it can emit. It is not intended as a beginner's pendulum but for experienced dowsers and therapists, and for research purposes.
Mermet		This is a brass replica of the pendulum used by Abbe Mermet, a founder of modern Radiesthesia. The top of the brass Mermet pendulum unscrews to reveal a cavity in which samples can be placed. The Mermet pendulum then emits the same vibrations as those of the sample. It effectively becomes an energy pendulum and may be used accordingly. Used in healing, mineral prospecting, over maps and for general dowsing, the Mermet pendulum proves to be another classic pendulum.

Kind of Pendulum	Shape	Usage
Double Mermet		The design of the double Mermet Pendulum which is available in brass or wood, is to further amplify the rays of the sample.
Virtual cone		A pendulum designed by chaumery and de Bellizal to measure different vibrational waves. Simplified version of the Universal pendulum. The shaft is segmented into wavelengths of different colors. The ring can be moved to various positions to create an imaginary cone that emits energy at the wavelength of the chosen color.
Atlantis		It emits the same vibration as the Atlantis ring. The pendulum strengthens and directs the vibration of the symbol. It is used for healing and protection, and reinforces intuition (for healing and protection)
Left-turn Spiral		Due to its counterclockwise spiral design, this pendulum concentrates and spirals energy. It is very precise; ideal for diagnosis and astrology. It is recommended for highly skilled dowsers. (for diagnosis and astrology)
UFO		It is a diagnosis tool due to its shape. It can precisely pinpoint the weak spot and send energy directly to it. (for diagnosis)
Ancient Egyptian "Djed-Wadj"		The ancient Egyptian "wadj" symbol of growth is a geometrical energy emitter due to (its hemisphere shaped crown) just like our skull. It is known today in radiesthesia and dowsing as the "Egyptian pendulum" was discovered and named by Chaumery and Belizal. It is a special and powerful pendulum/ scepter put together by Dr. Ibrahim Karim based on a specific combination of two Ancient Egyptian symbols used as amulets and scepters.

2.8.2 Dowsing-Rods

Dowsing rods as dowsing tools are known to humanity for as long as pendulums. Ancient cultures used to use dowsing rods.

There are many different types of rods plus quite a few variations of this kind to achieve better results in certain fields, such as L-rod, Y-rod and Aurameter.

2.8.2.1 L-Rods

The L-rod is probably the most common and easiest tool. The shape looks like "L" as shown in figure (2.32).

It has the ability to find anything if the person has the ability to use it correctly. It shows responsively the direction of the flow of underground water streams as well as where they branch off or cross other streams.

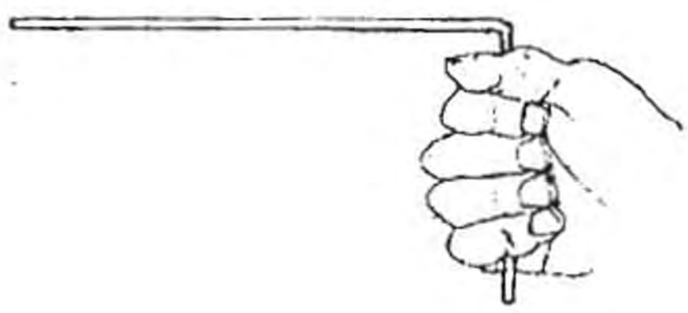


Fig. (2.32) Holding an L- Rod
Source:http://web.ukonline.co.uk/ianto/Dowsing%20intro.htm

2.8.2.2 Y-rods

They are the oldest type of dowsing rods. The shape came from the branch of the tree traditionally held by a dowser while searching for water or other underground resources.Y-rod in the shape of a forked stick or Y as shown in figure (2.33). It consists s of two hands. Each hand is supposed to grasp one of the short ends, and by bending one's hand outwards as drawn in figure (2.34). The material constituting a y rod is traditionally wood.

Fig. (2.33) Holding a Y- Rod
Source:http://web.ukonline.co.uk/ianto/Dowsing%20intro.htm

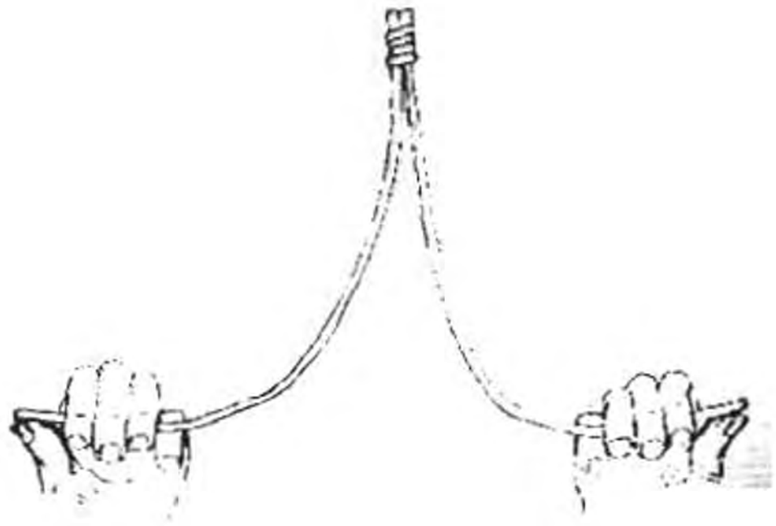


Fig. (2.34) Y- Rod
Source:http://www.intuitivedowsing.com/Shop/vmchk/Dowsing-Rod.html

2.8.2.3 Aurameter

It is one of the most sensitive dowsing instruments known. This combination dowsing tool was developed by Verne Cameron in California in the middle of the last century. It is essentially a spring loaded L-rod as shown in figure (2.35), but it has many different uses and can act as a number of different dowsing tools. As its name suggests, it was initially designed to look at human auras.

Fig. (2.35) Aurameter
Source: http://www.geomancy.org/dowsing/aurameter/index.html

2.8.3 Lecher Antenna

The principle of measuring energy was discovered by Ernst Lecher in 1890. The Lecher Antenna, as pictured on figure (2.36), was developed by a group of German physicists in 1975 based on Dr. Lecher's principle.

Lecher Antenna is a tool that can measure the defective human energy meridians, shift in the fields, and tell us which part of the space need correction. The Antenna allows the facilitator to read and verify the vibration on the body which was previously only perceived as "intuition" and could not be otherwise proven or verified. Now, there is an actual tool, which measures the energy that emanates from the organs of the body, skeletal structure as well as all of the energy fields which surrounds the physical body. All of the fields, organs, parts of the body and diseases have different frequencies.

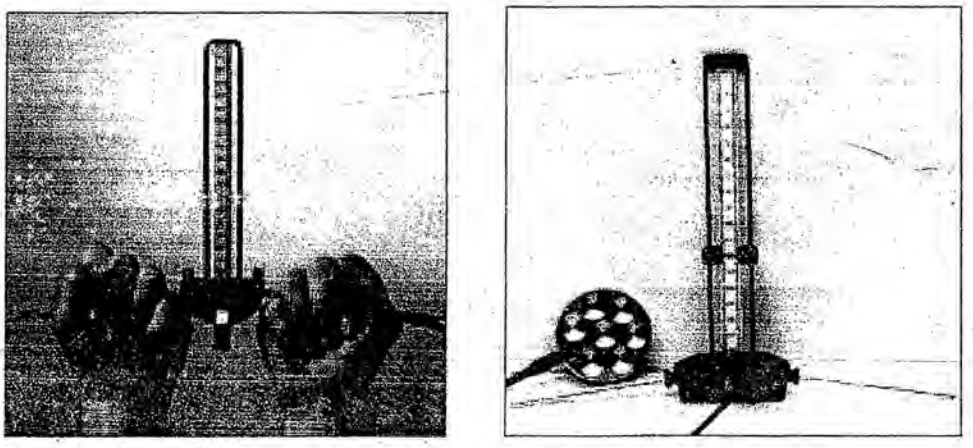


Fig. (2.36) Lecher Antenna
Source:http://kitsilano.net/etheric/harmony.htm

2.8.4 Acmos Antenna System

This is a very advanced and accurate diction, measurement, and treatment system based on the original lecher antenna which is illustrated in figure (2.37). It was developed by Dr.Rene Naccachain in France. SBJ Scientific and Technical Research Center.

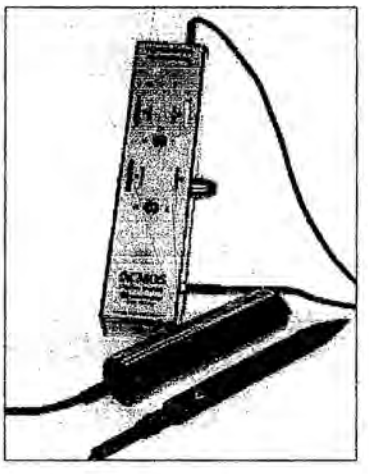


Fig. (2.37) Acmos Antenna System
Source: http://*www.acmos-sbj.com/*

The latest acmos lecher antenna called the "periscope antenna" possesses numerous for measuring easily human body fields imbalances and analyzing energetical qualities of animal, vegetal, mineral and all objects in, on or around the human body and which can influence health of mind and body.

2.8.5 Biogeometry Building Materials Energy Balanced Wheel

Samples of building material are placed in their correct orientations to N-S on the wheel to produce energy quality. The wheel is in resonance with materials in the

building and balance... quality of their energy. It can also be produced for a vertical ...rientation as an opti... addition. (Dabaieh, Marwa, 2006)

2.8.6 Human Body as a Tool for Measurement

> *Some of us perhaps don't need energy measurement instruments to feel some energy that today's science has no knowledge or instruments to detect it and measure it.*
> *Human body is the final and ultimate instrument in the sea of invisible energies surrounding us every day. The human genome science and human genes study may bring us some answers but for now some of us... dowsing may have the basic answers.* (Matacia, Louis, 1994)

...an pick up only a limited range of vibrations. For example, we can see color, but not X-rays. We can hear sounds. But only if they are loud enough and only if they are within our hearing rang. Many of these invisible spectrums can be detected and "seen" by the extension of our senses via various technologies like films, amplifiers, scopes, or transducers. Until technologies are developed to reliably detect the presence of earth energies, we must rely on the sensitivity of our bodies and minds. The human body is the best "receiver" on earth. We can detect many things that machines and technologies cannot, in the areas of emotion and consciousness.

The feeling of power sensed by our consciousness and body is the key to seek at any sacred place. It is the effect of the field on our consciousness that really counts, not the name, technicalities, or details. (Pettis, Chuck, 1999)

Conclusion

Physics tells us that everything is energy, even what we consider solid matter is actually some form of energy. All life functions are based on energy interactions, which are the hidden dimension at the core of any perceivable physiological and psychological function. According to our review and critical analysis of meaning and definition of energy and its sources, the anatomy of earth energy and human energy fields and electromagnetic and subtle energy, we can conclude that:

Taking into consideration this dimension of energy quality from the first beginning, keeping in mind the challenge presented by globalization and technology in the age of information and aiming the perfection and quality of architectural space, a new definition for energy should be introduced and broaden the understanding of its essence and how it could affect the built environment.

This chapter proposes a new definition for **"energy"** as follows:

"Energy is a flux of information carrying meaningful messages which can be decoded through resonance causing transaction and communication in the universe. Some of these transactions can be acknowledged when they are within our energy language ".

- Aiming the perfection and quality of architectural spaces and considering our ultimate goal of peace, there is definitely a strong relationship between energy quality and architectural space.
- Throughout history, ancient philosophies, religions and cultures have acknowledged the existence of a subtle life-force energy or chi, underlying and connecting all material existence.

- Throughout history, ancient philosophies, religions and cultures have acknowledged the existence of a subtle life-force energy or chi, underlying and connecting all material existence.

- There are still existing limitations of meaning, methods and tools of measurements for energy because energy is a quantity and a quality.

- The human body is the best "receiver" on earth, and the best measurement tool, which can ever exist.

- There are many different types of geopathic energies with some people being more susceptible than others are. Sleeping, living or working constantly in a geopathically stressed area can lead to emotional and physical problems and difficulties, which exact a heavy toll on both the sufferers and their families.

- Modern science is confirming that our actions, thoughts, and feelings are indeed shaped not just by our genes and neurochemistry, history and relationships ,but also by our surrounding environment.

- Architects, urban planners should understand and consider the carrying information by energy waves and how it works inside and outside our architectural spaces for raising the quality of our built environment and maintaining resonance with the entire universe.

Inner Peace

So much has been written
About peace in the world,
Peace on earth, peace be with you,

Peace is more
Than the absence of war,
More than tolerance
More than acceptance

There can never be peace
Between individuals or nations,
Until we are at peace with ourselves
That inner peace that passes
understanding.

David Moe

Source: http://www.worldpeacetech.com/peace%20poems.htm

Peace, Energy and Environment for Architectural Morphogenesis
Introduction
Peace, Energy and Architecture
Chapter 1
Peace... The Hidden Dimension in Architecture
Chapter 2
A Journey into Fields of Energy in Architecture
Chapter3
peace in Architecture as a Qualitative Energy Concept
Chapter 4
Towards a Conceptual Peacenergy Environmental Studio
Quality and Architecture
The hidden Dimensions of Architecture
Architecture, Energy and Peace Discover the Common Roots
Peace and Energy in Contemporary Architecture
Zero Time Concept and Architecture
Architecture, Energy and peace as a New Concept
Conclusion

Introduction

This chapter will explore the triangle of architecture, energy and peace, discussing the physics of quality and the hidden dimensions of architecture which are energy waves, harmonics and resonance.

This triangle of architecture, energy and peace will be analyzed, trying to discover the common roots among them through ages and in contemporary architecture. Starting with the concept of sacredness and its relation with energy and peace in architecture, then explores this relation in prehistoric architecture, ancient Egyptian architecture, Chinese architecture and Islamic architecture.

Moreover, the concept of energy and peace will be discussed in three new environmental trends of contemporary architecture: Cosmogenic,Nano, architecture and FAB Tree HAB architecture. Five points will be explained in each trend: background about the idea of this trend, architectural concept, architectural principles, space properties and examples representing this trend.

3.1 Quality and Architecture

Louis I. Kahn said

> *"The only way you can build, the only way you can get the building into being, is through the measurable. You must follow the laws of nature and use quantities of brick, methods of construction, and engineering. But in the end, when the building becomes part of living, it evokes unmeasurable qualities, and the spirit of its existence takes over."* (Ching, Francis D. K, 1995).

Quality is one of those words which are used unthinkingly by everybody, but which stubbornly evade definition. The perception of 'quality' as almost impossible to define is not confined to our profession; in "The Timeless Way of Building", architect Christopher Alexander calls it 'the quality without a name'. In the same way that we know a good room when we use one, but cannot define exactly what makes it good, we can name the attributes of quality, but cannot define quality itself. One way to find a good definition of anything is to take a broader view; Alexander does this in his definition of a 'pattern language' for architecture, reducing the whole building and town design to 252 simple rule-sets. Can architects find a new definition for quality by looking at the bigger picture?

Back to nature, nature does not recognize our scientific units of measurement: the centimeter, inch, mile, volt etc., do not exist in nature, they are our way of understanding nature by quantifying it. When nature recognizes quantity, it does so by interacting with the "qualitative aspect of quantity". In nature, for example every number has a vibratory quality that can be transmitted through interaction and can produce certain effects on other energy systems. Quality and quantity are actually two sides of the same coin.

There is a specific energy pattern of arrangement for every system that gives it its properties. Every energy pattern or grid must itself combine the qualities in a perfect balance for it to function properly. The state of perfect balance of the grid can also be detected through measurement using any of the quality scales. There seems to be a very specific energy quality that can be detected when systems are in perfect balance. The energy quality is linked to a source beyond the time-apace frame of the system itself. The balancing seems to come from a transcendental source. (www.biogeometry.com)

3.2 The Hidden Dimensions of Architecture

Energy waves, resonance and harmonic science are the hidden dimensions of architecture that form and determine the quality of architectural spaces. These three invisible dimensions play a major role to from the energy patterns and its quality of architectural spaces. As stated earlier in chapter two that architects, urban planners should understand and consider the carrying information by energy waves and how it works inside and outside our architectural spaces for raising the quality of our built environment and maintaining resonance with the entire universe.

3.2.1 Waves Science in Architecture

There are many kinds of waves all around us. Everyone knows about waves of water in the ocean. Sound travels through the air in waves and light is actually made up of waves of electromagnetic energy. Wikipedia defined wave as:

> *"A wave is a disturbance that propagates through space and time, usually with transference of energy. While a mechanical wave exists in a medium (which on deformation is capable of producing elastic restoring forces), waves of electromagnetic radiation (and*

> *probably gravitational radiation) can travel through vacuum, that is, without a medium. Waves travel and transfer energy from one point to another, often with little or no permanent displacement of the particles of the medium (that is, with little or no associated mass transport); instead there are oscillations around almost fixed positions".*

The length of a wave is called "wavelength". In physics, wavelength is the distance between repeating units of a propagating wave of a given frequency. It is commonly designated by the Greek letter *lambda* (λ). Moreover, the wavelength is the distance from the top of one wave (called the wave's "crest") to the top of the next wave. It can be also measured the distance from the lowest point between two waves (called the wave's "trough") to the next trough. It should be the same distance either way as shown in figure (3.1)

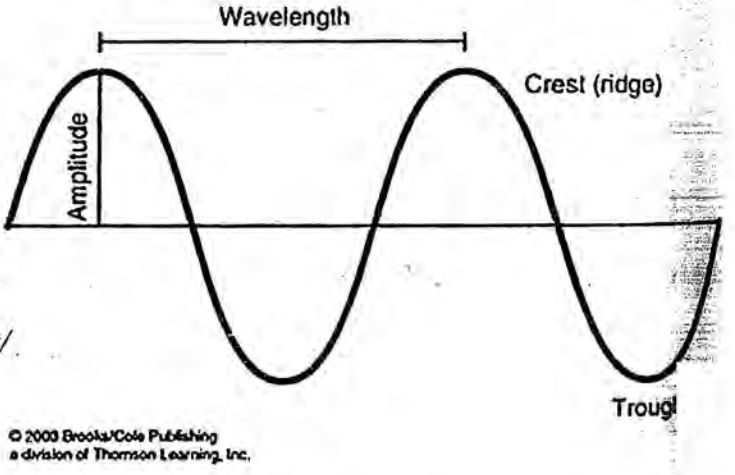


Fig. (3.1) Wavelength of a Sine Wave

Source:http://cimss.ssec.wisc.edu/satmet/modules/spectrum/wavelength.html

A wave also has a "frequency". The frequency is how often a crest goes by. The frequency of a wave depends on how fast the wave is moving. It also depends on the wavelength of the wave. Imagine two sets of waves that have the same speed. If one set has a longer wavelength, it will have a lower frequency (more time between crests). If the other set has a shorter wavelength, it will have a higher frequency (less time between waves). Wavelength and frequency go opposite of each other. Shorter

wavelengths mean higher frequencies, while longer wavelengths mean lower frequencies.

Everything in this reality is sine wave, or cosine, if people want to look at it like that. What makes one thing different from another is wavelength and pattern.

A wavelength extends from any point on the curve to the point where the entire curve starts over as shown in figure (3.2), as from A to B on the longer wavelength, or from C to D on the shorter wavelengths.

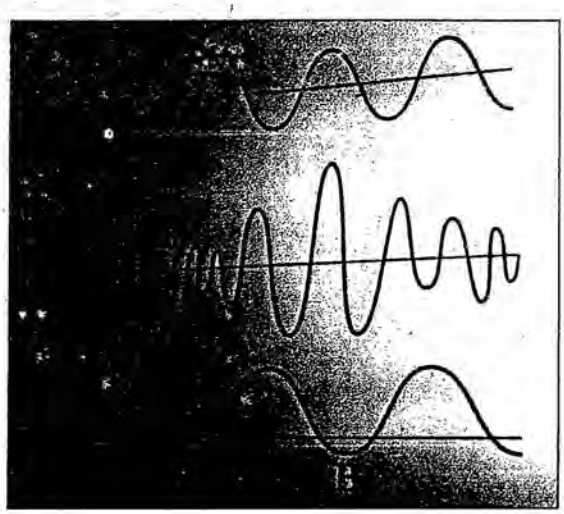


Fig. (3.2) Sample of a Sine Wave

Source: Melchizedek, Drunvalo, "The Ancient Secret of the Flower of Life", 1995

If people get into a really long wavelength, they look almost like straight lines. For example, the brain waves are about ten to the tenth power centimeters, and they are almost like straight lines coming out of your head. Quantum physics or quantum mechanics looks at everything in the reality in one of two ways.

Everything in our world is a waveform (sometimes called pattern, or sine-wave signature) or could even be seen as sound. All things, human bodies, planet, absolutely everything, are waveforms.

The universe and all the stars and atoms going infinitely out and infinitely in forever have a base wavelength of about (7.23) centimeters.

any spot in an architectural space and go infinitely in or infinitely out this particular universe. In a spiritual sense, this (7.23) cm wavelength is Om, the Hindu sound of the universe. Every object in this universe produces a sound according to its construction. Each object makes a unique sound. If the sounds of all the objects in this universe were averaged, this third dimension, this (7.23) cm wavelength would be got, and it would be the true sound of Om for this dimension.

This wavelength is the exact average distance between human eyes, from the center of the pupil to the other-that is we take a hundred people and average them. It is also the exact average distance from the tip of our chins to the tip of human noses, the distance across his palms and the distance between his charkas, to give a few more examples. The 7.23 cm length is located throughout human bodies in various ways because human is emerged within this particular universe, and it is embedded within him.

It was Bell Laboratories that discovered this wavelength, not some spiritual person sitting in a cave somewhere. When they first out up the microwave system that went around the United States and pulled the on switch, they found static in their system. Bell Labs just happened to Pick for the system's sending frequency one slightly longer than seven centimeters. Why they chose that wavelength, no one knows. They tried to find the static, looked through their equipment and tried everything they could. First, they thought it was coming from inside the Earth. Eventually, they looked into the heavens and found it, and said, "Oh, no, it is coming from everywhere" in order to get rid of the static, they did something that people and the planet are still suffering from: they upped the power 50,000 times over what they would normally need, which created very powerful fields, so that the (7.23)cm wavelength coming from everywhere would not interfere. (Melchizedek, Drunvalo, 1995)

3.2.2 Harmonics and Architecture

"The word "harmonics "; the concept of harmonics in classical Greece; in antiquity; Pythagorism and science; the two Pythagorean approaches; evaluation of these approaches in antiquity; today; justification for today".(Kayser, Hans, 1970)

Harmonics stems from the Greek harmonikos: pertaining to music. With the old Greeks this term already had a much broader scope and signified, especially in the Pythagorean definition, a science of measure (number) and value (tone).

The typical definition for a harmonic is "a sinusoidal component of a periodic wave or quantity having a frequency that is an integral multiple of the fundamental frequency." Harmonics have been around for a long time and will continue to do so. In fact, musicians have been aware of such since the invention of the first string or woodwind instrument.

The knowledge along of the essence of harmony and rhythm, developed from the marriage between a science of measure (number) and value (tone), would secure for the Greeks their immortality in the history of human culture; the possibilities of applying this insight to every sphere of life are almost unlimited. A new world strictly conforming to governing laws opens up, comparable to the tight system of Solonic jurisprudence. Whereas Anaximander had viewed the universe as a cosmos of things, the Pythagorean worldview considered the principle of the cosmos to be harmony. Whereas Anaximander had grasped the causal necessity of temporal events, so in the idea of harmonics the structural side of cosmic laws is made clear.

The Pythagorean approach then is two-fold: the first is the derivation of quality (tonal sensation) from quantity (numbers): this Pythagorean approach is the basis of the present day exact sciences. The second approach is the evaluation of quantities

numbers, overcoming material) through qualities (psychic sensation of numbers as forces). This latter approach was, in the eras following antiquity, further pursued only in exceptional cases. Both these Pythagorean approaches have undergone in the course of European development a fundamental change. It is extremely important to understand this point correctly, because out of it can be gained, in a certain sense, a new validation of harmonics for our present time.

Thus, we find ourselves today in exactly the opposite position from the ancients: with them, the soul, the heart, the psychic powers of imagination, threatened to overflow, and demanded limitation by reason, measure and number. We today are spiritually impoverished, and in spite of religion, philosophy and art, are to such an extent dedicated to the complete domination of science and her legitimate daughter, technology, that we need, and must seek again, a turning inward, an inner immersion in the meditative powers of the soul, thus giving new value to the logical side of our mind's image.

Harmonics can show a way to this if it once more takes Pythagorism in its full sense as a starting point. That means, harmonics once again must acknowledge tone and number as of equal value, tone understood first of all concretely, and then in the widest sense as the capacity for psychic experience; number understood first concretely, and then in the widest sense as symbol for the rational, measurable and statistically graspable side of the world. Placed side by side as equals, these would lead our modern thinking to build a new spiritual world. (Kayser, Hans, 1970)

3.2.2.1 Human Harmonies

The perception of human proportion has varied greatly throughout the ages. One of the earliest written documents dealing with human proportions is by Marcus Vitruvius pollio, the first- century Roman architect and writer. He begins his Ten Books on Architecture with the recommendation that temples, in order to be magnificent , should be constructed on the analogy of the well- shaped human body, in which he says, there is a perfect harmony between all parts. He mentioned that the height of a well-shaped man is the same as the span of his outstretched arms, these two equal measures yielding a square, which encompasses the whole body, while the hands and feet touch a circle centered upon the navel.

This relatedness of the human body to the circle and the square rests upon the archetypal idea of "squaring the circle", which fascinated the ancients, because these shapes were considered perfect and even sacred, the circle having been looked upon as a symbol of the heavenly orbits, the square as a representation of the "foursquare" firmness of the earth. The two combined in the human body suggests in the language of symbolic patterns that we within ourselves the diversities of heaven and earth, an idea shared by many mythologies and religions.

When the renaissance rediscovered the classical remains of Greece and Rome, Leonardo da Vinci illustrated Vitruvius' version of this idea with his own famous drawing, figure (3.3). The bar diagrams and the triangular diagram, which here are added to the drawing, show how the adjacent parts of this body share proportions which fall within the range of the golden section and the Pythagorean triangle.

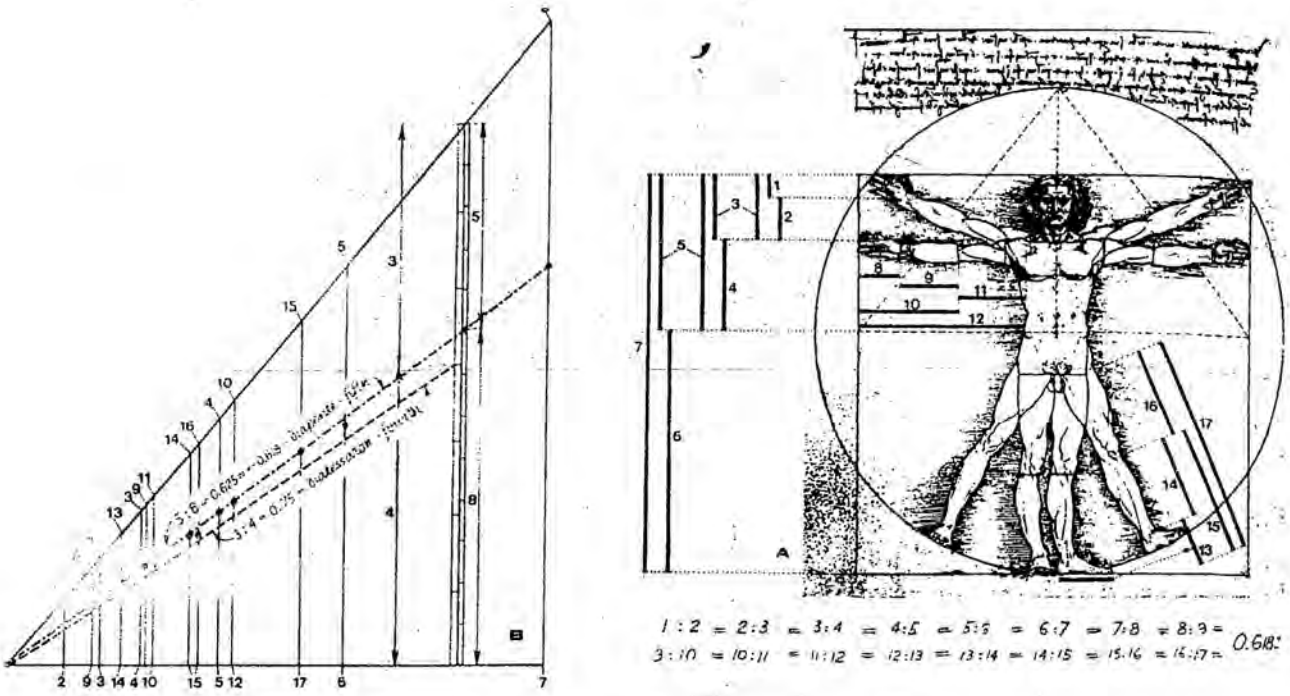


Fig. (3.3) Leonardo Da Vinci's Interpretation of Vitruvius, With golden proportions added

Source: Doczi, G., "The Power of Limits", 1985

Leonardo, along with many of the Renaissance masters, was a great student of harmonious proportions. Leonardo summarized his studies of good proportions in memorable words: *"... every part is disposed to unite with the whole that it may thereby escape from its incompleteness."*

The Englishman Robert Fludd depicted man as a microcosm, united with the macrocosm of the universe, combining dark, earthly potentialities with light, heavenly ones, attuned to universal musical harmonies like a monochord stretching from earth to heaven as shown in figure (3.4)

Figure (3.5) are based upon Doczi's measurements of human skeletons, integrated with information gleaned from measurements of live models as well as from anatomical textbooks. All dimensions are those of average-sized adults as reported by governmental surveys.

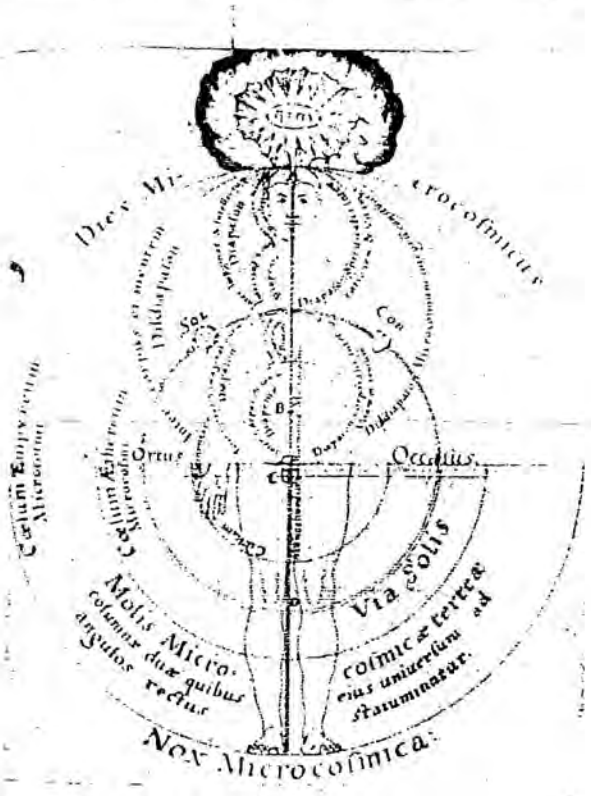


Fig. (3.4) Illustrations from Robert Fludd's

Source: Doczi, G., "The Power of Limits", 1985

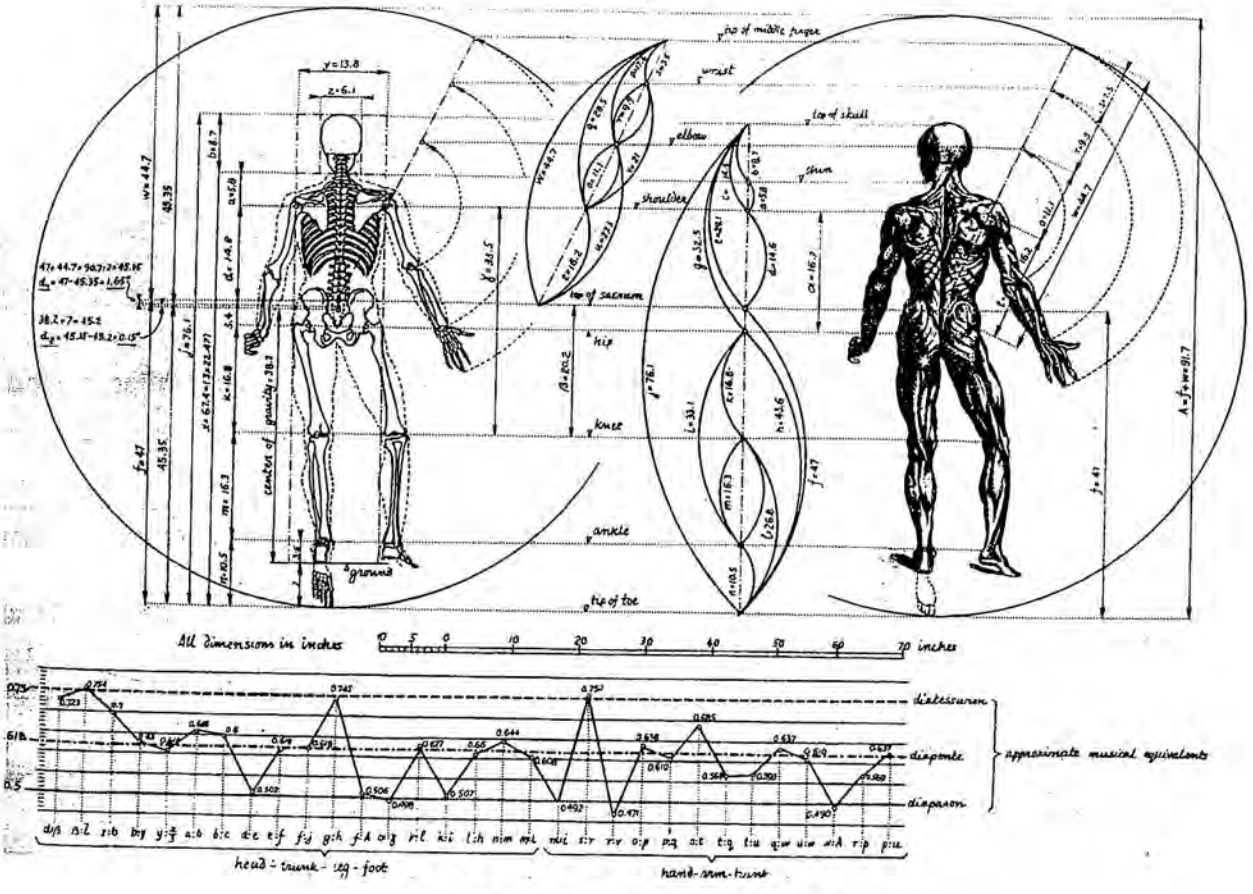


Fig. (3.5) Proportion of Male Body

Source: Doczi, G., "The Power of Limits", 1985

3.2.2.4 Rhythm and Harmonious Sharing of the Universe

Calendric architecture revealed rhythmic patterns characteristic of the Calendric changes themselves, the waning and waxing of the moon or the rhythms of ebbs and tides. The circular pattern in figure (3.6) represents a page of the calendar for May 1976. Every square represents a record of a day of the ebbs and tides of the Pacific Ocean in Seattle, Washington. Fluctuation within the major rhythm are caused by the joint gravitational pull of the moon and the sun, the former being the stronger one because of its relative closeness to the earth.

On a miniature scale, the wave patterns of this comic rhythm are shared our heartbeat as electrocardiogram **B** in figure (3.6) indicates. Our brain waves are further variations of these rhythms, depending upon human condition: light sleep, deep sleep, sweating, or the mental disturbances called *petit mal* and *grand mal*, for instance.

Human breathing has a similarly 'Dinergic' wave pattern: it is an ongoing rhythm of inhaling and exhaling, and similar fluctuations characterize the physical and mental cycles called biorhythms. Human "inner clocks" allow us to register our own rhythmic patterns of time, called circadian rhythms. Air travelers become aware of their circadian rhythms when crossing time zones: their own inner time and outer, calendric time temporarily get out of step.

By attaching pens to a pendulum and to a tuning fork, and by registering the pens' traces rolling paper, the mathematical physicist James Jeans proved that weight and sound share the same rhythmical, harmonious wave patterns, called sine curves, or simple harmonical curves. Light, color and sound also share the same wave patterns and the same vibration rates.

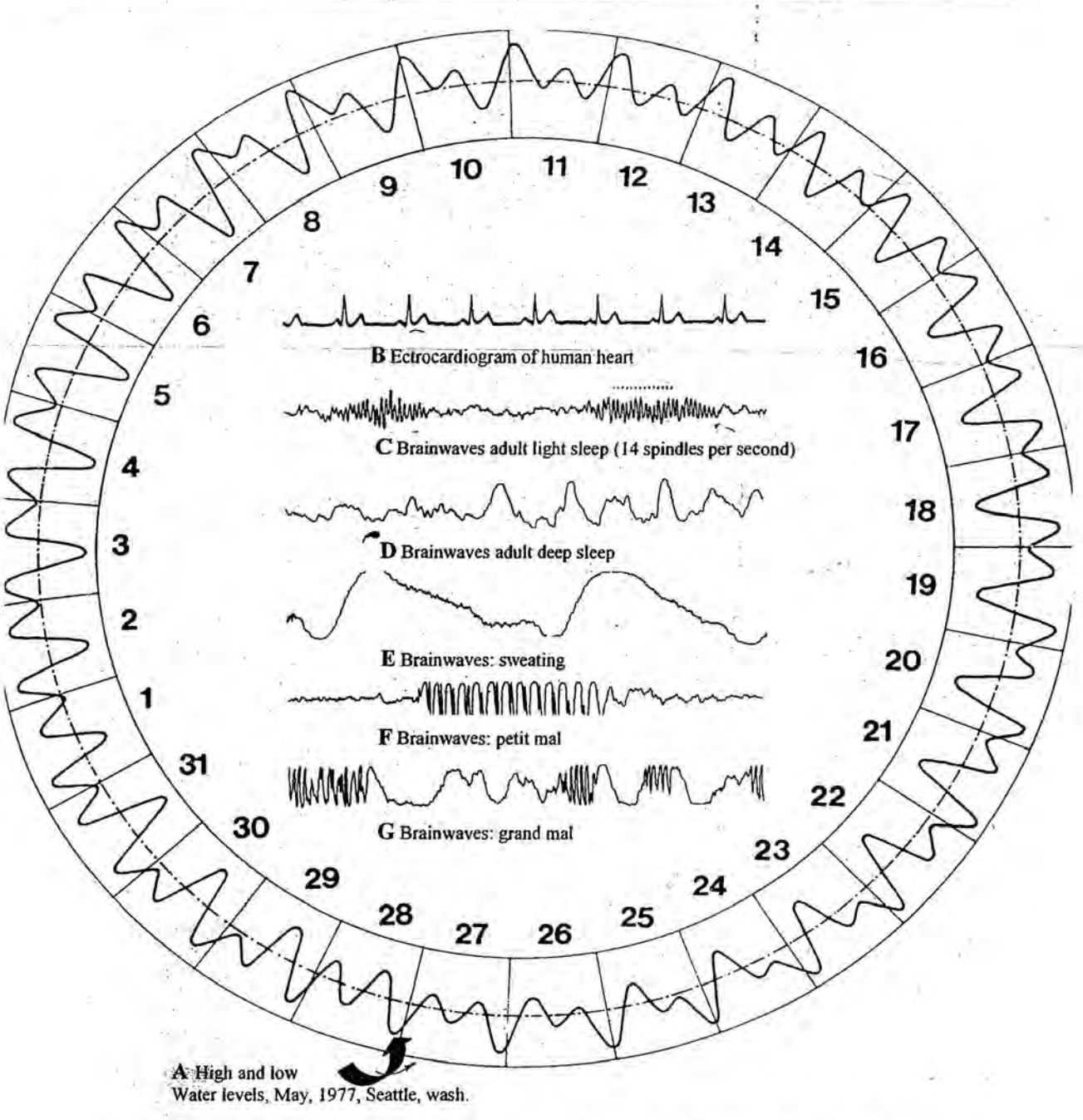


Fig. (3.6) Comparison of Cosmic and Biological Rhythmic Patterns

Source: Doczi, G., "The Power of Limits", 1985

3.2.3 Resonance: a Universal Energy Language

Resonance is a common thread, which runs through almost every branch of physics, and yet many people have never studied it. Without resonance, we would not have radio, television or music. Of course, resonance also has its dark side. It occasionally causes a bridge to collapse, a helicopter to fly apart, or other inconveniences. Unlike black holes, time travel, and quantum mechanics, resonance is commonplace and easy

to observe. However, it is one of the most striking and unexpected phenomenon in all of physics.

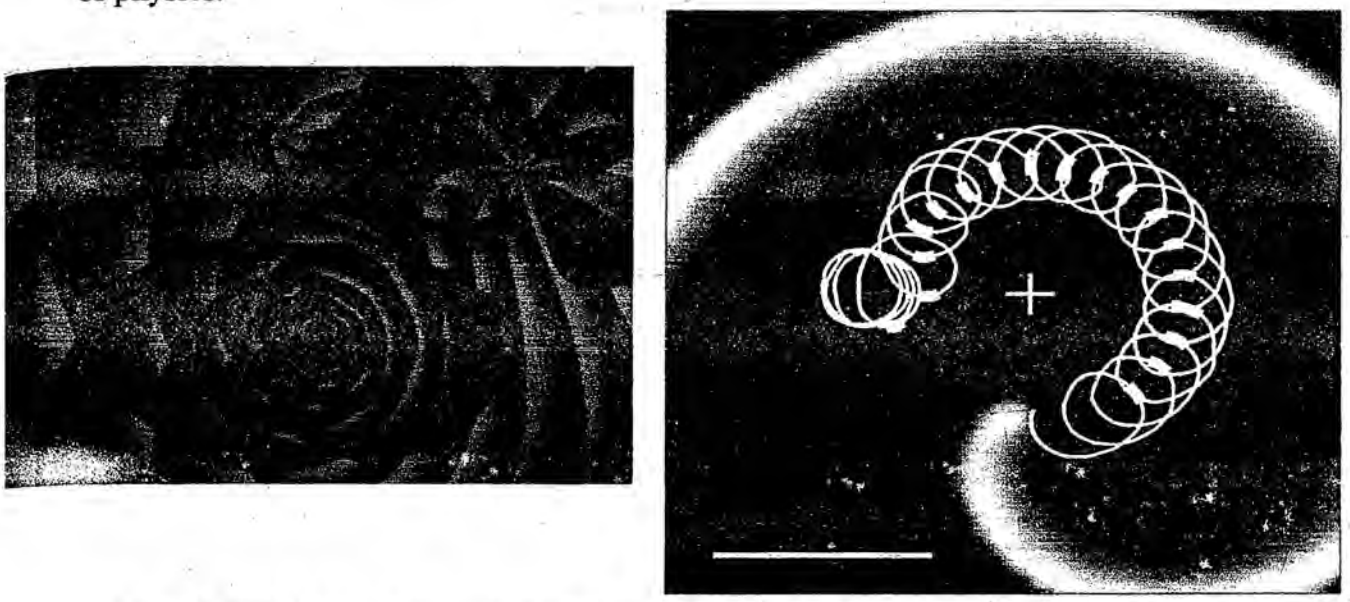


Fig. (3.7) Drift Of a Spiral Core under Feedback-Controlled Forcing (Creation of a Resonance Attractor)

Source: http://www.uni-magdeburg.de/abp/picturegallery.htm

Wikipedia defines resonance as follows:

> *"In physics,* ***resonance*** *is the tendency of a system to oscillate at maximum amplitude at certain frequencies, known as the system's resonance frequencies (or resonant frequencies). At these frequencies, even small periodic driving forces can produce large amplitude vibrations, because the system stores vibrational energy. When damping is small, the resonance frequency is approximately equal to the natural frequency of the system, which is the frequency of free vibrations. Resonant phenomena occur with all type of vibrations or waves; mechanical (acoustic), electromagnetic, and quantum wave functions".*

Resonance causes an object to move back and forth or up and down. This motion is generally called oscillation. Sometimes the oscillation is easy to see such as the motion of a swing on a playground or the vibration in a guitar string. In other cases the oscillation is impossible to see without measuring instruments. For

example, electrons in an electrical circuit can oscillate but it happens on a molecular level. In resonance the oscillation occurs at a specific frequency. These oscillations build up rapidly to very high levels. Ultimately, some of the energy in the oscillations has to be removed from the object or the size of the oscillations gets so large that the object breaks.

Resonance requires three basic conditions:

A) An object with a Natural Frequency.

B) A Forcing Function at the Same Frequency as the Natural Frequency

C) A Lack of Damping or Energy Loss.

For an object to resonate, mechanical or electrical energy has to build up in the object. Anything, which removes these forms of energy, tends to interfere with resonance. Damping is a means of removing electrical or mechanical energy by converting it to heat. The term damping should not be confused with the term dampening which means to make something slightly wet. Friction, air resistance, and viscous drag can all provide damping in mechanical systems. Electrical resistance performs the same function in electronic circuits. Other forms of energy loss can include sound (musical instruments) or light emissions (lasers).

When the forcing function's frequency matches the natural frequency of an object it will begin to resonate. The forcing function adds energy at just the right moment during the oscillation cycle so that the oscillation is reinforced. This makes the oscillation's amplitude grow larger and larger. These oscillations would eventually become infinitely large. However, as mentioned earlier, long before the oscillations reach infinity one of three things happens:

1) The object's dynamics change so that the resonant frequency and forcing functions no longer match,

2) The energy lost as heat, sound, or light becomes equal to the energy input. Or

3) The object breaks. (http://www.intuitor.com/resonance/index.php)

All objects have a natural frequency, which can be set in motion or increased by something nearby which is vibration at the same frequency or pitch. When this happens, it is said that the two things resonate. An opera singer can break a glass by the not, start to vibrate at the same frequency to such an extent that it will shatter.

Every organ of the body has its own resonant frequency. Different geopathic energies appear to vibrate at different frequencies giving them their own unique qualities and their ability to affect human beings. As with the opera singer and the glass, if the GS energy resonates at the same frequency as a body organ then it can damage that organ. The greatest damage occurs when the maximum resonance is being experienced. . (Read, Jane, 2006)

The previous explanation of the three dimensions: energy waves, resonance and harmonics showed that they are very important to determine the quality of architectural spaces and the quality of human life. These dimensions were taken into consideration in the ancient civilizations as will be explained in this chapter.

3.3Architecture, Energy and Peace ... Discover The Common Roots

The triangle of architecture, energy and peace will be discussed to discover the common roots between them through ages and in the contemporary architecture. Starting with the concept of sacredness and its relation with energy and peace in architecture then explore this relation through:

- Prehistoric architecture
- Ancient Egyptian architecture
- Chinese architecture
- Islamic architecture

3.3.1 The Concept of Sacredness

A sacred site is a locale where the earth's power radiates more strongly in a vortex of energy. Sacred sites are usually situated on natural energy streams that run beneath the earth's surface. Sacred places can be natural, like holy wells or rock formations, or built out of stone and earth. (Lauren O. Thyme, 1999)

It is essential to define the meaning of the word "sacred" as applied to architecture. Sacred architecture can mean many different things. 'Sacred architecture' is usually defined as a building or a monument, which has a religious function or uses the vocabulary of forms consistent with religious practice. The architecture, which is considered sacred, has a common root in the life of the soul and spiritual vision, rather than merely in forms. This definition itself poses some problems because the 'spiritual' must also be defined. The spiritual is the active, dynamic aspect of the psyche, which is independent of forms. However, it is an essence, which seeks expression in and through the world, always invested in forms. Those forms into which spiritual energy flows reflect a sense of the divine, and a science of such forms has developed throughout history, a science based on symbolism. (A. T. Mann, 1993)

Until now people have had to leave open the question of whether a power points has been selected with respect to a known telluric network, before construction, or whether such a large neutral zone, such as are found inside these edifices, develops after the fact as emission of the shape deliberately calculated by constructor-intitates.

In chapter three, we will explain in details the ancient ways for choosing sites. (Blanche Merz, 1985).

3.3.2 Prehistoric Architecture

Standing stones and circles, henges, cup-marked stones and dolmens that have intrigued us for generations, but until recently, there has been little real evidence of their purpose and their strong relation with energy.

The relation between architecture, energy started since the beginning of built environment on earth searching for peace, the ultimate goal of human being.

Archeological and astronomical research has established that the large stone monuments which were built across Northern Europe about 3500 years ago served as giant compasses, calendars, and computers of seasonal patterns, as well as sacred precincts for religious rituals.

The most famous of these megaliths is Stonehenge, on the Salisbury plain in England, built in stages from the twentieth to the sixteenth centuries B.C. See figure (3.8)

A plan of Stonehenge III indicates how the exact time of midsummer sunrise was established as shown in figure (3.9), by sighting the disk of the rising sun between adjacent tall stone markers, called Sarsen Stones, directly on top of what is referred to as the Heelstone. (Fig.3.10) The horizontal projections (azimuthal directions)of the midwinter and midsummer risings and settings of the sun and the moon established with modern scientific instruments corroborate the astronomical accuracy of Stonehenge. (fig.3.11). It seems to have escaped notice so far that the architecture of Stonehenge shares the proportions of the golden section and of the Pythagorean triangle. The classical construction of the golden section applied to plan III of Stonehenge (fig.3.9) reveals that a golden relationship exists between the width of the bluestone Trilithon Horseshoe and the diameter of the Sarsen Circle, (1:0.618 = 1.618). On the other hand, stone henge is considering a sacred site and it creates patterns of positive energy around it as shown in figure (3.11).

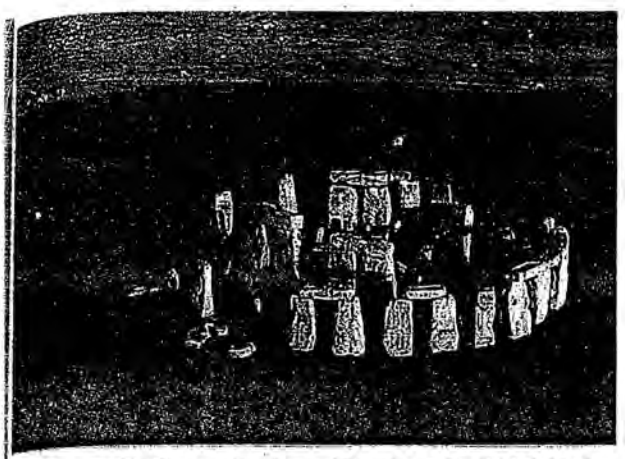


Fig (3.8) Stonehenge, England, 3100 BC.
Source:http://members.aol.com/stoneequation/stonehenge_files/mon.jpg

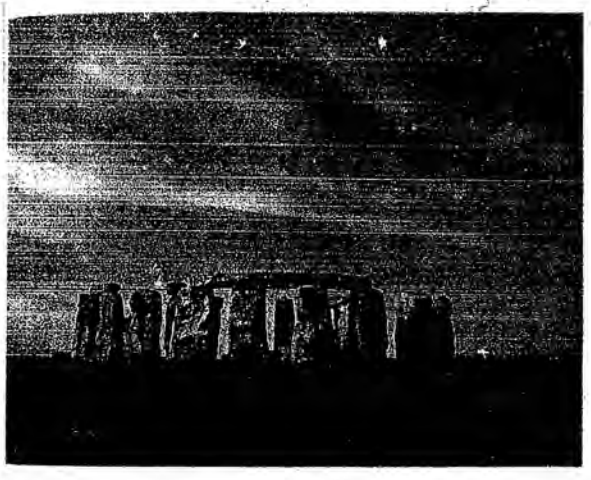


Fig. (3.10) Heelstone framed in arch way at Stonehenge

Source:http://www.soulsofdistortion.nl/links.html

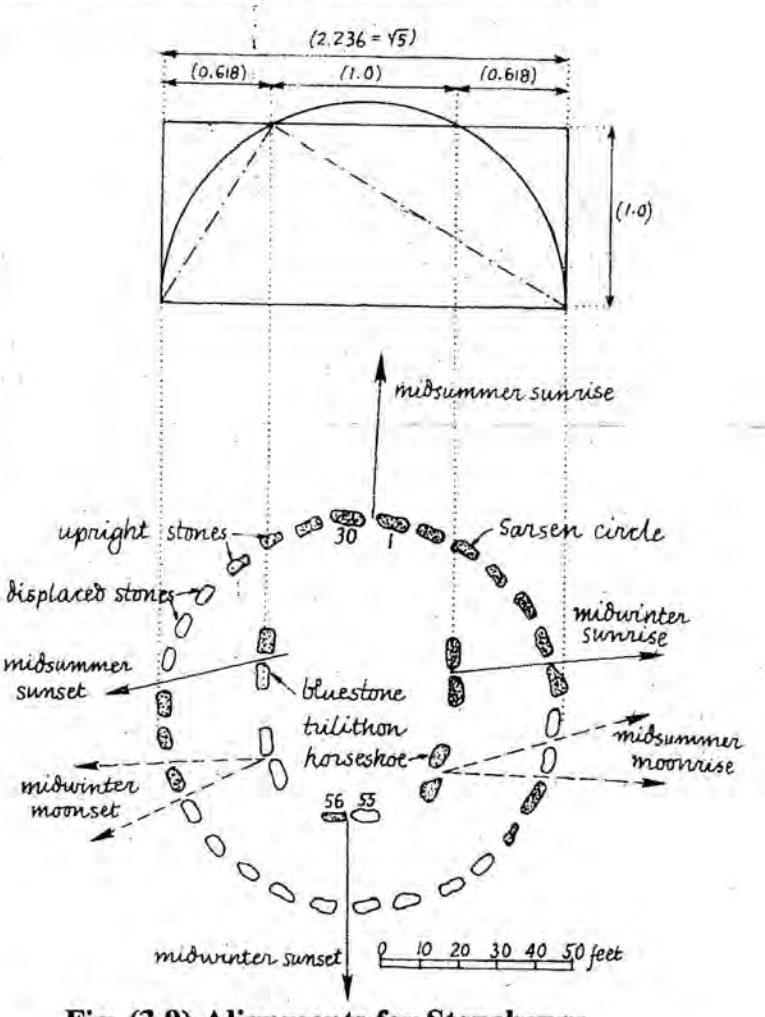


Fig. (3.9) Alignments for Stonehenge.
Sarsen Circle's diameter and width of bluestone Trilithon Horseshoe are in golden section relationship

Source: Doczi, G., "The Power of Limits", 1985

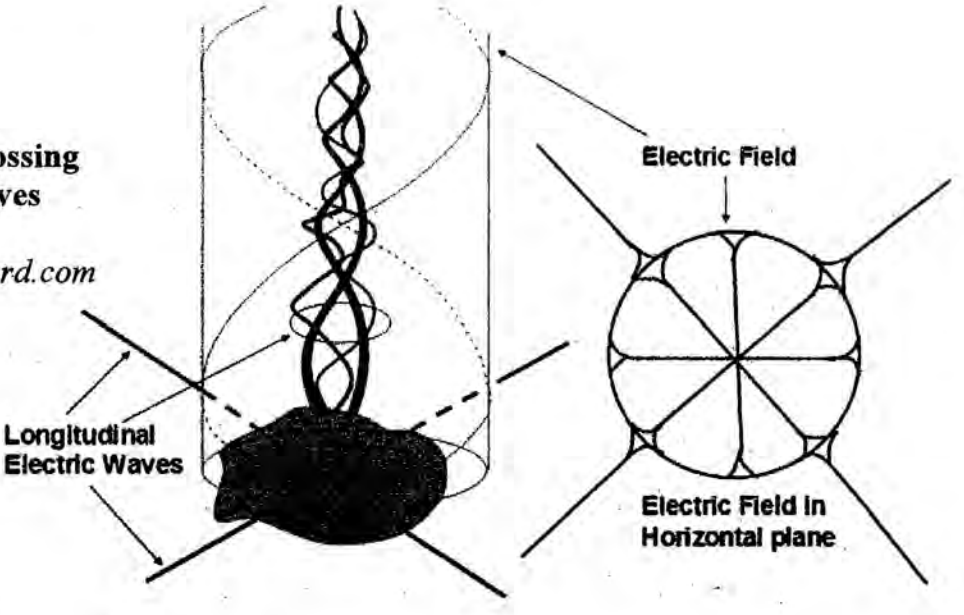


Fig. (3.11) Stone in two crossing longitudinal electric waves

Source: http://www.miklagaard.com

David R. Cowan in his research into the mystery of the Ley Line System "Standing Stones, Power Points, Ley Lines, and How They Work" mapped the patterns of energy around an ancient cup-marked stone in The Sma' Glen,north of Crieff, figure (3.12), (3.13). This, as it happened, was the key to the whole system of a very large area. Pecked out of the living rock, or on freestanding boulders like this one, carved on walls of sandstone rock like the beautiful engravings at Mauchline, Ayrshire, cup-marks have been discovered worldwide and have over one hundred theories as to their purpose.

Fig (3.12) The cup-marked stone in the Sma' Glen, near Crieff, Perthshire, Scotland

Source:http://www.leyman.demon.co.uk/Standing_Stones,_Ley_Line_and_Power_Points.html

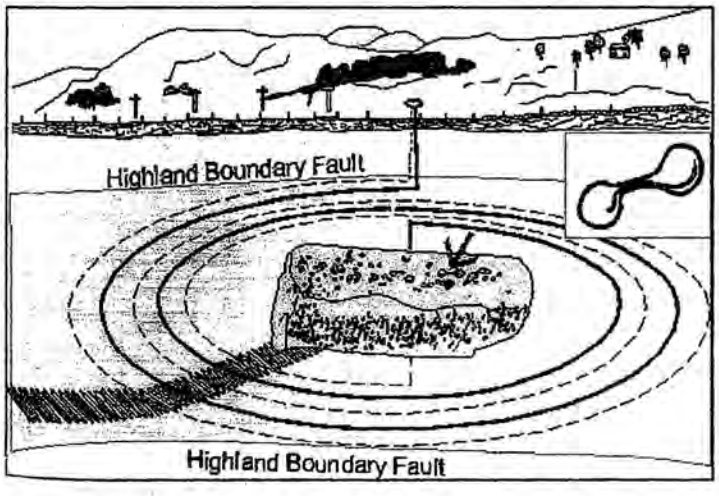


Fig (3.13) An Illustration of the Energy Emitted by The Cup-Marked Stone
A spiral of energy is emitted from the stone, travels in a dog leg (not shown) to a low cairn (top of illustration), then returns to the opposite side of the stone forming a circuit, a type of Ley line. This is the skeleton of the energies this stone emits depicted in the cup-marked Petroglyph (inset right) as a badly worn "S" shape. The arrow above the stone points to it location.

Source:http://www.leyman.demon.co.uk/Standing_Stones,_Ley_Line_and_Power_Points.html

3.3.3 Ancient Egyptian Architecture

The anthropomorphic associations in Egyptian religious life seem to have worked well for this ancient society since it provided the bridge between a multi theistic mythology rooted in nature and a monotheistic structure essentially placing the

monarchy above nature the representative god system paid homage to every major environmental force (James Wines, 2000).

The ancient Egyptian used the proportions of the human body for measuring short distances. For instance, the length of a man's forearm with the hand outstretched was called a cubit, which had several variants. The Egyptians a smaller cubit, which consisted of six "handbreadths" and a larger one, the royal cubit, which was seven handbreadths, see figure (3.14). The Egyptian "hand" was made up of the dimensions of four "fingers" or "digits". A further measure, the "fist" equaling one and a third handbreadths, was used by the Egyptian master-builders and craftsmen to establish the square grids used for the proportioning of their royal statuary. Many unfinished Egyptian sculptures have been found which have such grids, used by the artists and workers.

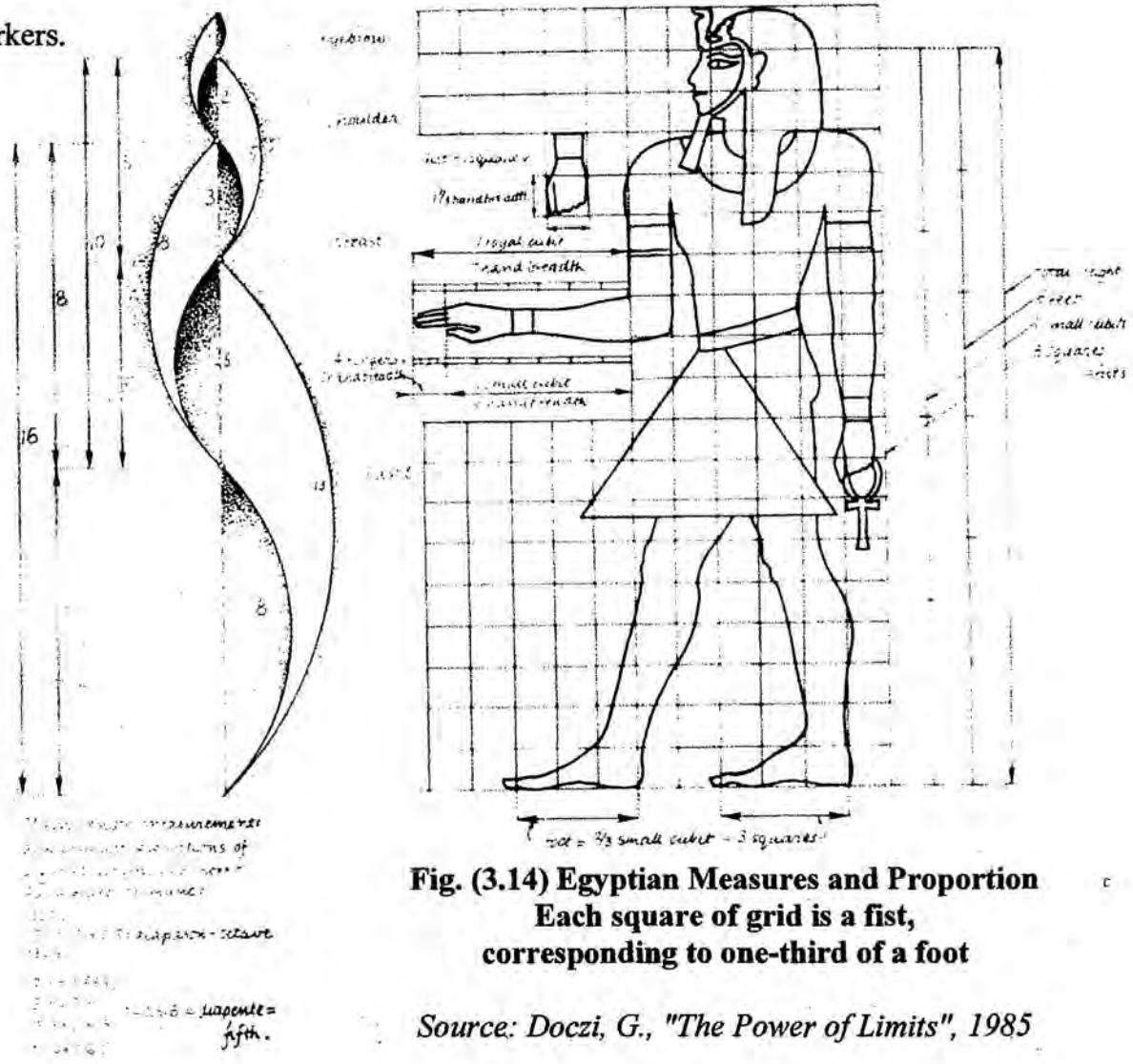


Fig. (3.14) Egyptian Measures and Proportion
Each square of grid is a fist,
corresponding to one-third of a foot

Source: Doczi, G., "The Power of Limits", 1985

The rhythmic wave diagram in figure (3.14) reveals how the main proportions of this figure share the harmonious proportions approximating the root harmonies of music. (Doczi, G., 1985)

Very little study has been devoted to design in architecture in Egypt. A . Violet-Le-Duc who wrote on architecture theory, recognized in the monuments of ancient Egypt the influence of a harmonic system but did not accept the idea that the artists of Thebes were governed by formulas. He suggested that the Egyptians used in the design of the great pyramid at Giza both the isosceles and 3:4:5 right-angle triangles and elsewhere the equilateral triangle.

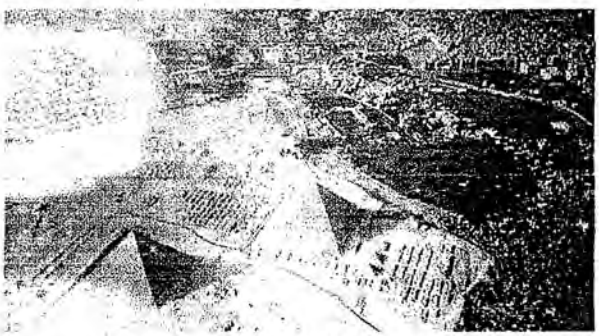
The architectural historian, Auguste Choisy was one of the few who treated the subject of design. His appreciation of Egyptian architectural design is based upon a thorough understanding of the methods presumably used. He recognized certain laws of proportion based on simple arithmetic and geometric relations, perhaps originating from the use of brick. He held the view that dimensions showed the occurrence of even numbers of metrological units, a system, which led to simple relations. Arithmetic relations featured such proportions as 1:2 or 3:4, while geometric or graphic ones were constructed by means of a 3:4:5 triangle, called the "triangle of Osiris" by Plutarch and which was considered sacred by the Egyptian. This triangle certainly played a basic role in Egyptian construction since it allowed the setting out of a right in the field by means of a rope of twelve units of length, wound about three pegs so that it formed a right-angle triangle with sides equal to 3,4, and 5 units. This method is still used by surveyors and builders and is probably the same one which the "rope fasteners," used in ancient Egypt. Choisy also recognized the use of the equilateral triangle whose height is related to its base as the lesser member of a mean

and extreme ratio, the golden section. Methods both arithmetic and graphic were combined to achieve harmonic design in architecture.

It can be concluded that Egyptian architecture was designed according to a harmonic system based upon the use of the square and triangles. Among the latter the 8:5 triangle was the most prominent. There is also sufficient evidence about the occurrence of the numbers from the Fibonacci Series in the significant measures in cubits in plans of monuments. The fact that both the 8:5 triangle allied with the square and the Fibonacci Series give a good approximation of the constant ratio of the golden section proves that the Egyptians became aware of the qualities of that ratio at least as early as the third dynasty . They adopted the geometric shapes of the square and the 8:5 triangle and produced their system of harmonic design where all the elements and the whole project are interrelated according to that approximate ratio. Whether the Fibonacci Series, essentially a primitive summation series, was the starting point of the system or an incidental result, is controversial. (Badawy, Alexander, 1965)

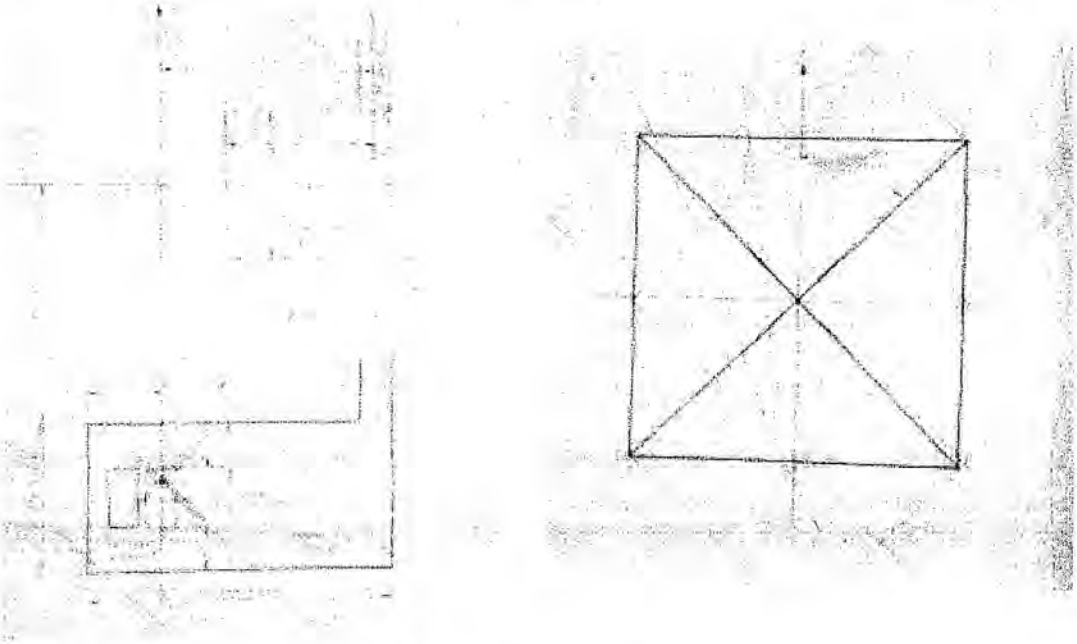
The high-energy content of some geometrical forms (the pyramid) together with the power of symbolism shaped the beginning of Egyptian architecture. A very advanced "know-how" of energy quality is evident when we analyze and use the shapes that they have developed thousands of years ago. A recent research showed that the Pyramids of Cheops, Khefren and Mykerions on the Giza plateau are aligned to the diagonal earth energy grids as shown in figure (3.15), (3.16).

Moreover, Kirlian photograph is illustrated the aura of a stone from the "Kings Chamber" in the Great Pyramid of Giza, which showed the evident fields of energy surrounding the stone, see figure (3.17). In addition, energy measurements were taken under the eyes of the Sphinx in front of the valley temple at Giza showed that the strength of energy fields reached 13500 energy units, figure (3.18).



The Pyramidof Cheops (Khufu), Khefren (Khafraa) and ...ions (Manquaraa) on the Giza plateau are aligned to the diagonal earth energy grids

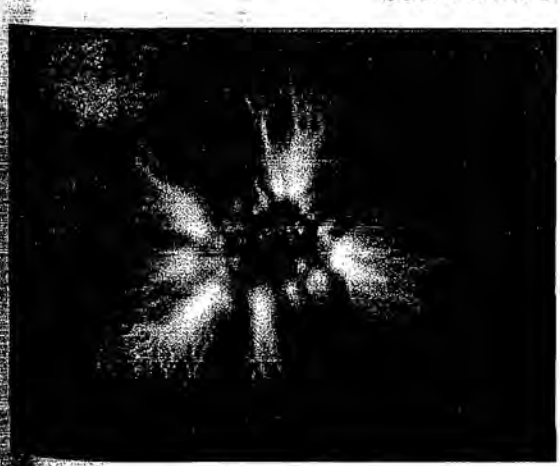
Fig (3.15) Grid Alignment of Giza Pyramids
Source: Ibrahim Karim, 2005



** The Pyramid of Cheops (Khufu) is aligned to the diagonal earth energy grids.*

** The Pyramid chambers were carefully designed on the gridlines. The head of the Sarcophagus is on the powerful energy grid crossing.*

Fig (3.16) Cheops Pyramid Grid Alignment
Source: Ibrahim Karim, 2005



...g (3.17) Stone from "Kings Chamber", Great Pyramid of Giza
...ource: www.kirlian.net/currentkirlian.htm

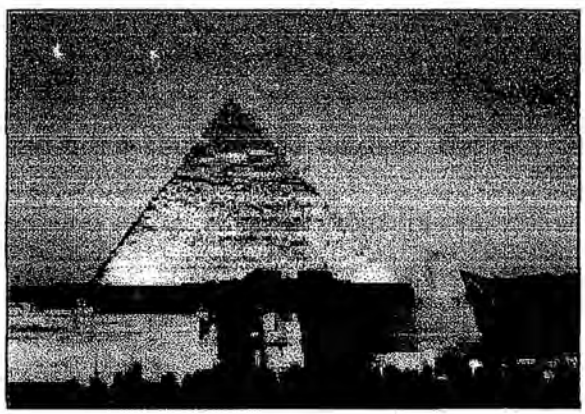


Fig (3.18) The Measurements of Energy in Sphinx Eyes Was 13500 Unit
Source: Blanch, Merz,Points of cosmic energy, 1985

Temple of Hathor at Dandara is another evidence, The recent research of Merz Blanch found more evidence that is corroborative; one subterranean stream is split as it approaches the temple, flowing around all four sides of a rectangle, below the temple as shown in figure (3.19). In addition to two patches of Hartman energy lines, each patch consist of seven lines intersect into one of the corner of the temple leading to amplifying the source of energy in this spot, which affects the space energy of the temple spaces.

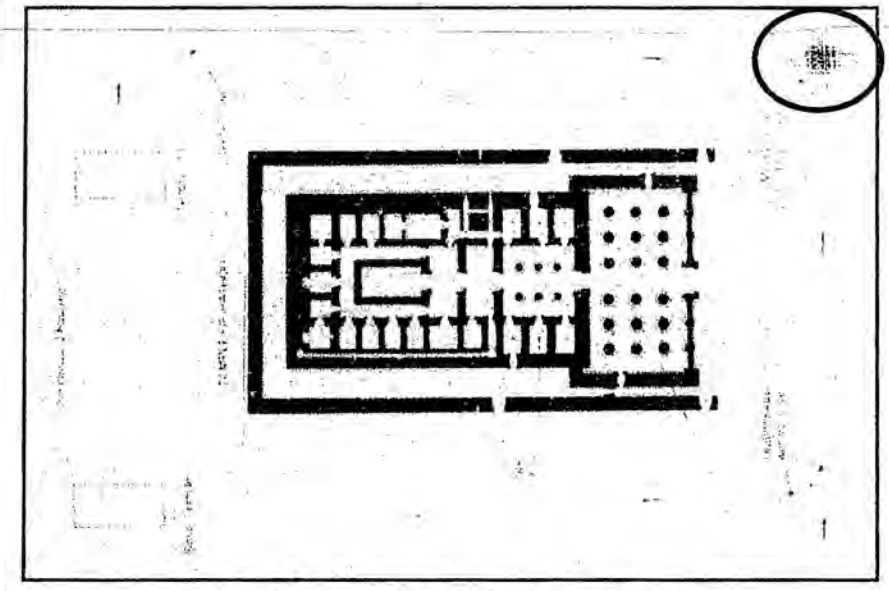


Fig (3.19) Temple Of Hathor , Dandara
Source: Blanch, Merz,Points of cosmic energy, 1985

In the vibratory domain, and especially in the matter of subtle vibrations, the Ancient Egyptians still have a head start on our trial and error methods. The viewpoint indicator of this receiver corresponds a little with the enormous sculpted zodiac on the ceiling of the upper gallery of the temple of Hathor. Experiments made with the device have demonstrated, for example, that the orientation of a wave coming from the east, a 90- degree wave which we have called the wave of Ra, the rising sun, gives a vital energy when applied to the human body. The wave found at 77 degrees, the wave of Isis, can heal today's malignant tumors. Applied research proves that this is not a casual claim. The multiplication of unhealthy cells is stopped by this method, and can ask the following question: might we not take this instrument for a perfect cellular equilibrator, being close to a frequency of 27 megahertz, that of the healthy

cell? We may also cite the wave of Path located at 65 degrees: this one has a psychological effect and was used in Ancient Egypt to prevent mistakes. The wave of Osiris located at "five minutes before midnight" and helps calm the dying, similar to an energy-consciousness expressed in the Ka as an etheric double for the body. ((Blanche Merz, 1985)

3.3.4 Ancient Chinese Architecture

According to the Chinese beliefs, the universe began with the infinite-Wuji-the invisible vital force, which was the very essence of its beings. Once it acquired from, it become the absolute- Taiji- the beginning of the physical universe that could not be known through our sense. The absolute, Taiji, breathed Qi, and created two forces, the Yin and the Yang, or negative and positive forces. Things thus created could either be Yin or Yang dominated. Yin, for example, dominated the earth, all that was negative, female, dark, soft, cold, dead, or still. Yang, on the other hand, dominated heaven and all that was positive, male, light, fiery, hard, warm, living, and moving. Yin and Yang permeated the whole of the universe whose very life and breath was Qi.

The Yin and Yang forces were not considered things in and of themselves. Most things in the universe, however, were the final products of Yin and Yang interaction were the five elements: metal, wood, water, fire, and earth as shown in figure (3.20). The five elements were the simplest forms of physical existence and were the essence of the physical universe that we human beings recognize through the five senses.

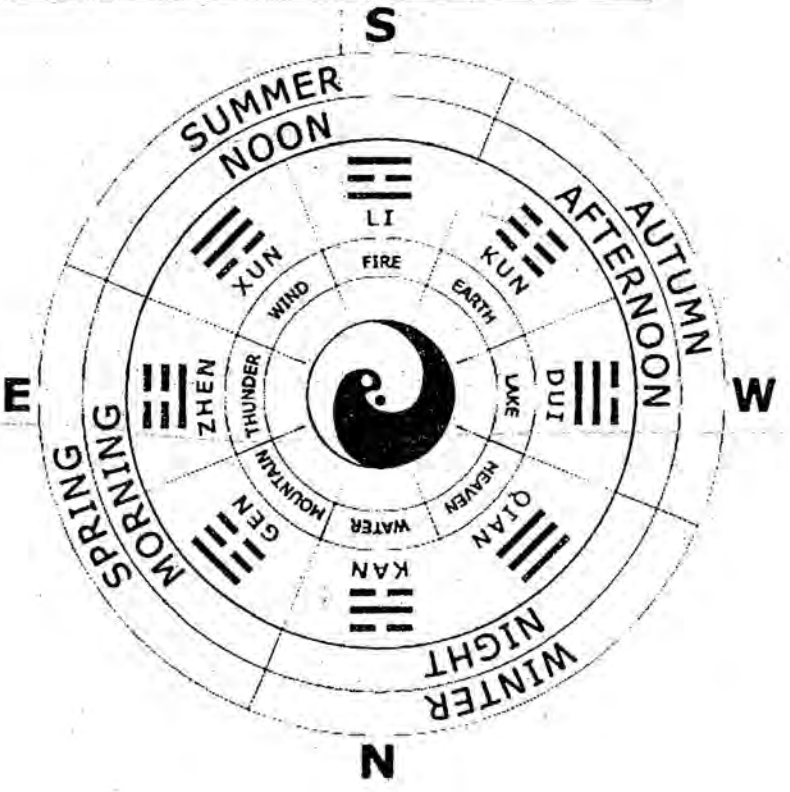


Fig (3.20) The Chinese Yin and Yang
Source: http://www.artic.edu/taoism/diag-trigram.php

The Chinese architecture was close to nature from ancient times until now and design has traditionally been fully integrated with the culture of country and belief systems. The principles on which it has been based include:

1. Harmony at all scales of design.
2. Integration with nature.
3. Strong cultural connections.
4. The importance of shared understanding of environmental meaning.
5. An emphasis on the process of experiencing design, not on form alone.
6. A focus on place making, not space planning.

Feng Shui is an ancient Chinese method of studying natural and "built" environment and has been practiced for thousands of years. This environment can be created at the office, at home, in a building, or on real property. Feng Shui analysis examines surrounding environment and building, showing how people interact with the building in space and time. Based upon these considerations, recommendations can be made on how to improve your relationship with the environment around you. Results include

comfort, health benefits, and well-being. Properly applied, Feng Shui recommendations can result in improvements in the life of the individuals who occupy the space. Feng Shui has been called the Chinese "Art of Placement," that balances the life energies, or chi, in a living space. Using simple "cures," it increases the flow of positive chi and subdues the negative flow. And according to the theory of Feng Shui, harmonizing our personal chi with the chi in the environment, puts us in harmony with the natural forces of nature and, in turn, results in a healthy, happy and prosperous life.

The origin of Feng Shui was addressed by Sarah Rossbach in her book Feng Shui: the Chinese art of placement. She explained:

> *"For all the mystery that surrounds it, Feng Shui evolved from the simple observation that people are affected, for good and homes. In addition, the Chinese have long observed that some surroundings are better, luckier, or more blessed than others are. Every hill, building, wall, window, and corner and the ways in which they face wind and water have an effect. They concluded that if you change surroundings, you could change your life. The aim of Feng Shui, then, is to change and harmonize the environment- cosmic currents known as ch'I (Qi) to improve fortunes."*

The aspects of traditional Chinese architecture that could prove to be of particular importance to the world today include the following:

1- Developing an awareness of the flow of psychic energy, the experiential quality, or, to put in the vernacular, the "vibe" of spaces.

2- Gaining an understanding of the presence of symbolism and of forms whose meanings are shared across a culture.

3- Addressing the spiritual, as well the pragmatic, aspects of space.

4- Considering the harmony of buildings landscape, and nature.

5- Learning about the integration of designing with the patterns of everyday life.

6- Adopting a concern with the impact of design on ecological systems of all types. (Mitchell, C. Thomas and Wu, Jiangmei, 1998)

The principles of Feng Shui show the strong relation between the architectural space, energy quality and surrounding environment to produce harmony and increase the quality of architectural space, which maintain inner and outer peace.

3.3.5 Islamic Architecture

Architect Garry Martin in his essay "Building in the Middle East Today- in Search of a Direction." Explained the concept of Islamic architecture as follows:

> *"The concept of Unity in multiplicity is the determining factor in integrating Islamic societies. Historically the revelation of Islam as expressed by the prophet Mohammed and the Holy Koran brought together the most diverse cultures and peoples from Spain across to India and beyond. The architecture of the Islamic world throughout history adapted and responded to different cultures and existing traditions of buildings without weakening the spiritual essence, which was its source of inspiration. Urban centers in Islamic cities evolved over long periods with generations of craftsmen whose sensitivity and experience added variety and a diversity of styles to the environment. The traditional Islamic city reflected a unity which related the architecture of the mosque, the madrassa , the souq, palace and the home as a sequence of spaces... The identity of the city lay in the relationship of its elements. These relationships were generated by the harmonizing of the community with the forces acting on it, that enabled the interaction of cultures, building methods and methods to evolve an Islamic identity in the same*

... language maintains its own identity even when it absorbs outside words."

It is also that Islamic architecture was in harmony with the people, their environment and their Creator. Martin explained that no strict rules were applied to govern Islamic architecture. Muslims used local geometry, local materials, local building methods to express in their own ways the order, harmony and unity of Islamic architecture. When the major monuments of Islamic architecture are examined, Martin writes, they reveal complex geometrical relationships, a studied hierarchy of form and ornament, and ... depths of symbolic meaning.

A new concept of unity has merged in Islamic architecture. It calls for unity as a base for life cycle. The principle of unity in Islamic architecture is applicable on horizontal projections as well as on radial and vertical projections.

One of the most striking features of the Islamic architecture is its focus on the enclosed space. Enclosed space, defined by walls, arcades and vaults. This is ...phasized not only by the phenomenon that little attention is paid to outside appearance or even visibility of any structure, but especially by the fact that most decoration (with the notable exception of the dome and the entrance portal) is reserved for the articulation and embellishment of the interior; there is an intimate ...nection between space and environment.

Islamic domestic architecture paid a great attention to maintain appropriate comfortable contrition within different spaces in house by using passive means. The ...ic building worked with all its architectural spaces elements and acted as an ...mental passive machine (entrance, court, makaad, malakoff, kaa, dorkaa, shogshekha, roof gardens, elmashrabia and the fountains) – all theses are parts of the whole system.

The spaces of the Islamic architecture, specially the mosques, have a Spiritual energy, ... cannot be found in any other spaces in different architectures. A recent research ... the relation between Soltan Hassan and energy grid lines, which indicated that ... mosque is aligned to the earth energy grids and two positive energy grid lines ... in the center of the dome as shown in figure (3.21).

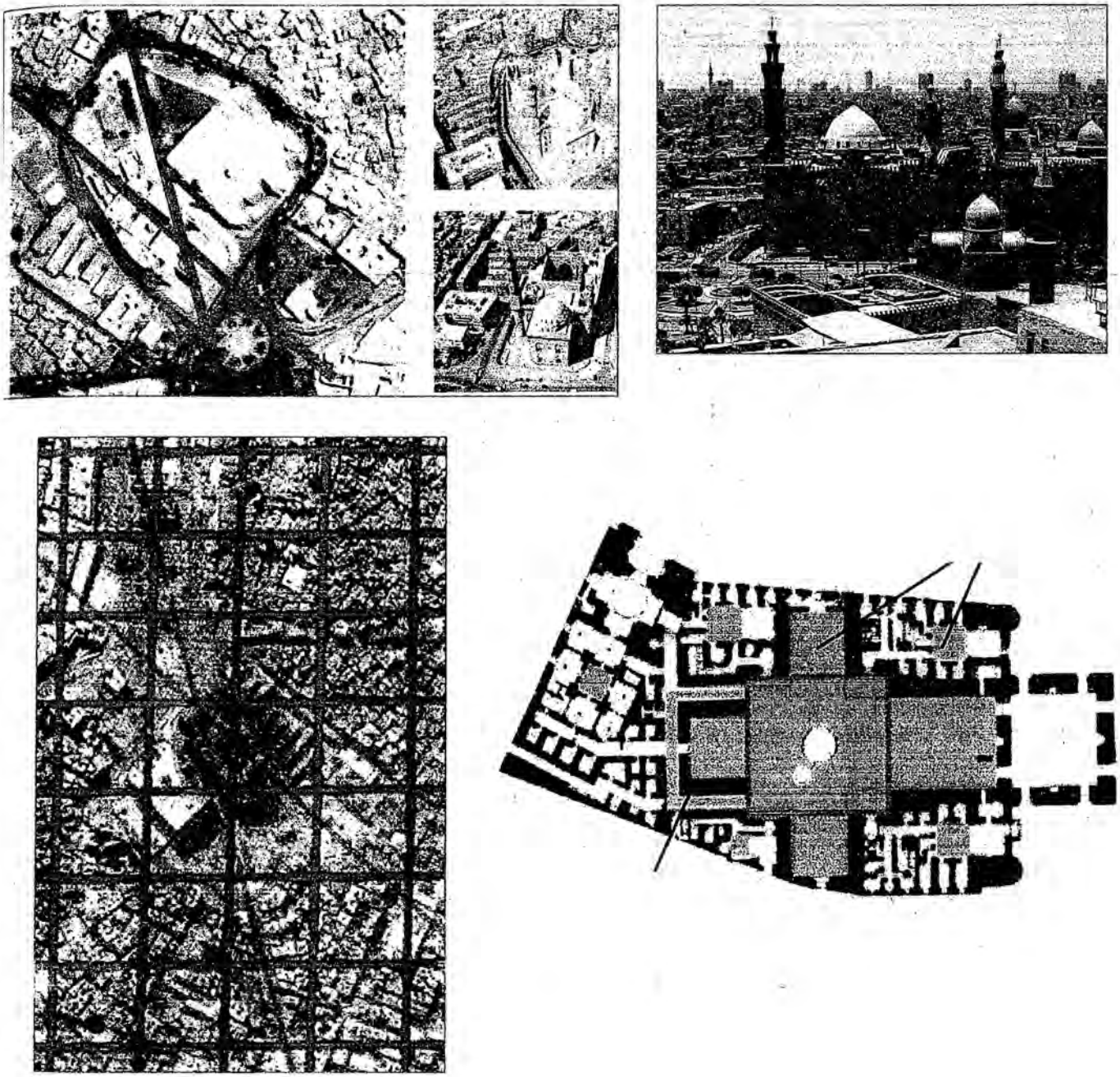


Fig (3.21) Sltan Hassan Mosque and Energy Gridlines
Source: Ibrahim Karim, 2005

3.3.6 Energy of Places

Energy of place is concerned with the relationship between our personal energy and the energy in places. It calls our attention to the cycles of change in energy that move through both our outer world and our own lives, and suggests ways to bring our lives

into harmony with those changes. It helps us find nurture in natural places and to make and use our own homes and work places so that they also sustain our lives and the rest of Creation. It shows how clear intention, giving welcome, honoring others, making places. That have a soul, and brining our ancestors and the spirit world into our everyday life can give richness and meaning to both our places and our lives.

With the diversity and unfamiliarity of chi-related actions that we can learn from various traditions, it is important to understand the relative significance and effectiveness of the different elements. Different situations have different needs. Different individuals and communities have different skills and traditions.

The philosophical view of the universe expressed by the Neo-Confucian philosophers is amazingly congruent with what we are confirming today, experimentally and experientially. However, the dynamics of our materialistic culture are so unprecedented that the truly significant actions needed today to align and improve the energy of place lie outside the normal areas of practice of any tradition of energy work.

The table that following is the list of elements of energetic of places, which was published by Tom Bender (2000), and his sense of the relative significance today. He argued that all the elements of the list would change, as we understand these elements more deeply. Moreover, all these elements interact with and affect each other.

Table (3.1) Elements of Energy of Places

Source: Bender, Tom, "Building with the breath of life", 2000

Element by Importance	Its nature	Actions	Duration
1 **Moving Beyond A Greed-Centered Culture**	To avoid and heal root energetic damage from greed-based patterns, which is far greater than energetic "cures" can heal. Beside this, all other actions pale.	* participatory rather than recreation and entertainment * work, learning, family, and institutional patterns that support our sense of doing valued work, contributing to our community, and our worth being acknowledged * All actions affirming a love- and life-centered world.	Finding alternatives to cultural values and patterns such as TV, tourism, and bureaucratic work patterns may offer the greatest and most enduring energetic benefit of any actions we can take.
2 **DIRECT RAISING AND NURTURE OF CHI**	To directly heal and augment energy of community and place- even more vital for community than for individual health. A practice almost totally neglected today.	* Group spiritual practice. * Community ritual and energy raising, "shamanic" practices. * Cathartic conflict resolution * Internal or external chi adjustments, blessings. * Use of mantras, mudras, yantras and visualization. * Simple actions by individuals and communities involving love and giving.	Sustaining direct rising of community chi is an on-going process. Repetition buildings long-lasting patterns.
3 **THE PERSONAL ENERGY OF USERS**	To affect our personal energy flows- which are, with few exceptions, the largest energy flows in our homes and communities.	* Individual spiritual practice. * Actions that enhance emotional health, self-esteem, or sense of being of value to our community * Practices that open us to deeper energetic flows in our surroundings. * Places that give shelter, nurture, challenge, and harmony to our lives. * Symbolic actions that affect our emotional and mental interface with our surroundings.	Successful individual changes can last a lifetime. Symbolic actions rarely survive the tenancy of a single user of a place or have the power of actions that actually alter underlying patterns.

Element by Importance	Its nature	Actions	Duration
4 Good **Natural Chi In Land** and Place	To find, enhance, and create Resonance with, natural flows and patterns of chi in place- not for advantage over others, but to communicate and interact more fully. Some chi of place comes from topography, some from how we have attuned the places we build to channel and enhance those energies.	* "Tangible" feng shui practices: from and compass school; adjustment to interior and exterior factors such as road, trees, hillsides or waterways; location of doors, beds, bathrooms or workplaces. * Dowsing to locate and move chi. * Calling in of energy balancing and enhancement. * Design of homes, gardens, and communities to focus and sustain place energy.	Good natural chi in land and place may endure for millennia, or change tomorrow due to new road cuts, underground water movement, dams, power lines, ground water withdrawal, etc. Requires monitoring to verify continuation.
5 Attention and Intention (Li)	To express clarity of intention and purpose in the soul of a place can be the most accessible way to change the energy of a place and its users.	* Consensus on place making goals and their alignment with goals of the rest of Creation. * Clarity in specifics of our actions, with those goals as touchstones. * "Hara"- based practices of individual action and group decision-making. * Ritual in the building process * Honoring work, materials, and the spirit world.	Intention can rapidly change energy of a place, but it can be countered by intention of others or existing energy patterns. Deep intention embodied in physical actions gives greater impact and duration.
6 **Design Harmony of Inner Patterns**	To achieve wholeness, a harmony of intention with inner patterns and attributes is essential. This is very much the opposite of conventional design, which focuses on outward appearances	* Creating place as invisible servants. * Tying to the cycles of nature * Honoring. * Gardens that nurture our spirits * Connecting to the community of nature. * Eliminating mirrors * Celebrating night, rain, and death. * Durability. * Putting love, giving, and silence into the places we make	Designs may last as the facility, negated by changes patterns.

Element by Importance	Its nature	Actions	Duration
7 **Relation to Ancestors and The Spirit World**	To achieve wholeness by reopening the doors to our ancestors, to the spirits, and to the non-material words- to honor and work together to manifest the great unfolding of Creation.	* Establishing temples, shrines, home altars, and sacred places. * Learning design of "gateways" to the spirit world. * Design and placement of tombs as in traditional feng shui; scattering of ashes; honoring of ancestors.	Acknowledging and restoring connection to the spirit world can result in enduring energy shifts. Individual actions will have different impacts.
8 **Clearing Cleansing and Clutter**	To focus intention and energy by simplifying and eliminating distractions. Clearing intention often precedes direct raising of chi, enhancing the energy of individual users or specific actions. In our materialistic lives, this is valuable for letting go of the past, or for its own benefits of achieving clarity.	* Dealing with the inheritance of good or bad chi from prior use of a place, such as death, bankruptcy, anger, divorce, or illness. * Internal clearing, such as fasting, meditation, or Zen training. * Balancing, freeing, or relocating bad chi and Li.	Dealing with clutter may last minutes or years, depending on how deeply inner patterns are changed. Internal clearing can create life-long change. Clearing inherited chi of a place can have enduring results.
9 **Specific Practices and Rules**	To attend to specific psychological, cultural, and ecological problems of people and place. This is a important and effective as a grand theoretical approach to a situation.	* Taking care of lighting, sanitation, ventilation, structural adequacy, and setting needed for rituals. * Applying traditional feng shui remedies for such classic problems as "T" intersections, heavy beams, or bad bed locations * Verifying applicability of rules by following your tummi-paying attention to what feels right.	Varies with individual situations and actions.

Element by Importance	Its nature	Actions	Duration
10 **Aligning with the Cosmos**	To symbolically embody philosophical, social, and cosmological principles; astrological principles; astrology, numerology, five elements, and the feng shui. Beyond any direct connections, aligning with the cosmos strengthens our will and sense of the context of our beliefs and actions. Major significance, very different from existing beliefs and practices, may await discovery here.	* Applying symbolism in house or city design * working with astrology of place. This takes two main forms- birth-influenced desires and needs for surroundings (Chinese Nine-star ki); and time-specific compatibility with places depending upon position in our personal time cycles (Chinese Eight Words or Four Pillars) * using the Elements (Earth, Air, water, Fire, and Metal in Chinese tradition) to alert us to the qualities of change cycles, particularly chi-related, to which we must relate. * Honoring traditions of cosmic connection from different cultures for elements of homes, villages, and ritual.	Individual birth needs are lifelong. Position in time cycles change periodically. Symbolism in design and layout has impact as long as aligned with beliefs of society and affirmed in fresh and clear ways.
11 **Attention To Outward Appearance**	To see, through appearances, what inner intentions are being manifested. Harmony, beauty, and balancing yin and yang in how things look are outer appearances do affect us and our perception of meaning.	* fine-tuning the esthetics, the physical expression, and the patterns of a place to enrich its ability to resonate with our hearts and our lives. * Maintaining inner intention as a touchstone so as to not fabricate appearances at odds with what lies within.	Affected by rate of change in society and society and how much "fashions" change our sense of beauty or harmony. The best work has enduring value. The worst loses value immediately.
12 **Other...?**	To look for what unanticipated elements might apply to your individual case. Every situation provides unique avenues of action that resist codification.	* Varies with situation	Duration varies with individual action and context.

3.4 Peace and Energy in Contemporary Architecture

> *"Architecture has always had a unique place among the arts in shaping the structure of human life within nature. Often that singular responsibility has meant translating a new technological capability into a mode of living, thereby promoting and accelerating it. At the beginning of the last century, the architecture profession took the new transformation as a challenge to create such a new architecture: more rational, more scientific, more open and more advanced than what came before. Along with this was a corollary of political liberation from the old aristocracies and the old bourgeois authorities. We would see the final completion of the grand Enlightenment project."* Mehaffy Michael W., 2005

It is agreed among some architects that people can see the failures of the technological architecture and identify some of its missing structural qualities. It is seen that while architects thought they were being sophisticated in the minimalism, they were in fact only manufacturing incompleteness on a profound scale. In so doing, they did great violence to the biosphere, and to the subtle but essential qualities of human life. They were bewitched by their own abstractions.

Three new environmental trends of the contemporary architecture will be discussed and explore the triangle of peace, energy and architecture in an environmental context. These trends are:

1. Cosmogenic architecture
2. Nano architecture
3. FAB Tree HAB architecture

3.4.1 Cosmogenic architecture[1]

3.4.1.1 Background

Architecture has always had some cosmic dimensions in traditional cultures. In Egypt, India, Greece, Japan and in the West through Renaissance, architects inscribed the cosmos in their buildings, oriented their structures to the propitious points of universe and represented it in details. Today architecture must also do these things, as well as going beyond this to our contemporary view; that is, cosmogenesis.

In the nineteenth century, the new sciences of thermodynamics and ecology introduced directionality and holism into the equations. Then, between (1900) and (1927) quantum and relativity theories overturned determinism. In the late (1940s) general systems theory, plus a series of life sciences and computer sciences started to grow, and by the late (1970s) the trickle had become a flood, yielding a new Consistent paradigm. Continuing the Post-Modern perceptions of the cosmos, Chaos theory, fractals, neural nets and Gaia have arrived on the scene. All of this can be generally conceived as the sciences of *complexity*, or nonlinear dynamics, or self-organizing systems.

Fundamentally, we started to move into a universe of cosmogenesis instead of a static cosmos (Charles Jencks, 1995).

3.4.1.2 Architectural Concept

What is the cosmogenic world view? It is the idea that the universe is a single, unfolding self-organizing event, something more like an animal than machine, something radically interconnected and creative, an entity that jumps suddenly to higher levels of organization and delights us as it does so. Complexity Theory, the Gaia hypothesis, Chaos and Quantum theories all point in tills direction.

Charles Jencks believes that 'the arts and architecture particularly should reflect this cosmic creativity'. Jencks has articulated the theory of a creative cosmogenesis to describe how the arts and architecture might reflect the processes of the (jumping) universe, its energy, its growths and sudden leaps, its beautiful twists, curls and turns; its catastrophes.

[1] Hend Elsayed Osman, "Space Energy", and "Total Thermal Comfort" ... A comprehensive approach to architectural space quality, Cairo university, 2004

(http://www.charleswalkerhazzard.com/publications/mono_wheeler.htm)

In Jencks's book "The architecture of the jumping universe" showed an illustration of a work by Jencks and Joanna Migdal, Universe Model, Mark II, figure (3.22).

The model represented the Cosmogenic as a spiral of growth generates a globe, which unfolds in distinct jumps.)

Charles Jencks introduced the "new organic architecture", the "Cosmogenic architecture", which he says is the built representation of developments in scientific theories of chaos and cosmic organizations. In other words, there is a cultural propensity for things to do with chaos theory and a view of a world ordered more by mayhem than generic and social regulation. The idea of cosmogenic architecture that architecture must be oriented to nature and culture must also have a larger orientation: the universe as a whole. The Cosmogenic architecture shows modern science more strenuously than the other trends of architecture.

Fig (3.22) Universe Model, Mark II by Jencks and Joanna Migdal, 1994
Source: Charles Jencks, The architecture of *the jumping universe, 1995*

3.4.1.3 Architectural Principles

The Cosmogenic architecture includes the following principles:

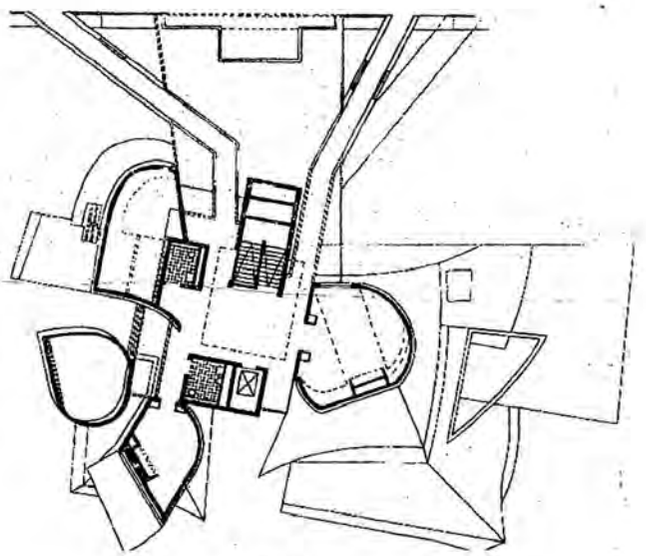
- Architecture must have a larger orientation: the universe as a whole.
- It should engage more than the eye and thought; it should involve the other sense in motion and movement, particularly the body.
- It is often more open to the metaphysics of contemporary science.
- Engaged actively in exploring the new science of fractals, Fuzzy logic, and chaos.
- More fluid and supple than the more familiar right-angled forms and it has a twisting, folding, wave form.
- Show both the cosmic propensity for variety – its most profound pattern – and mixing.
- The permanent art of architecture should represent the changing, sometimes ephemeral, nature of reality.

3.4.1.4 Architecture, Energy and Peace

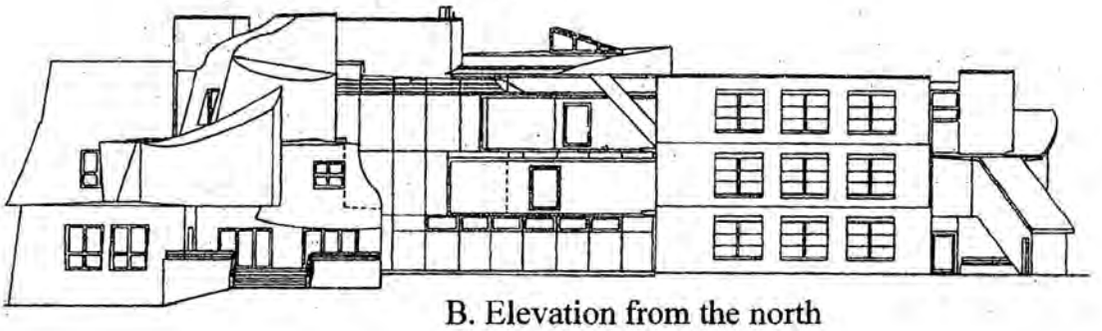
Table (3.2) Peace, Energy and Environment of Cosmogenic Architecture

Features		Cosmogenic architecture
Morphology	Shape pattern	Twisting, folding, wave form and interference pattern.
	Space type	Refreshing, spirited, harmonic space.
	Space relations	Floating and continuity relation between spaces.
Environmental control	Natural	Self-organizing systems.
	Mechanical	
	Totally	
	Partially	Intelligent controlled environment.
	Intelligent	
Envelope and boundary surfaces	Responsive	Responsive envelope using high tech.
	Materials	Using new materials.
	Exposure to surrounding environment	Exposed to the universe.
Health impact	Physiological & psychological impact	Highly efficient good impact on the physiological and psychological human conditions.
	Electro Magnetic Impact	Was not discussed
	Pollution	Provide clean interior environment.
Energy configuration	Consumption	Highly efficient.
	Resource	Renewable and non renewable resources are used.
Integration with nature		Highly integrated with the universe as a whole.
Energy concept		Energy flow is maintained mainly from using the characteristics of twisting, folding, waveform.
Peace concept		It is maintained through the balanced relation with the entire universe.

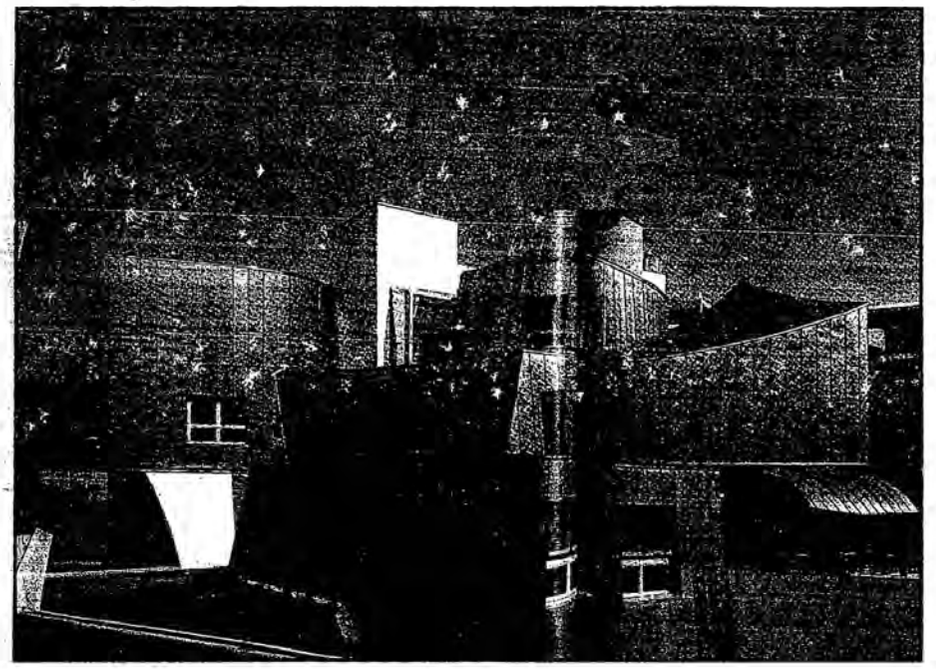
3.4.1.5 Examples



A. plan



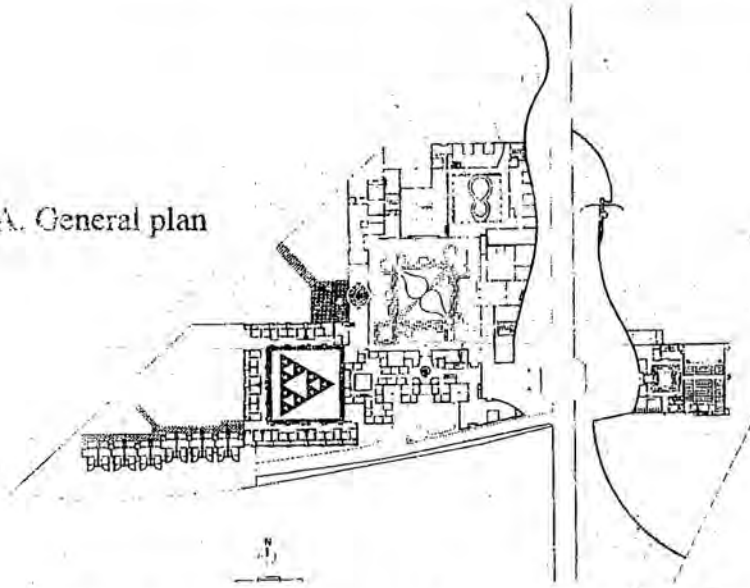
B. Elevation from the north



C. General view

Fig. (3.23) Frank Gebry, Vitra Headquarters, Switzerland, 1992
Source: Charles Jencks, The architecture of *the jumping universe, 1995*
Architecture of twists, waves, undulations, and smooth continuity

A. General plan



B. Black stone entrance

C. Central court yard

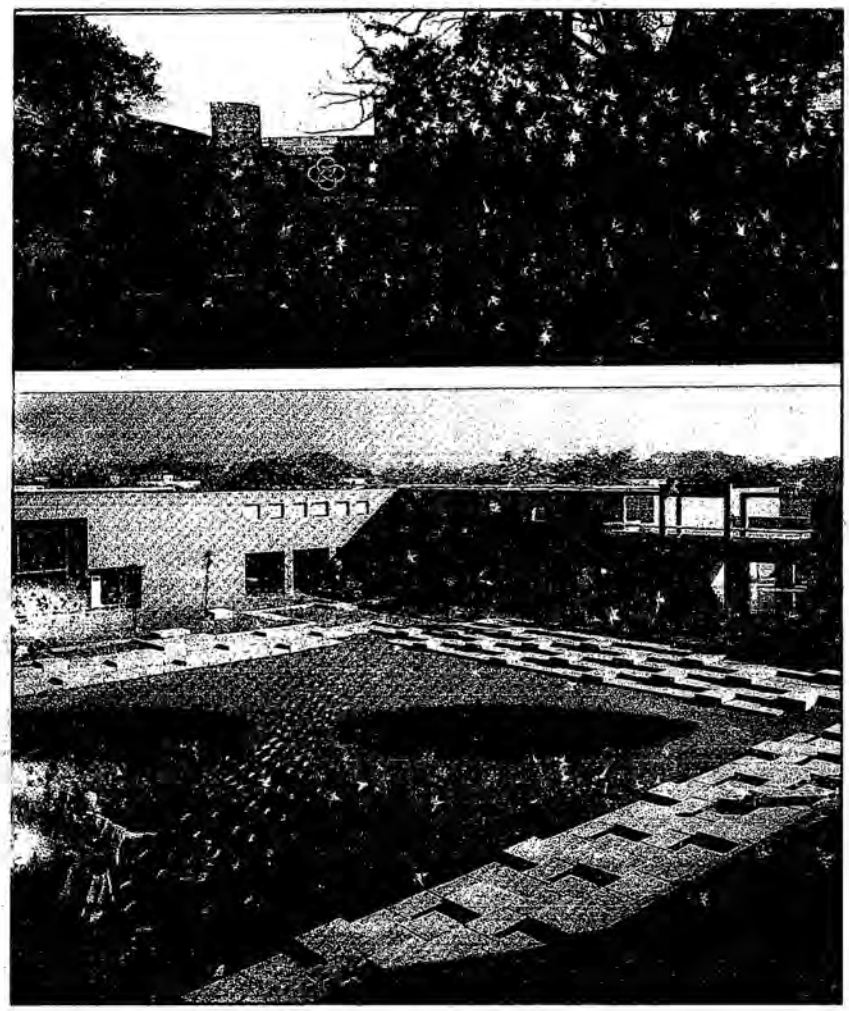


Fig. (3.24) Charles Correa, Inter-university Center of astronomy and astrophysics, India, (1990-1993)

Source: Charles Jencks, *The architecture of the jumping universe,1995*

Conceived as a model of the cosmos, Black stone entrance and center garden signify, respectively, the infinity of outer space and jets of energy emerging from a black hole.

3.4.2 Nano architecture

3.4.2.1 Background

In Wikipedia, Nanotechnology refers broadly to a field of applied science and technology whose unifying theme is the control of matter on the atomic and molecular scale, normally 1 to 100 nanometers, and the fabrication of devices with critical dimensions that lie within that size range. It is a highly multidisciplinary field, drawing from fields, such as applied physics, materials science, interface and colloid science, device physics, supramolecular chemistry (which refers to the area of chemistry that focuses on the noncovalent bonding interactions of molecules), self-replicating machines and robotics, chemical engineering, mechanical engineering, biological engineering, and electrical engineering. Much speculation exists as to what may result from these lines of research. Nanotechnology can be seen as an extension of existing sciences into the nanoscale, or as a recasting of existing sciences using a newer, more modern term.

Molecular nanotechnology (MNT) represents a new phase in the evolution of man-made structures. The central thesis that nanotechnology is "capable of producing almost any chemically stable structure that can be specified" was first advanced by the physicist Richard Feynman in 1945. prompted by Feynman, physicist-designer William Katavolos expanded the study of MNT to the growth of architecture, foreseeing the production of large floating city. Katavolos remarks, "we are rapidly gaining the necessary knowledge of the molecular structure of these chemicals with the necessary techniques that will lead to the productions of materials that will have a specific program of behavior built into them."

Advanced studies link the processes of DNA with molecular growth. James Watson and Francis Crick discovered that DNA directs ribosomal machinery to build other

Physicist K. Eric Drexler, the founding father of nanotechnology, has advanced realistic procedures for designing simulated molecular structures. Accordingly, Drexler proposes that artificial DNA, or coding devices, be developed and employed in structuring matter to the service of mankind. Within the molecular structure, atoms of various chemical make-up are selected, assembled in particular patterns, and programmed to replicate themselves, thus enabling immense workforces to produce of almost any design. The molecular structure harnesses the energies from chemicals and electricity, rather than conventional human labor and current major power sources.

Nanotechnology will soon change industrial production by introducing labor-free manufacturing. This will directly influence our health, welfare, comfort, and prosperity. The molecular assembler breakthrough will transform our entire manufacturing process; for this, we must prepare. As with previous technological revolutions, MNT will present new ways of thinking about society and ourselves, and exact the same moral responsibilities. (John M. Johansen, 2002)

3.4.2.2 Architectural concept

As we move into the future, the field of molecular engineering represents a new frontier for architecture. In the process of computer coding, buildings will be designed, grow, and perform just as living organisms directed by their built- in DNA. At some point the relationship between the building and the living organism will be more than the subject of analogy; they will be one and the same.

The molecular building process is not biological, but mechanical; living cells are replicated by dividing, assemblers replicate mechanically, by building others. As Drexler has written: "the great difference is that nanotech use not veins but conveyor

belts, not muscles but computers, not cells diving but small factories producing products and additional factories."

Assemblers are robots, or "nanobots," with communicative powers that in collaboration can build anything they are programmed to build. They are organized by their "foreman," the seed computer, into specialized building crafts that operate as part of a vast construction project. Mechanical assemblers are expected to employ a greater variety force, control, and precision than ribosome can in nature.

3.4.2.3 Architectural principles

- **Coding**

Artificial DNA, or coding, is essential to the process of molecular nanotechnology. If molecular structures are to reproduce and build products, they must be given directions as to what to build, how, when, and where. "It is important to know that molecular assemblers cannot build anything by themselves," writes bill Spence." All products familiar today and inventions of future products to be built by MNT, must be re-designed, engineered, molecularly modeled... and translated into functional software."

It is possible, at this time, to transfer the exact pattern of DNA to an artificial code. Architect-morphologist Haresh Lavani states, "coupled with biological (DNA based) or other (chemical-physical) building processes, the artifical genetic cod enables, growth, adaptation, evolution, and replication of buildings permitting architecture to design itself." Regarding evolution, recent research by Lipson and Prilock of Brandeis university's Deno-lab has revealed that robot evolution is close to realization. They have designed robots that reproduce according to performance, simulating natural selection and the process of evolution in nature.

In his book *An Evolutionary Architecture*, the British computer technician and visionary John Frazier states that "our description of an architectural concept encoded is analogous to the genetic cod DNA script in nature—we go beyond present blueprints and specifications to a coded set of genetic instructions called a "genetic language of Architecture," He describes his project, universal constructor (1990), as a "tool for the explanation and demonstration of a radically new design process," certain buildings familiar to us have already been coded as to schema, plan, section, mass, dimension, material, detail, and construction strategy. Newly designed building concepts can be easily coded as well.

- **Environmental considerations**

The "seed," or coding device, will replace conventional blueprints, specifications, and conventional blueprints, specifications, and construction procedures. In regard to ecological relationships, the seed contains instructions with feedback allowing the new building to respond to its immediate surroundings. So far, the most extraordinary proposal put forth is that of coordinating the artificial coding of a building with the DNA of a living environment.

- **Architectural expression**

Looking back from the future, our present buildings will seem quaint. As we anticipate such buildings of strength, lightness, integral structure, seamless continuity of surface, transparency, and evolving, growing forms, molecular nanotechnology will reshape the man-made environment. These new characteristics explain how the molecular growth process, subject to architectural design orchestration, will insist, in its own right, to express itself.

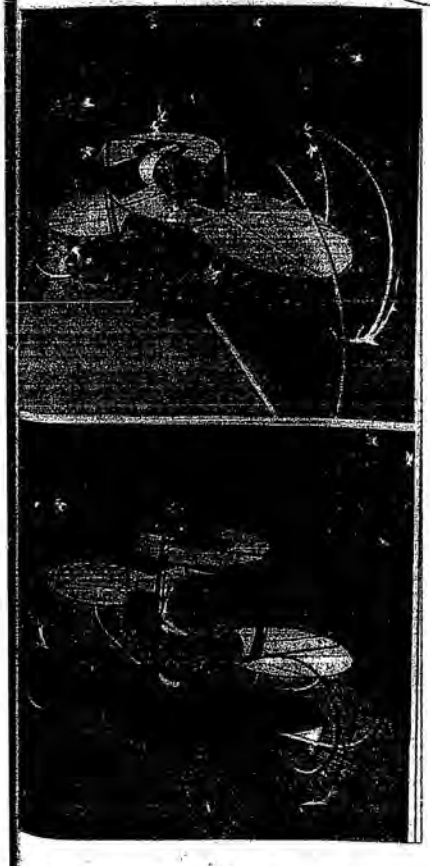
3.4.2.4 Architecture, Energy and Peace

Table (3.3) Peace, Energy and Environment of Nano Architecture

	Features	Nano Architecture
Morphology	Shape pattern	Natural and dynamic patterns
	Space type	Grow, and perform just as living organisms directed by their built- in artificial DNA
	Space relations	Floating and continuity relation between spaces.
Environmental control	Natural Mechanical Totally Partially Intelligent	Self-organizing systems. Intelligent controlled and highly responsive environment.
Envelope and boundary surfaces	Responsive	Contains instructions with feedback allowing the new building to respond to its immediate surroundings.
	Materials	Using natural materials.
	Exposure to surrounding environment	Integrated with the surrounding environment.
Health impact	Physiological & psychological impact	Healthy and friendly spaces
	Electro Magnetic Impact	Grow and be part of the earth electromagnetic fields so it should be taken into consideration the site of the building and its energy fields.
	Pollution	Provide clean interior environment.
Energy configuration	Consumption	Highly efficient.
	Resource	Renewable resources are used.
Integration with nature		Highly integrated with the nature.
Energy concept		Energy flow is maintained mainly through the relation with the earth.
Peace concept		It will be maintained through resonance with the universe. The building is part of the nature and if the energy quality was taken into consideration, the building will be in a balanced relation with the universe as a whole.

3.4.2.5 Examples

- **Example1**



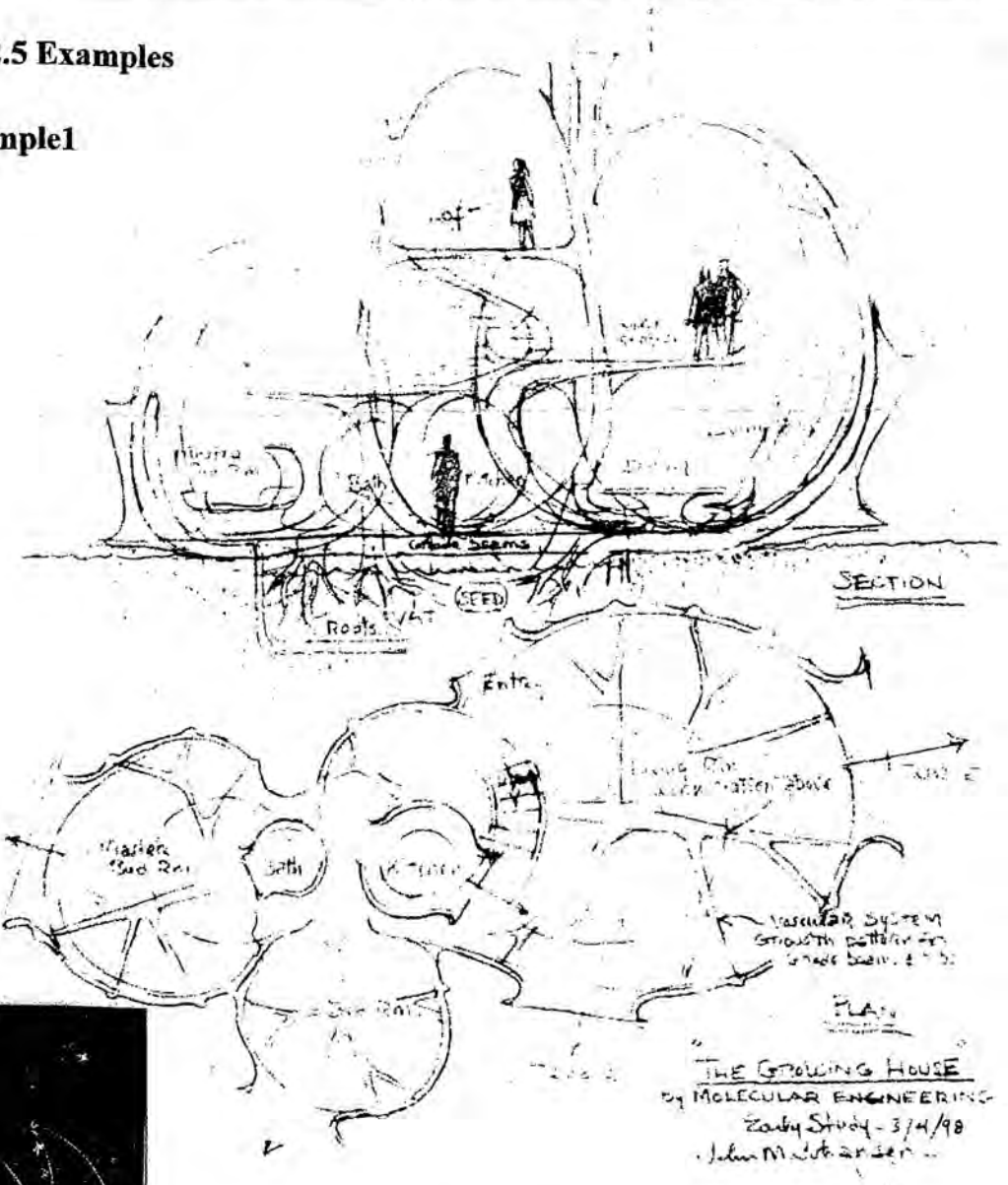


Fig. (3.25) Johan M. Johansen, Molecular-Engineered House, (for the year 2200)
Source: Johan M. Johansen, Nanoarchitecture, 2002

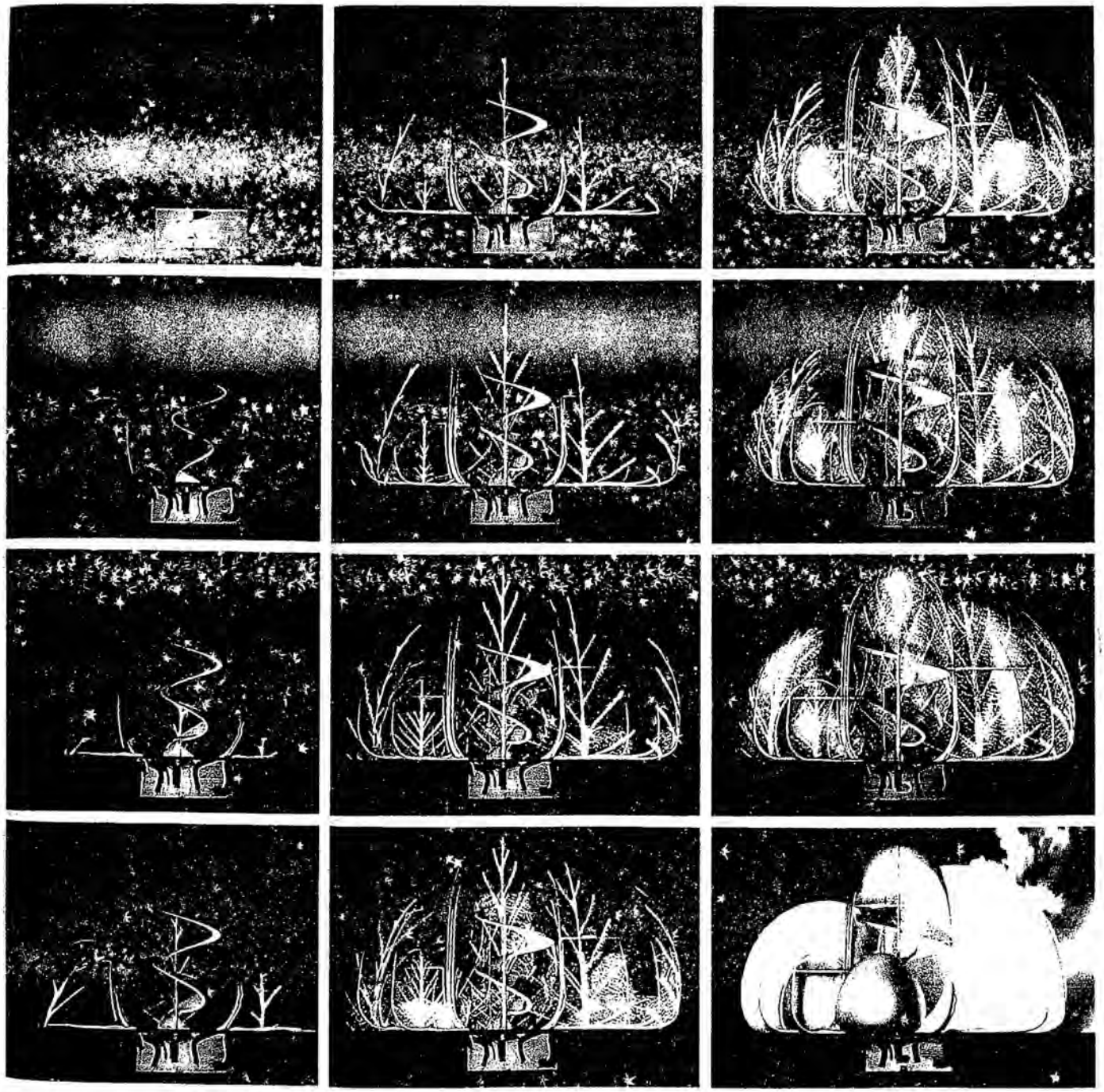


Fig. (2.26) Johan M. Johansen, Forming Process of Molecular-Engineered House
Source: Johan M. Johansen, Nanoarchitecture, 2002

The house is self- sufficient, functioning without dependence upon any outside public services. Solar power activates heating, cooling, recycling of wastes, and purifying of water. Interior finishes grow also. "Body support," known previously as sofas, chairs, tables, and beds, are springing up from the floor, out from the wall ribs, and hanging from the arched vault-furniture as an extension of the structure itself. The floor, a "morph able topographic carpet," consists of a resilient, molecular, spongy substance that is responsive to comfort, whim, or tactile experience.

- **Example2. Multistory Apartment Building**

For further demonstration of molecular engineering in more complicated building types, other than houses, Johan M. Johansen proposed this project, a multistory apartment. In this case, we consider a more sophisticated structure, grown in stages, controlled by more intricate coding strategies.

First, we may fairly assume that the molecular growth processes, though more extensive in this case, are the same as for the molecular-engineered house. From Vats at the building site, root, stalk, branch, platform, lattice, membrane, and openings develop. Light control, self-cleaning, repairs and demolition systems also emerge.

As a structure of this size requires a larger layout of supporting columns, it would be required that a number of vats be assembled and filled together at the site, each to feed a cluster of stalks or columns, each supplied with the same or different codes, which must be strictly coordinated. Growth of the structure would then be in stages; say, in four- six-story increments in accordance with rental and marketing analysis; when necessary, growth could be arrested, to be activated at another time. Replenishing the bulk material in liquid form in the original vats would fuel subsequent stages.

Looking back from our future time, we would remember uniformly designed dwelling units in which there was little latitude for personal expression, and consider them inhuman. Intricate coding systems will facilitate a greater diversity, particularly in interior design. Suppose the basic building structure proceeds in growth according to the directives of a central, all-inclusive code to achieve the entire structure, dwelling units and all common basic services. However, suppose then that each dwelling unit provided a separate local vat, and within it a separate cod that could prompt growth of personalized interior design-growth within growth, as it were. Such specific codes could be readily acquired from the local rental agent, or custom designs could be

produced by designers of the tenant's choice offering any interior, from styles past to contemporary to something imagined. Remodeling partition layout, lighting, surface materials, and furniture within the dwelling unit would be of little complication. However, the basic form and character of both the houses and apartment exterior and interior will, or honestly should, express the growth process.

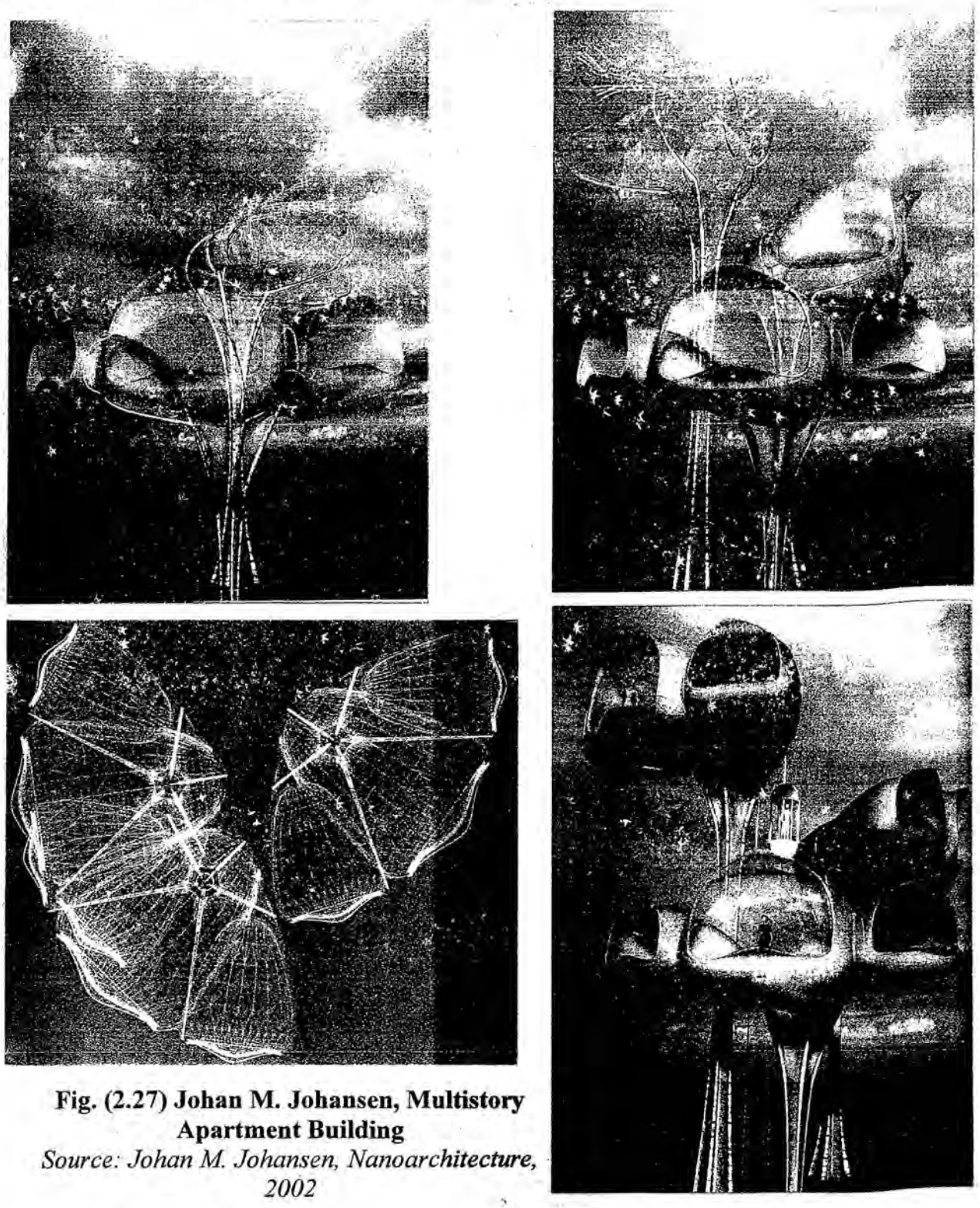


Fig. (2.27) Johan M. Johansen, Multistory Apartment Building
Source: Johan M. Johansen, Nanoarchitecture, 2002

3.4.3 FAB Tree HAB Architecture
(http://www.archinode.com/bienal.html)

3.4.3.1 Background

As a direct contribution to building knowledge in the fields of architecture and urban design, the FAB Tree HAB supposes ecology as the main driver for dwelling. It is a fully ecological home design developed at Massachusetts Institute of Technology (MIT) by Team H.E.D. (Human Ecology Design) in 2003.

Furthermore, the approach stems from Jeffersonian ideologies in regards to equalizing edification and ecology. In the mind of Thomas Jefferson, the measure of any single human gesture was its contribution to the individual's pursuit of happiness. He believed humans had natural rights. He devoted most of his life to a revolution ensuring the rights of agrarianism and education. This was vital to a citizen's personal livelihood in an agrarian economy within a nascent system of government. Universal access to education was critically linked to sustenance thus, the "gentleman farmer." Jefferson essentially would advocate ecological principles applied to human habitat so that each person can live off the land without detriments. He could have never imagined a human race that ignored the right to freedom from toxicity, carcinogens, and ozone depleting substances.

The FAB Tree HAB not only attempts to provide a healthy biological exchange with the inhabitant, but also strives to contribute in a positive way to everyone's quality of life.

In congruence with ecology as the guiding principle, this living home is designed to be nearly entirely edible to provide food to some organism at each stage of its life cycle. While inhabited, the home's gardens and exterior walls continually produce nutrients for people and animals. As a direct contributer to the ecosystem, it supports

an economy comprised of truly breathing products not reconstituted or processed materials. Imagine a society based on slow farming trees for housing structure instead of the industrial manufacture of felled timber.

3.4.3.2 Architectural Concept

Future-forward designers are concocting tree houses that live and "breathe," such as the FAB Tree HAB. It uses high-tech computer modeling and ancient techniques such as pleaching, which weaves together living branches and trunks to create walls and ceilings.

The FAB Tree HAB concept resolutely accumulates the inscribed nuances that influenced the American Rustic period. Stemming from the insurgent writings of Thoreau, Emerson, Whitman, and Alcott, America defined a sensibility. These authors represent an early mode of intention that was profoundly ecocentric. Their notion of dwelling was envisioned as retreats, poets' bowers, hermitages, and summer cottages in a Sylvan style. In 1847, it culminated in the self-made assembly of a crooked cedar and honeysuckle summer home by Thoreau and Alcott for their friend Emerson in the midst of a cornfield. This peculiar house served as our point of departure. Here traditional anthropocentric doctrines are overturned and human life is subsumed within the terrestrial environs. Home, in this sense, becomes indistinct and fits itself symbiotically into the surrounding ecosystem.

3.4.3.3 Architectural Principles

This home concept is intended to replace the outdated design solutions at Habitat for Humanity International. The goal was to propose a method to grow homes from

enables these new local dwellings to be a part of a green community. The ...tectural principles are:

1. Composed with 100% living nutrients.
2. Harmonize & embrace growth.
3. Make effective contributions to the ecosystem.
4. Accountable removal of human impacts.
5. Involve arboreal farming & production.
6. Subsume technology within terrestrial environs.
7. Circulate water & metabolic flows symbiotically.
8. Consider the life cycle from use to disposal.
9. Achieve fitness with our earthen web of life.

- **Structure, form and growth**

A methodology new to buildings yet ancient to gardening is introduced in this design pleaching. Pleaching is a method of weaving together tree branches to form living archways, lattices, or screens. The trunks of inosculate, or self-grafting, trees, such as Elm, Live Oak, and Dogwood, are the load-bearing structure, and the branches form a continuous lattice frame for the walls and roof. Weaved along the exterior is a dense protective layer of vines, interspersed with soil pockets and growing plants. Templates, cut from 3D computer files control the plant growth in the early stages. On the interior, a clay and straw composite insulates and blocks moisture, and a final layer of smooth clay is applied like a plaster to dually provide comfort and aesthetics. Existing homes built with cob (clay & straw composite) demonstrate the feasibility, longevity, and ...ability of the material as a construction material. In essence, the tree trunks of this ...e provide the structure for an extruded ecosystem, whose growth is embraced

over time. Living examples of pleached structures include the Red Alder bench by Richard Reames, 'Sycamore Tower' by Axel Erlandson.

- **Renewal**

The seasonal cycles help the tree structure provide for itself through composting of fallen leaves in autumn. Seedlings started in such a nutrient rich bed may provide the affordable building blocks for a new home typology, firmly rooted to place. Likewise, realization of living structures would introduce forest renewal to an urban setting. Building of these homes occurs throughout a longer time. However, the benefits are enjoyed as long as the trees live, after which another wave of renewal begins.

- **Life sustaining flows**

Water, integral to the survival of the structure itself, is the pulmonary system of the home, circulating from the roof-top collector, through human consumption, and ultimately exiting via transpiration. A gray water stream irrigates the gardens, and a filtration stream enters a Living Machine, where it is purified by bacteria, fish, and plants that eat the organic wastes. Cleaned water enters the pond, where it may infiltrate the soil or evaporate to the atmosphere. Water consumed by the vegetation eventually returns to the water cycle through transpiration, simultaneously cooling the home.

- **Skin**

Fundamental to the flux of the water cycle is solar radiation, which furthermore drives heating and ventilation. In the winter, sunlight shines through the large south-facing windows, heating the open floor-space and thermal mass. The reverse is true in the summer, as the crown of the structure shades itself from extreme temperatures, instead using the sun's energy for photosynthesis. Two levels of operable windows

set up to encourage open ventilative flow, drawing in cool air at floor level. An active solar hot water system heats the home through an array of radiant floor pipes. Technology inspired by nature also explicitly engages it to provide water and growth to the habitat. The Hull section illustrates design for water flows: a roof-top trough harvests water for human use; the plumbing system is positioned to provide for gravity-induced flow and gray-water reuse; a composting system treats human waste and will later return nutrients to the eco-system.

Rethinking budget

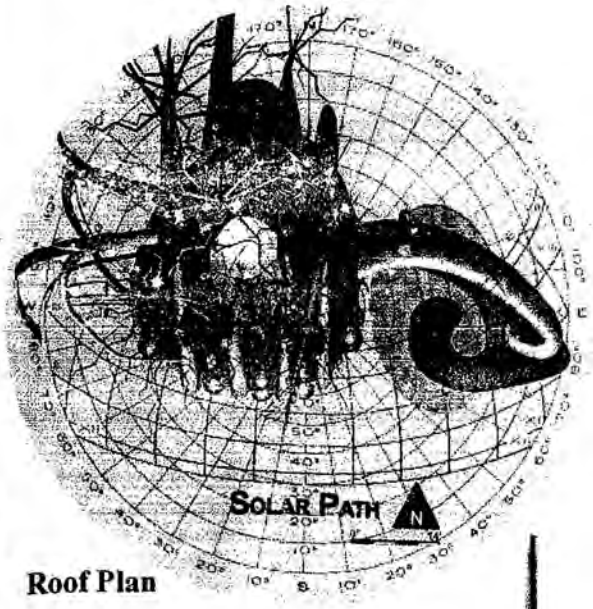
In departing from the modern sense of home construction, compilation of a budget for this prototype inherently opens the debate surrounding decision-making and green architecture. It is widely acknowledged that life-cycle costing methods would provide more favor to conscientious home designs by including energy cost savings and, more indirectly, accounting for reduction or elimination of externality costs. However, this falls short of recognizing the compound and continuous value of sustainable housing as an interweave of systems, and it still places too much value on benefits received today as opposed to tomorrow or hundred years from now. By rejecting the tendency towards immediacy and, likewise, first cost dependency, a true representation of sustainable value can be achieved by explicitly recognizing the adaptive, renewal, cooperative, evolutionary, and longevity characteristics of the home. This design explores the concepts in that debate by including all five traits.

3.4.3.4 Architecture, Energy and Peace

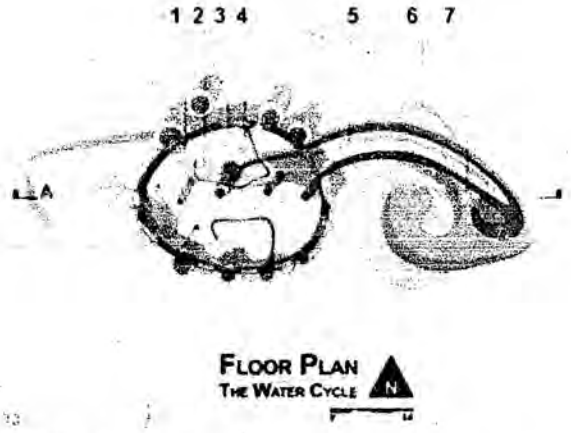
Table (3.4) Peace, Energy and Environment of of FAB Tree HAB Architecture

Features		FAB Tree HAB architecture
Morphology	Shape pattern	Composed with 100% living nutrients and patterns.
	Space type	FAB Tree HAB depend on the concept of Pleaching which is a method of weaving together tree branches to form living archways, lattices, or screens.
	Space relations	Systematic space relation depending on the fields of energy inside space
Environmental control	Natural	Natural, harmonize and embrace growth.
	Mechanical	
	Totally	Intelligent environmental control.
	Partially	
	Intelligent	
Envelope and boundary surfaces	Responsive	Highly responsive.
	Materials	100% living nutrients materials
	Exposure to surrounding environment	Make effective contributions to the ecosystem. Accountable removal of human impacts
Health impact	Physiological & psychological impact	Good impact on the physiological and psychological human conditions.
	Electro Magnetic Impact	Grow as a part of electromagnetic fields of the earth so energy fields of the site should be taken into consideration.
	Pollution	Provide clean interior environment.
Energy configuration	Consumption	Highly efficient.
	Resource	Renewable energy.
Integration with nature		Grow as part of the nature.
Energy concept		Energy flow is maintained mainly through the relation with the earth.
Peace concept		It is maintained through harmony of spaces with nature and achieves fitness with our earthen web of life.

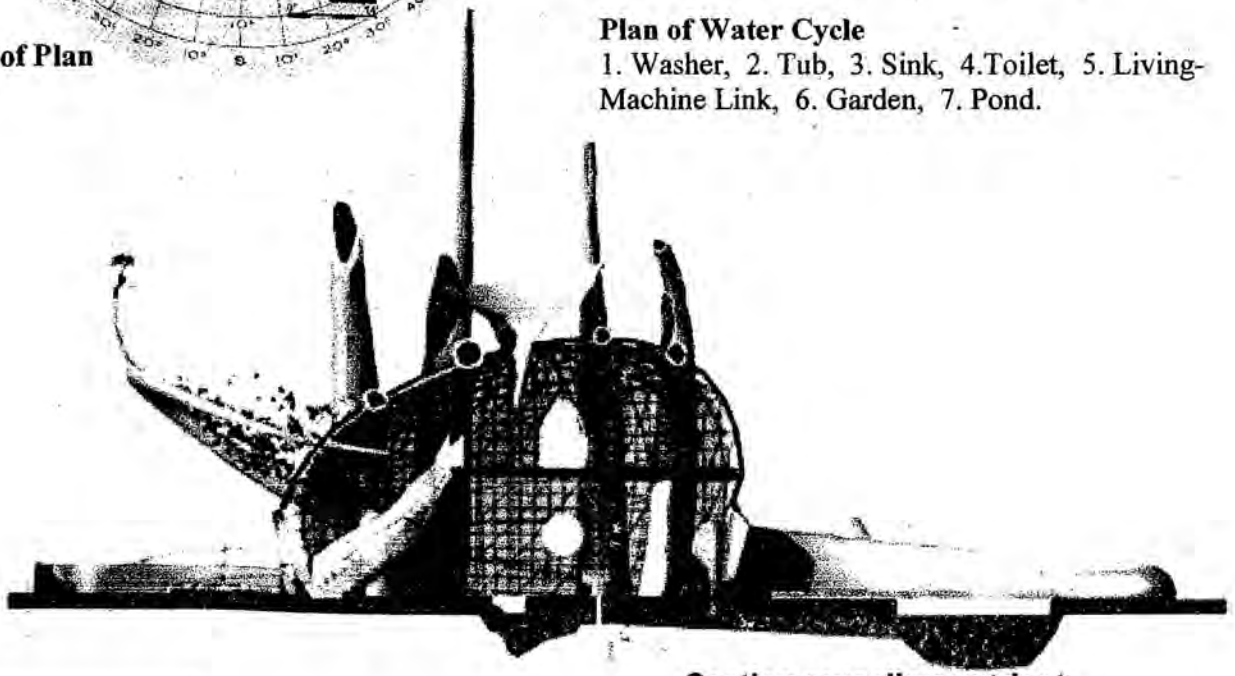
3.4.3.5 Examples



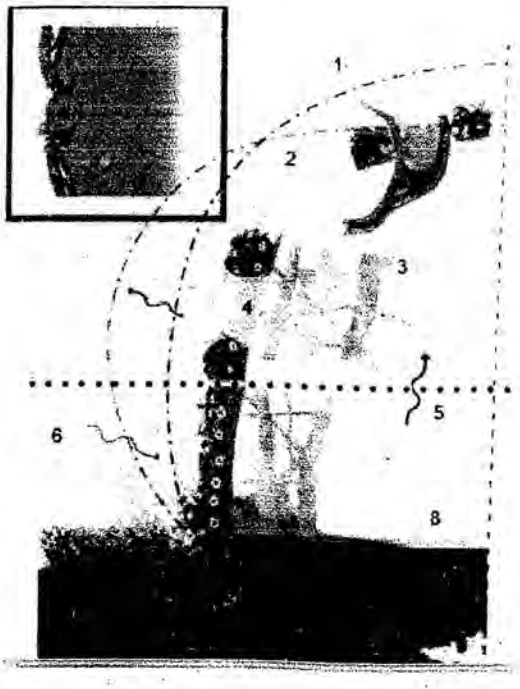
Roof Plan



Plan of Water Cycle
1. Washer, 2. Tub, 3. Sink, 4.Toilet, 5. Living-Machine Link, 6. Garden, 7. Pond.

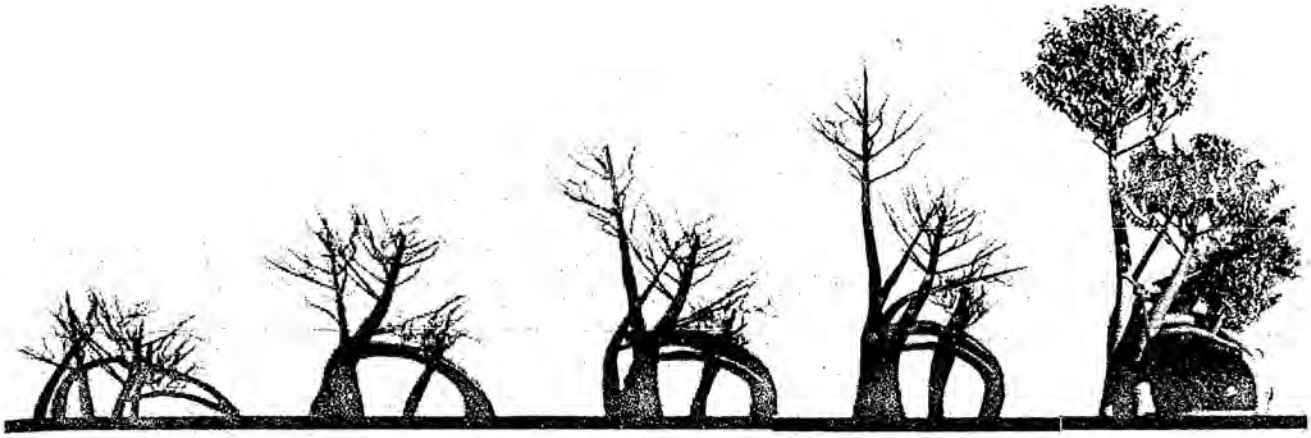


Section revealing nutrient flows:
1. Circulation + Entry, 2. Gravity Plumbing, 3. Composting, 4. Aqueous Garden



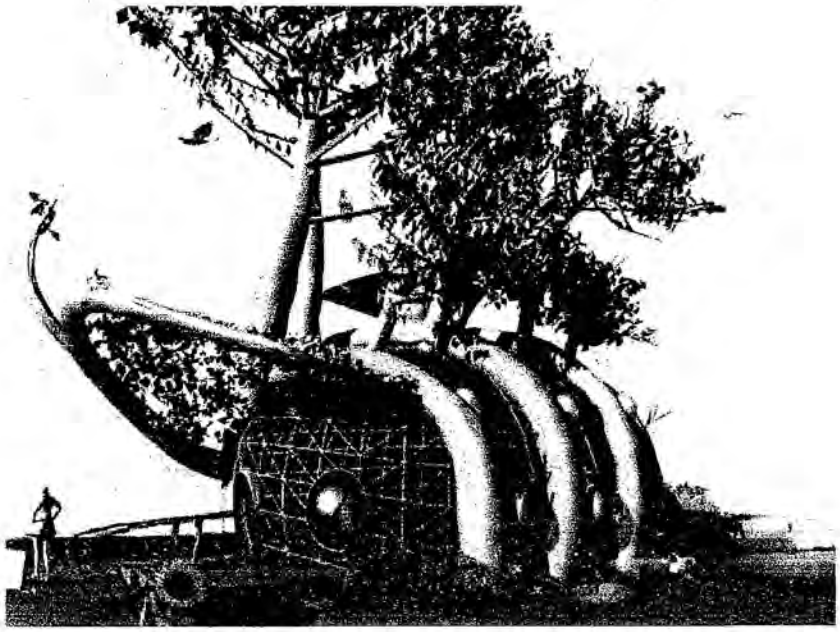
Skin
1. Rain water harvester at roof.
2. Thermal clay and straw-based infill.
3. Expandable vine surface lattice.
4. Soy based plasitc operable windows.
5. Buoyancy-driven ventilation.
6. Cool air intake at floor level.
7. Tile flooring.

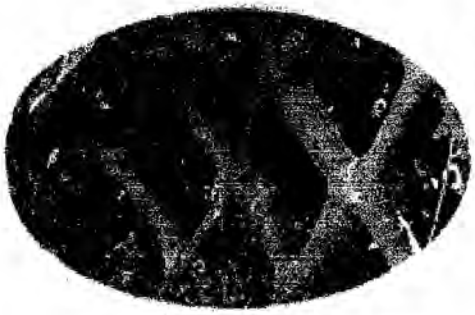
Fig. (3.28) FAB Tree HAB House, Team H.E.D. (Human Ecology Design), MIT



Arboreal farming of living hull structure sections at local nurseries

Living Lattice system





Detail by Konstantin Kirsch

Fig. (2.29) Forming process of FAB Tree HAB House
Source: http://www.archinode.com/bienal.html

3.5 Zero Time Concept and Architecture

"Architecture should speak of its time and place, but yearn for timelessness". Frank Gehry

Any matter or energy that reaches below absolute zero becomes anti matter or energy, but at absolute zero, it looses all form. Past zero, it becomes the opposite form. As well at absolute infinite the matter or energy becomes infinite as shown in figure (2.30). At which it gains an unknown form possibly light. What this means

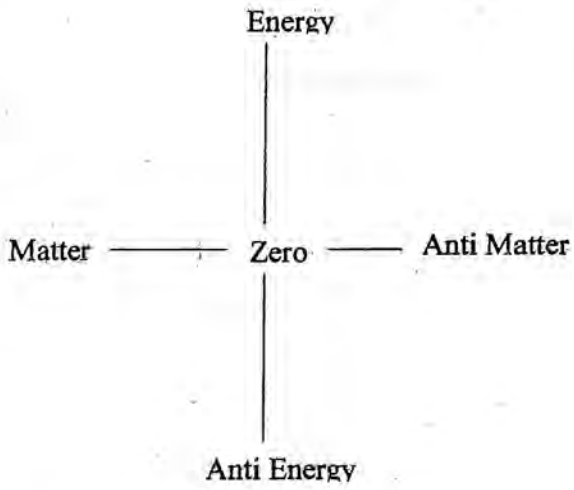


Fig. (2.30) Zero Time Concept
Source: http:// www.Natelikescars.com

1. Darkness is light at zero.
2. Past zero there is a "negative" energy.
3. On the other hand, light is absolute.

Raymond T. Yeh and Keri Pearlson in their paper "Zero time: A Conceptual Architecture for 21st Century Enterprises" discussed the concept of zero time and indicated that time is not a phenomenon, which simply depends on the speed of movement; it is movement itself. Time is change and depends on the frequency of the fluctuations, concerning a certain fragment of space.

Raymond and Keri concluded that ***Zero Time concept*** is a holistic way of thinking about change and understanding the importance of time from a multitude of viewpoints. Normally people think of time as sequential, or "horizontal," in that time flows linearly. Given this, they try to 'slice' their time in order to gain efficiency when dealing with the multitude of situations. As people tackle problems in different

time slices, they bring a part of their knowledge, energy and emotion to determine solutions. Zero Time thinking is like taking a view from a "vertical" perspective in that all of the knowledge, energy and emotions are brought to bear on the problem. As such, each problem can be solved instantly because we are able to see differently

Aldo Van Eyck, (1969) in his article " The Interior of Time" indicated that architects are pathologically addicted to change, regarding it as something one either hinders, runs after, or, at best, keeps up with. This is why they tend to sever the past from the future, with the result that the present is rendered emotionally inaccessible – without temporal dimension. Both, a sentimental antiquarian attitude towards the past and a sentimental technocratic towards the future are founded on a static clockwork notion of time (what antiquarian and technocratic have in common). Some architect said, "An architect cannot be a prisoner of tradition in a time of changes" It seems that an architect cannot be a prisoner of any kind and at no time can he be a prisoner of change. thinking"

Back to peace as the ultimate goal of architecture; it could be grasped the turning point between the past and the future to make the present of architecture as shown in figure (2.31). Zero time in architecture can be defined as "how the history live in the future in a balanced relation and how to link and bridge.

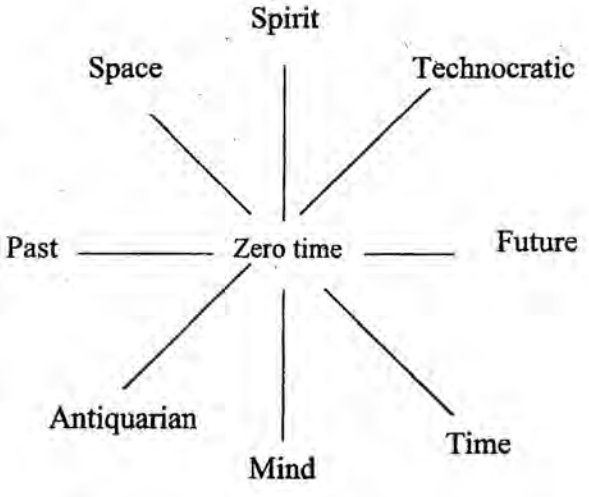


Fig. (2.31) Zero Time in Architecture
Source: Researcher

3.6 Architecture, Energy and Peace as a New Concept

Despite the huge literature on architecture, its definition and purpose have never been settled. These are issues about which there is a great deal of confusion and debate. Considering architecture a human activity is literally older than the pyramids. Architecture is inescapably a political field, in which there are no incontrovertible rights and many arguable wrongs. The world can be conceptually organized in infinitely diverse ways. As there are many religions and many political philosophies, there are many divergent ways people live and interact with each other.

> ake places (or have places made for them) in which to do the things they
>
> ces to eat, to sleep, to shop, to worship, to argue, to learn, to
>
> ways people organize their places is related to their beliefs and
>
> eir world view. As world views vary, so does architecture: at the
>
> t the social and cultural level; and between different sub-cultures
>
> . (Unwin, Simon, 2003).

f M. (1998) in his book "Human Factors in Environmental Design"

fferent definitions of architecture as follows:

> chitecture is the masterly, correct, and the magnificent play of masses
>
> rought together in light (Le Corbusier).

Architecture is a discipline, a profession and a state of mind (Antony Antoniades).

Architecture is a cultural index that takes different forms in different civilizations and political settings (Antony Antoniades).

A building must meet the following standards to qualify as architecture: it must conveniently serve the purpose for which it was built; it must be structurally sound; it must be beautiful. Architecture in this sense can be

defined as commodity, firmness and delight at the right time and at the right cost (Marcuse Vitruvius pollio).

- The reality of the building dose not consists of walls and roofs but in the space within. (Lao Tze).
- Architecture makes tangible meanings; it creates metaphors of the ideals and beliefs of a group (Amos Rapoport).
- Architecture is a very special functional art; it confines space so we can dwell in it. It creates a framework around our lives (Steen Elier

safeguards life, health, and property, and promotes public Board).

that a common factor to everything would be energy, physics ıg is energy, even what we consider solid matter is actually ions are based on energy interactions. Energy interactions are the t the core of any perceivable physiological function. The thesis inition for architecture from energy point of view:

cture can be defined as harmonizing energy patterns form architectural spaces within their function, in nce with human being to create the feeling of peace.

s sense, architecture has become a tool for change and its conventional time and space concepts".

ined earlier that different studies and researches discussed the meaning n of energy and the thesis introduced the following definition for energy:

'Energy is a flux of information carrying meaningful messages which can be decoding through resonance causing transaction and communication in the universe, some of these transactions can be quantified when they are, in our language".

Coming back to architecture and its purpose and goal, which have never been, settled yet .The thesis considering peace an ultimate goal of architecture. As we stated earlier that energy is a common factor to everything. Therefore, the thesis proposes a new definition for peace from energy point of view:

> *"Peace can be defined as a balanced state arising from harmony of all different energy fields in all components of individual and collective activities of a society on several hierarchies' levels. This harmonizing balance quality into any activity is a basic criterion towards peace".*

ıs been played by architecture throughout human history although it has tten in the modern times.

ıous definitions of architecture, energy and peace could be concluded in .31).

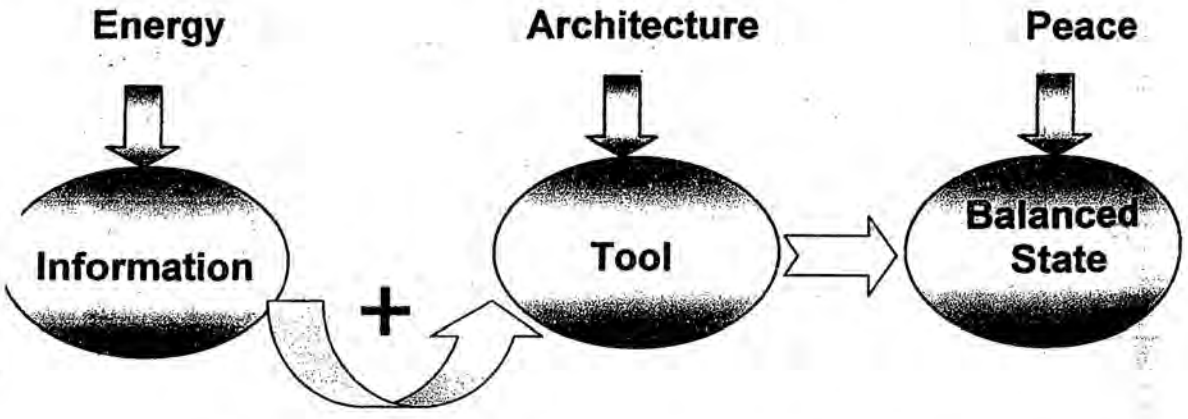


Fig (3.32) The Relation Between Architecture, Energy and Peace

Conclusion

Conclusion

- Over the last 100 years, the link between energy quality and architectural space has been forgotten or even lost. Therefore, architectural spaces in this last period lost their human content. Buildings became a thing, a product, a commodity and not a lively, healthy and peaceful environment.

- Most of the contemporary architectural trends have discussed the energy from the aspect of energy consumption and energy quantity only and have ignored the energy qualitative aspects in architecture. The world is in need to revive and recall the old energy quality sciences depending on a scientific base, and it has to begin to care for both quality and quantity in architectural designs.

- Energy waves, resonance and harmonic science are the hidden dimensions of architecture that form and determine the quality of architectural spaces.

- Depending on the new definitions of energy, peace and architecture which were introduced, the thesis proposed "peacenergy" environmental concept which can be defined as:

  "The genetic peace concept is manifested in most architectural morphogenesis throughout history giving it its ability to produce a balanced physical, physiological, psychological, mental and spiritual state of the human being. This state is generated from harmonizing resonance by integration of all energy fields of architectural space and human energy fields to maintain the state of balance. This balanced state brining qualities to architectural space, which generate and maintain peace to the built environment".

Peace and Millennium Development Goals

Without fear, desperation and terrorism
And with love, affection, compassion, and equilibrium
To live with security, comfort and happiness
And with truth, order and harmony

For survival of humans
In the planet earth and cosmic world
Instead of creative construction
Creative destruction has increased manifold
In the last two millenniums
Because of in equilibrium relationship between
"spiriton and atom"
"non-matter and matter"
and gradually loss of reins
by the mind (The driver)
on the five senses human body
leading it to the path of suicide
and to a process self combustion of matter
With absolute peace of spiriton of universe
Without giving any scope to Big Bang
Development goals of third millennium calls for
Evaluation of goals of last two millenniums

Oh, humans accept millennium development goals
As peace with its sources and constituents of technology
To ensure saga of humanity
To continue in the biosphere
Through designing human activities
both for biosphere and human peace
for making millennium development goals
peaceful, sustainable and vibrant

Source: http://www.worldpeacetech.com/peace%20poems.htm

Peace, Energy and Environment for Architectural Morphogenesis
Introduction
Peace, Energy and Architecture
Chapter 1
Peace.. The Hidden Dimension in Architecture
Chapter 2
peace in Architecture as a Qualitative Energy Concept
Chapter 3
A Journey into of Energy in Architecture
Chapter 4
Towards a Conceptual 'Peacenergy' Environmental Studio
Studio Concept
Studio Goal
Studio Pricipals
Studio Forming Process
Conclusion

4.1 Studio Concept

The thesis showed in the previous chapters that peace has always been the desire of architecture. It has been the hidden dimension of architecture which affects the quality of architectural space, and consequently affects inner and outer human peace, taking into consideration that achieving peace is a problem integrates many different issues which have impacts upon peace - often, each one is a dilemma in itself.

The concept of 'Peacenergy' environmental studio integrates various dimensions and aspects of architecture. Some of them can be measured using existing technologies and methods, and others cannot be yet measured due to lack of appropriate instruments. The thesis predicts that these obstacles could and will be overcome by the accelerating progress of technology.

The forming process of the studio concept can be explained in the following stages, which are illustrated in figure (4.1):

1. Genetic peace concept, an advent willed in the designer imaginary represents the genetic idea of the studio.
2. This genetic idea creates form (the imaginary essence of object) seeking to be assimilated.
3. Then form creates its field of energy.
4. Energy has an infinite number of patterns, which are abstracted traces of legible indication.
5. Based on these patterns infinite shapes can be generated.
6. Generated shapes can contain all possible building functions and needs.

7. Shapes create resonative fields between human body, environment, cosmic and architectural space which creates Peacenergy architecture

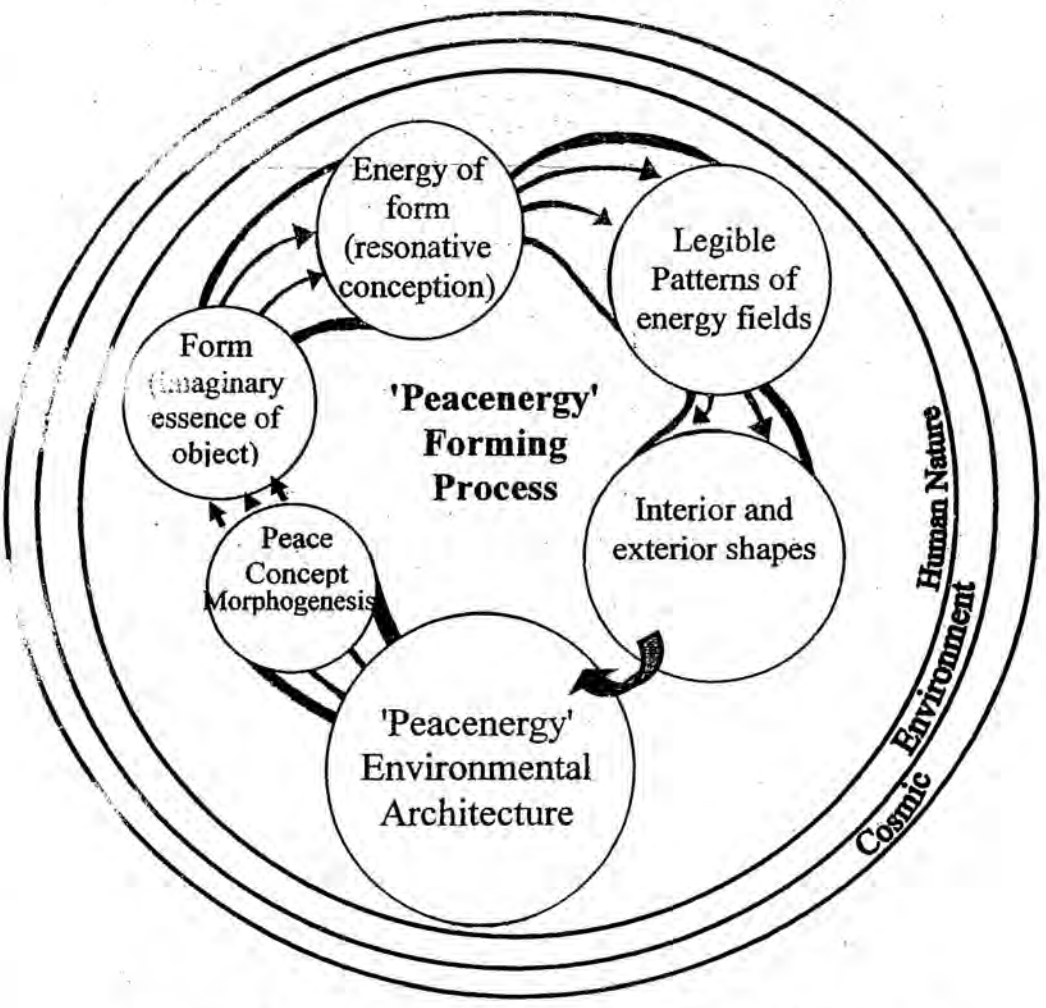


Fig (4.1) The Forming Process of 'Peacenergy' Concept

To reach the process of the studio, the thesis studied the concept evolution of peace, energy, architecture and environment, which is illustrated in figure (4.2) to find the balanced relation among these four concepts, which represent the main idea of the studio.

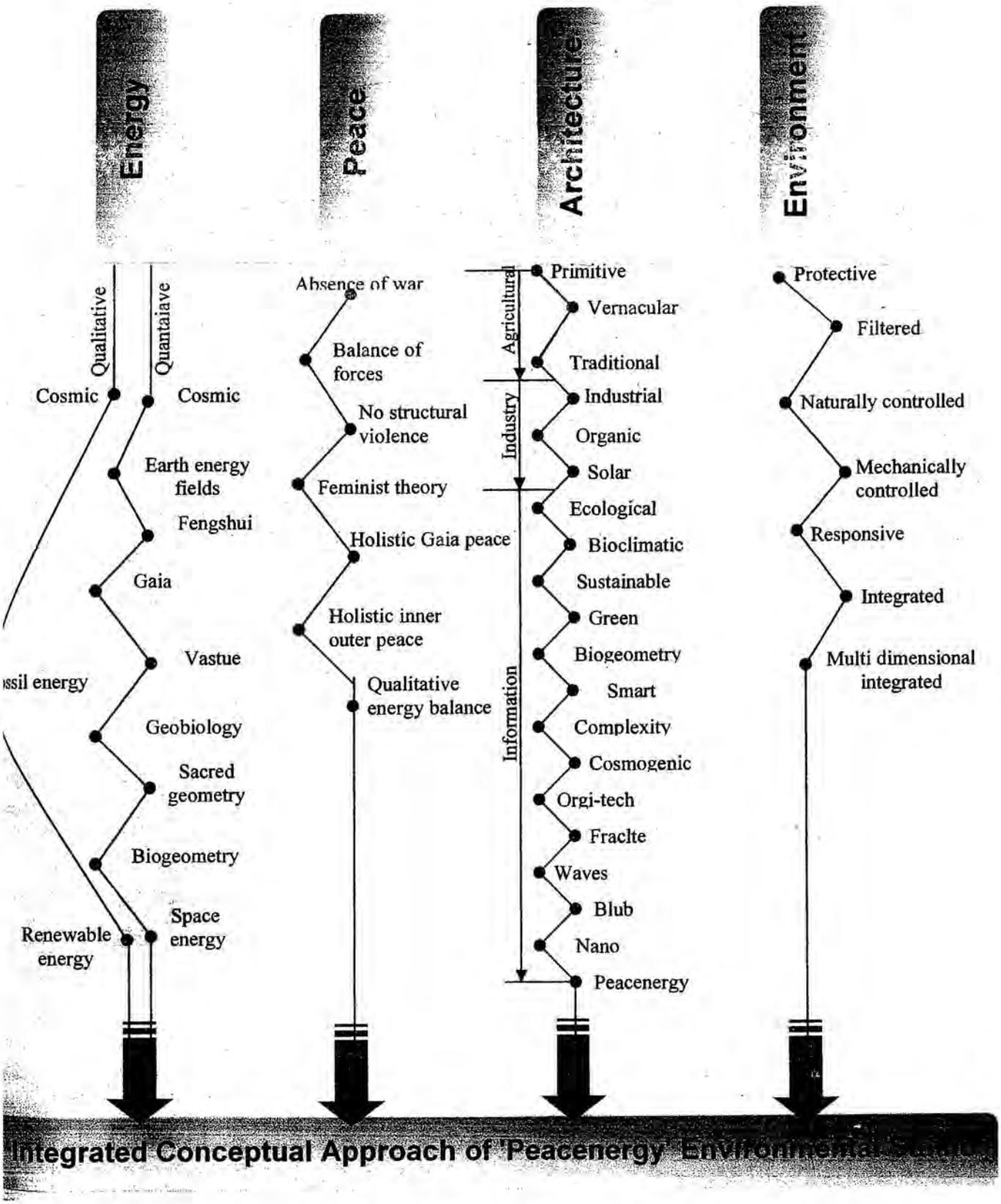


Fig (4.2) The Concept Evolution Of Energy, Peace, Architecture and Environment

4.2 Studio Goal

'Peacenergy' environmental studio is a trial to step away from the 20th Century vision of architectural studios as an isolated triumph from violence and conflicts in the world to a more inclusive 21st century idea to be part of a vibrant, messy, exhilarating, harmony process of creating a living, breathing, harmony and balanced architecture. This new vision of architecture is global in scope, and based on energy quality balance.

4.3 Studio principles

The Peacenergy architectural studio proposes the following principles:

- A holistic way of thinking about change.
- Travel through time.
- Vertical perspective of architectural forming process.
- Architecture must have a larger orientation towards the universe as a whole.
- It should engage all the senses of the human being in the forming process but more than that engage the human body as a whole.
- It is often more open to the metaphysics of contemporary science.

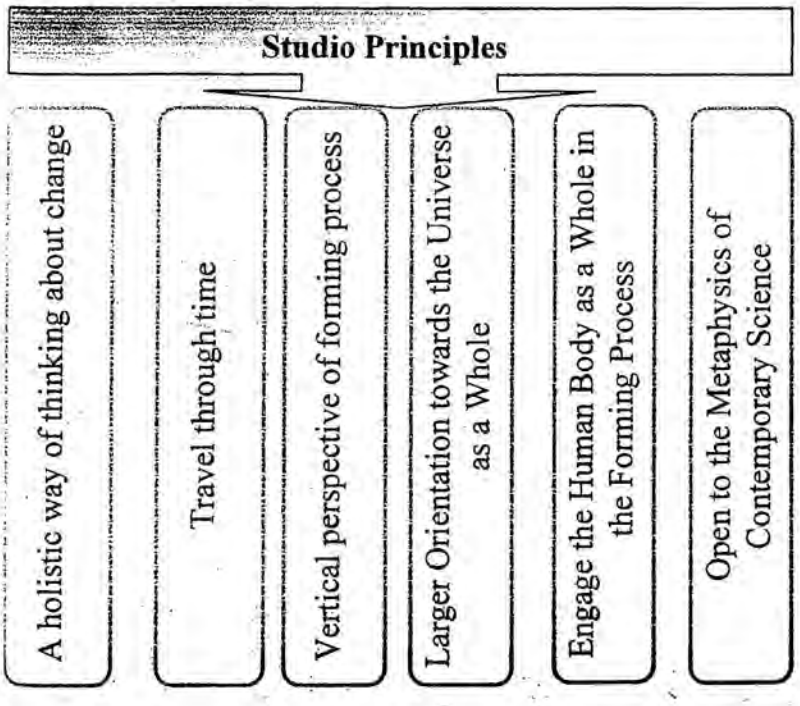


Fig (4.3) The Principles of 'Peacenergy' Environmental Studio

4.4 Studio Forming Process

The forming process of 'Peacenergy' environmental studio consists of ten stages. Each stage has its details and steps, which could help the architects to reach a balanced physical, physiological, psychological, mental and spiritual state resulting in a holistic harmony of the human being. As stated earlier, this natural subtle energy forming process produces qualities to architectural space, which generate and maintain a harmony that brings peace to our built environment.

The stages of the forming process are:

1. Pre-design knowledge
2. Site investigation
    A. Morphology
    B. Energy quality
3. Climatic diagnosis
4. Concept
5. Envelope
    A. Material
    B. Windows
6. Physical environment
    A. Artificial lighting design
    B. Natural lighting design
    C. Chromatic environment design
7. Interior design
8. Electromagnetic field
9. Landscape
10. Energy check

The steps and details of each stage will be explained in the 'Peacenergy' forming process chart, figure (4.4), which will be a useful guide for architects to use.

Conclusion

This chapter proposed the concept of "Peacenergy environmental studio" which integrates various dimensions and aspects of architecture. It introduced the studio concept, goal, principals, forming process and the ten stages of this forming process.

The conclusion of this chapter could be summarized in:

- "Peacenergy" forming process chart which was illustrated in figure (4.4) can orient architects and students to increase the quality of architectural space in their designs.

- Proposed "Peacenergy" Environmental Studio checklist, as shown in table (4.1), is a simple tool to help architects to evaluat their generated designs according to the ten stages of 'Peacenergy' forming process. The total outcome of the checklist shows how much the design fulfills the proposed concept.

Table (4.1) 'Peacenergy' Environmental Studio Checklist

Source: Researcher

There are four Percentages of achievements 0, <25, <50, <75, <90% will be indicated in the table as follows:

0% = not achieved

25% = 1 < 50% = 2

<75% = 3 < 90% = 4

		Stage 1 (Pre-requisite)	Achievement %				
			0	<25	<50	<75	<90
Pre-Design Knowledge	1	**Environmental design concept** (principles, methodology and different strategies of active and passive design)					
	2	**Climatic analysis**					
	3	**Human energy fields and their measurements**					
	4	**Earth energy grid lines & geopathic stress**					
	5	**Basics of harmonic science**					
	6	**Electromagnetic fields**					
	7	**Enough experience of energy measurements tools**					
	8	**Biogeometry science**					
	9	**Basics of different energy sciences in architecture** (concept, principles and methodology)					

		Stage 2 (Design)	0	<25	<50	<75	<90
Site Investigation Energy Quality Morphology	10	**Updated satellite image**					
	11	**Contour lines and topography map**					
	12	**Hydro geological map** (Depth of ground water, chemical GW classification…)					
	13	**Building material map**					
	14	**Roads network**					
	15	**Energy grid lines survey**					
	16	**Geopathic stress survey**					
	17	**Radiological in water and soil survey**					
	18	**Abnormal phenomena in the site survey** (Sick plants, crooked growth appearance of insects….)					
	19	**The paranormal survey** (Traumatic events, such as a violent death…)					
	20	**Sacred power spot survey** (to connect to one of these spots)					
	21	**High power lines, radio, TV and MW towers survey**					
	22	**Nearby disturbances questionnaire**					
	23	**Site energy check** (using energy measurements tools and instruments)					

		Stage 3	Achievement %				
			0	<25	<50	<75	<90
Climatic Diagnosis	24	**Bioclimatic Diagram** - Prepare the bioclimatic diagram with the different bioclimatic zones for the giving location according to latitude, gender and age. - Define over heated and under heated period according to evaluation of hourly mean monthly temperature and humidity parameters. - Define percentage of each bioclimatic zone.					
	25	**Solar analysis** - **Sun path diagrams** (determine the time of day and year in which the sun will be available in each façade) - **Shading masks** (times and date plotting in the sun path diagram determine sun angles that require shade) - **Solar radiation** (to determine times when comfort can be achieved outdoors and to estimate potential for solar heating in building					
	26	**Radiation analysis** *(To determine times when comfort can be achieved outdoors)* Define the direction and magnitude of different solar radiation: direct, defuse, reflected and emitted radiation.					
	27	**Wind system analysis** - Wind rose (speed, direction and frequency) - Plot the wind rose for each month. - Prepare the average Wind rose for UHP, OHP					
	28	**Hazards** Study the possible hazards affecting the location such as flood.					
	29	**Diagnosis** - Define the environmental diagnosis for the design problem from the integrated analysis of the previous analysis. - Define possible strategies for bioclimatic design of the proposed project					

		Stage 4	0	<25	<50	<75	<90
Concept	30	Peace concept morphogenesis sketch & its form					
	31	Energy patterns of the form					
	32	Shape of the mass and energy of shapes					
	33	Energy quality design for each function and needs of architectural spaces					
	34	Interior and exterior design Shape					

		Stage 5	0	<25	<50	<75	<90
	35	Orientations					
Envelop	36	**Building Material selection** - Natural, plentiful or renewable - Locally available - Reusable or recyclable - Durable - Low or non-toxic - Minimal chemical emissions: - Low- volatile organic compounds assembly - electromagnetic radiation (EMR) - Moisture resistant - Psychological effects of material texture					
Windows	37	**Windows design** - Window orientations - Window wall ratio calculation - Shading heat gain coefficient calculation - Exterior shade design - Glass type selection (energy efficiency)					

		Stage 6	Achievement %				
			0	<25	<50	<75	<90
Physical Environment: Lighting	38	**Artificial lighting design** - Light distribution (direct or diffuse; modeling) - Luminance distribution - Color of light - Color rendering - Freedom from glare - Energy saving					
	39	**Natural lighting design** - Orientation - Window size - Position in the room & distribution - (Psycho) biological effects study					
Sonic	40	**Sonic environment design** - Power and intensity - Waves length - Frequency - Velocity - Noise control requirements (insulation, screens…) - Energy saving					
Color	41	**Chromatic environment design** - Chromatic energy and wavelength of colors - Psychological effects of each color - Color therapy theory					

		Stage 7	0	<25	<50	<75	<90
Interior design	42	**Furniture and accessories design** (taking into consideration color and material recommendations)					
	43	**Shapes and angles calculations and energy quality**					
	44	**Energy quality check** (using energy measurements tools and instruments)					

		Stage 8	0	<25	<50	<75	<90
Electromagnetic field	45	**Location of motorized equipment** (Isolate motorized equipment from living space)					
	46	**Wiring** (circuitry runs go through circulation space not living space					
	47	**Energy quality Check** (using energy measurements tools and instruments)					

		Stage 9	0	<25	<50	<75	<90
Landscape	48	**Plants selection** (according to their effects either indoors or outdoors regarding colors, age and kind)					
	49	**Plants location and placement** in relation with earth grid lines					
	50	Applying the principals of energy quality to landscape and layout design					

		Stage 10	0	<25	<50	<75	<90
Energy Check	51	**Final energy quality Check** Energy measurement instruments ,tools and software					
	52	**Energy quality evaluation questionnaire** (For occupants after designing and using the spaces)					
	53	**Annual energy quality check**					

The scores will be as follows:

0 - 50 = not recommended at all

50 – 100 = not recommended for living and occupants will face a lot of problems

100 - 150 = Occupants may face problems related t energy disturbance in a short while.

180 - 150 = Occupants may face problems related t energy disturbance in a long while.

180 – 212 = Generate and maintain a harmony that brings peace to the building.

Let Peace Prevail In This World.....

When you look for peace
Then the peace lies within you
When you search for peace
Then it is not hard to find
When you want to be in peace alive
Then you allow white doves to fly over you
When you make peace with others
Then the whole world live in your heart

When you let peace be in the world
Then you live in wonderful world
When you allow peace flow around the world
Then your hateness will go and love will flow
When you open the door for peace
Then peace welcome to your lives.
Let the peace prevail in our wonderful world

Ravi Sathasivam

Source: http://www.poemhunter.com/poems/peace/

Conclusions and Recommendations

The thesis dealt with different concepts of peace and space from the first beginning, starting from its first origin in the uterus of the mother, analyzing and criticizing the evolution of peace concepts and its directions in architecture. Then, the thesis explored energy as a common factor to everything and explained its effects on architectural spaces and the built environment through resonance and energy waves.

According to the review and critical analysis through the thesis and the new concept of energy, peace and architecture, which was introduced in the 'Peacenergy' environmental studio, the following conclusions can be reached:

- The concept of thermal comfort, which has been the basis of most environmental studies in architectural design since 1950, was extended to total comfort, proposed by the researcher in her master thesis in 2004. It further has been re-extended according to this thesis to a new vision in that peace is the ultimate goal of all architectural creations.

- Peace, energy and environment are the main pillars of architectural morphogenesis. These three concepts should be injected from the beginning in the forming process of architectural design to enhance the quality of architectural spaces.

- Modern science is confirming that behaviors, actions, thoughts, and feelings are indeed shaped not just by our genes and neurochemistry, history, memory, cultures and relationships, but also by surrounding environment.

- Western peace research has been focusing almost entirely on outer peace. In the last ten years, there has been a trend in peace research away from the traditional political idea that peace is simply the absence of war towards a more holistic inner outer view. In future, the researches should deal with both inner and outer aspects of peace and their interrelationships in a more balanced way.

- Architects have tried to achieve peace through their design by different directions: sacred sites, concept of habitation, symbolism, context and

Declarations, movements and alliances, and integral environmental concept. However, they do not consider the overall integrated picture. Architects and urban planners should seek a holistic approach to contemporary designs to maintain peace in the built environment.

- Throughout history, ancient philosophies, religions and cultures have acknowledged the existence of subtle life-force energy, underlying and connecting all material existence. Unfortunately, the old sciences of energy quality began to fade out since the Industrial Revolution.

- Over the last 100 years, the link between energy quality and architectural space has been forgotten or even lost. Therefore, architectural spaces in this last period lost their human content. Buildings became a thing, a product, a commodity and not a lively, healthy and peaceful environment.

  Most of the contemporary architectural trends have discussed the energy from the aspect of energy consumption and energy quantity only and have ignored the energy qualitative aspects in architecture. The world is in need to revive and recall the old energy quality sciences depending on a scientific base, and it is time to begin to care for both quality and quantity in architectural designs.

- Energy waves, resonance and harmonic science are the hidden dimensions of architecture that form and determine the quality of architectural spaces.

- The thesis proposed a new definition for **"energy"** as follows:

  "Energy is a flux of information carrying meaningful messages which can be decoded through resonance causing transaction and communication in the universe. Some of these transactions can be acknowledged when they are within our energy language".

- A new definition for peace from energy point of view was proposed in this thesis as:

  "Peace can be defined as a balanced state arising from harmony of all different energy fields in all components of individual and

collective activities of a society on several hierarchies' levels. This harmonizing balance quality into any activity is a basic criterion towards peace".

- Taking into consideration this dimension of energy quality from the beginning, keeping in mind the challenge presented by globalization and technology in age of information and aiming the perfection and quality of architectural space as a corner stone in efficiency revolution, a new definition of architecture should be introduced, depending on the fact that everything is energy and energy is a common factor to everything.

- The thesis proposed new definition for architecture from energy point of view :

  "Architecture can be defined as harmonizing energy patterns which form architectural spaces within their function, in resonance with human being to create the feeling of peace. In this sense, architecture has become a tool for change and transits conventional time and space concepts".

- Depending on the new definitions of energy, peace and architecture which were introduced, the thesis proposed "peacenergy" environmental concept which can be defined as:

  "The genetic peace concept is manifested in most architectural morphogenesis throughout history giving it its ability to produce a balanced physical, physiological, psychological, mental and spiritual state of the human being. This state is generated from harmonizing resonance by integration of all energy fields of architectural space and human energy fields to maintain the state of balance. This balanced state brining qualities to architectural space, which generate and maintain peace to the built environment".

- Achieving peace is a problem that integrates many different aspects which have impacts upon peace. The concept of "Peacenergy" environmental studio

integrates various dimensions and aspects of architecture to increase the quality of architectural spaces.

- Some of "Peacenergy" environmental aspects can be measured using existing technologies, methods and tools of measurments, but others cannot be yet measured due to limitations of existing measurements tools and lack of appropriate instruments.

- The thesis predicts that the obstacles of measurements can and will be overcome by the accelerating progress of the technology in the 21st century.

- "Peacenergy" studio which was introduced in the thesis should be in the near future the corner stone and indicator of architectural space quality.

- The idea of "Peacenergy" studio needs further research to reach the complete manifestations of the concept and applications to improve it.

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Appendix A

International Network of Museums for Peace

Source: http://www.museumsforpeace.org/organizations_Museums_for_Peace.htm

Name	Country	Website	Email
AFRICOM International Council of African Museums	Kenya	www.africom.museum	africom@museums.or.ke
Albert Schweitzer House	France	www.schweitzer.org	gunsbach@schweitzer.org
Antikriegshaus Sieverhausen	Germany	www.antikriegshaus.de	info@antikriegshaus.de
Anti-Kriegs Museum	Germany	www.antikriegsmuseum.de/index.html	Anti-Kriegs-Museum@gmx.de
Battambang peace museum (project) in Cambodia	Cambodia		
BOCS Foundation		http://bocs.hu/	bocshu@gmail.com
Article 9 Society	USA	www.article9society.org	overbycm@hotmail.com
CEGESOMA		http://www.cegesoma.be/	
Centre for Peace and Reconciliation Studies Coventry University	UK	www.coventry.ac.uk/peacestudy	c.rank@coventry.ac.uk
Centro Documentazione Manifesto Pacifista Internaz.	Italy	http://www.casalecchionet.it/percorsidipace/gruppocultura/cdmpi.html	cdmpi@iperbole.bologna.it
Center for Peace Museum, Seoul Korea		www.peacemuseum.or.kr	peacemuseum@empalcom
Centre Mondial de la Paix (World Center for Peace)	France	http://www.centremondialpaix.asso.fr/	
Comenius Museum	Netherlands	www.comeniusmuseum.nl	info@comeniusmuseum.nl
Dayton International Peace Museum	USA	www.DaytonPeaceMuseum.org	info@DaytonPeaceMuseum.org
Display House of Lucky Dragon	Japan		
Europäisches Museum für Frieden	Austria	http://www.aspr.ac.at/museum/index.htm	museum-buero@aspr.ac.at
First Austrian Peace Museum	Austria	www.peacemuseum.at.tf	gemeinde@wolfsegg.ooe.gr.at
Flanders Fields	Belgium	www.inflandersfields.be	flandersfields@ieper.be
Franz Jägerstätter Haus (Franz Jägerstätter House)	Austria	St. Radegund 7; A-5121 Ostermiething; Austria. Telephone: 004362788219.	

(Franz Jägerstätter House)		Telephone: 004362788219.	
Friedensbibliothek - Antikriegmuseum	Germany	www.friedensdienst.de/Friedensbibliothek-A.80.0.html	
Friedensbibliothek-Antikriegsmuseum (Berlin , Germany)	Germany	www.friedensbibliothek.de	friedensbibliothek@web.de
Friedenshistorisches Museum (Peace History Museum)	Germany	www.friedensmuseum.de	info@friedensmuseum.de
Friedensraeume Lindau	Germany	www.friedens-raeume.de	friedensraeume@freenet.de
Friedensmuseum Meeder	Germany	www.friedensdank.de	friedensmuseum.meeder@t-online.de
Friedensmuseum Nürnberg	Germany	www.friedensmuseum.odn.de	na3745@fen-net.de
Friedensmuseum Remagen	Germany	www.bruecke-remagen.de	infos@bruecke-remagen.de
Friends of Peace	Japan		
Gandhi Durshan Gandhi Smitri	India	http://gandhismriti.gov.in/indexb.asp	gandhismriti@india.com
Gandhi Memorial Museum	India	www.gandhimm.org	gandhimm@lycos.com
Gandhi Smarak Sangrahalaya	India	gandhiashram@satyam.net.in	
GandhiServe Foundation	Germany	http://www.gandhiserve.org	mail@gandhimail.org
Gernika Gogoratuz	Spain	www.gernikagogoratuz.org	gernikag@gernikagogoratuz.org
Gernika Peace Museum Foundation	Spain	http://www.museodelapaz.org/Indice.html	museoa@gernika-lumo.net
Ghent University	Belgium	www.rug.ac.be	
Global Peace Museum	U.S.A.	http://www.globalpeacemuseum.org/	
Grassroots House	Japan	http://ha1.seikyou.ne.jp/home/Shigeo.Nishimori/grh.htm	
Green Island Human Rights Memorial Park	Taiwan	http://wcchen.eastcoast-nsa.gov.tw/english/intro_01_main.asp	
Gustavus Adolphus College, Peace Studies Program	USA	www.gac.edu/oncampus/academics/peacestudies	
The Herbert	UK	www.theherbert.org	natalie.heidaripour@coventry.gov.uk
Hiroshima Peace Memorial Museum	Japan	http://www.pcf.city.hiroshima.jp/top_e.html	hpcf@pcf.city.hiroshima.jp

Name	Country	Website	Email
Historical Museum of Japanese Military Sexual Slavery	South Korea	www.nanum.org	
The Children's Museum for Peace and Human Rights	Pakistan	http://www.hrep.com.pk	cmphr@cyber.net.pk info@hrep.com.pk
Ijzertoren	Belgium	www.ijzertoren.org	ijzertoren@unicall.be
Imperial War Museum	UK	www.iwm.org.uk	mail@iwm.org.uk
Indian Institute for Peace	India		
International Exhibition Centre	(in new City Hall of The Hague)	www.judicap.com	judicap@tiscali.nl
International Museum of Peace and Solidarity	Uzbekistan	www.civilsoc.org//nisorgs/uzbek/peacemsm.htm	peacetur@samarkand.uz
Kochi University Peace Studies	Japan	http://www.kochi-u.ac.jp	kyamane@sings.jp
Kurdistan, Save the Children Fund	Iraq	www.ksc-kcf.org	
Kyoto Museum for World Peace	Japan	http://www.ritsumei.ac.jp/mng/er/wp-museum/e/eng.html	
Kyoto University of Education	Japan	www.kyokyo-u.ac.jp	
La Paix Herb Farm Interactive Museum	USA	http://www.lapaixherbfarmproducts.com/IntroductiontoInteractivePeaceMuseum.htm	lapaix@westvirginia.net
Le Mémorial de Caen	France	www.memorial-caen.fr	contact@memorial-caen.fr
The Lion and Lamb Peace Arts Center of Bluffton University	USA	http://www.bluffton.edu/lionlamb/	lionlamb@bluffton.edu
Lucerne Initiative for Peace and Security	Switzerland	http://www.lips-org.ch/	info@lips-org.ch
Musée Albert Schweitzer à Kaysersberg	France	www.ville-kaysersberg.fr	info@ville-kaysersberg.fr
Muséé d"ethnographie	Switzerland	www.ville-ge.ch/musinfo/ethg/	
Museum Haus am Checkpoint Charlie	Berlin Germany	www.mauermuseum.de	info@mauermuseum.de
Museo della Pace Piccoli Martiri di Gorla	Italy	http://www.associazioni.milano.it/itsos/museo%20della%20pace/	ciallella@tiscalinet.it

Name	Country	Website	Email
Museum de la Paz (Museum for Peace)	Costa Rica	www.arias.or.cr/en/museum.php	
Museum voor Vrede en Geweldloosheid	Netherlands	http://www.vredesmuseum.nl	vredesmuseum@tiscali.nl
Muzeum Brnenska	Czeck Republic	www.muzeumbrnenska.cz	muzeum@brnenska.cz
Nagasaki Atomic Bomb Museum	Japan	http://www1.city.nagasaki.nagasaki.jp/na-bomb/museum/museume01.html	heiwa@city.nagasaki.lg.jp
National Gandhi Museum	India	http://www.gandhimuseum.org/	andgandhimk@bol.net.in
National Museum of Indian Freedom Movement	India	http://www.karmayog.com/lists/art.htm	freedommuseum@indiatimes.com
National Peace Museum of Conscientious Objection and Anti-war Activism	USA	http://www.nationalpeacemuseum.org/	info@nationalpeacemuseum.org
Nederlands Instituut voor Oorlogsdocumentatie	Netherlands	www.niod.nl	info@niod.knaw.nl
No More Hiroshima: No More Nagasaki: Peace Museum	India	under construction	iipdep_ngp@sancharnet.in
Nobel Peace Center	Norway	www.nobelpeacecenter.org	post@nobelpeacecenter.org
Nobel Institute	Norway	www.nobel.no	postmaster@nobel.no
Nova centre per a la Innovacio Social	Spain	www.novacis.org	
Oka Masaharu Memorial Peace Museum	Japan	www.d3.dion.ne.jp/~okakinen	
Pacific war history museum	Japan		
Peace Museum Bradford	UK	http://www.peacemuseum.org.uk/	peacemuseum@bradford.gov.uk
Peace Museum Chicago	USA	http://www.peacemuseum.org/	http://www.peacemuseum.org/Contact.htm
Peace Museum of Deleware Valley	USA	http://www.peacemuseumdelval.org/	jbailey@crusoe.net
Peace Museum of Saitama	Japan	http://village.infoweb.ne.jp/~pms/	

Robben Island Museum	South Africa	www.robben-island.org.za	contact information
Sapporo Gakuin University	Japan	http://www.sgu.ac.jp/	
Smithsonian National Museum of the American Indian	USA	http://www.nmai.si.edu/	contact information
Society for Chemical Weapons Victims Support	Iran	http://www.scwvs.org/	info@scwvs.org
Stadtgeschichtliches Museum Leipzig / Völkerschlachtdenkmal	Germany	http://home.t-online.de/home/Stadtmuseum.Leipzig/	Stadtmuseum.Leipzig@t-online.de
The second historical archives of China	China		
The Swedish Museums Association	Sweden	http://www.museif.a.se/eng/the_museums.html	info@museif.a.se
Traveling Museum Project History of Concientious Objection	Germany		
Tehran Peace Museum	Iran	http://www.scwvs.org/	info@scwvs.org
University College London	UK	http://www.ucl.ac.uk/	international@ucl.ac.uk
University of Bradford Peace Studies	UK	www.bradford.ac.uk	p.vandendungen@bradford.ac.uk
Vall d'Uxio Peace Museum	Spain	http://www.museupau.uji.es/	museudelapau@vallduixo.infoville.net
Yi Jun Peace Museum	Netherlands	http://www.yijunpeacemuseum.com/	webmaster@yijunpeacemuseum.com
Vredespaleis Den Haag	Netherlands	http://www.vredespaleis.nl/showpage.asp?pag_id=273	
Vredescentrum Antwerpen (Peace Centre Antwerp)	Belgium	http://www.vredescentrum.be/vredescentrum/index.html	vredescentrum@admin.provant.de
Women's Active Museum on War and Peace	Japan	http://www.wam	

Appendix B

'Sick Building Syndrome'

Definition & symptoms

The term 'sick building syndrome' (SBS) is generally related to the physical environment of a building. The World Health Oraganisation defines sick building syndrome as:

> *"... a syndrome of complaints covering non-specific feeling of malaise, the onset of which is associated with occupancy of certain buildings"*

Common symptoms for the individual include tiredness, confusion, headaches, flu like symptoms, skin rashes, problems with the eyes, nose, throat and chest (often involving a feeling of dryness), dizziness and nausea. This can lead to absenteeism, reduced efficiency, lowered morale and increased staff turnover.

Sick building syndrome can be seen as a reaction to a cluster of problems often found in modern buildings. In some buildings the air conditioning is not maintained to high enough standard, allowing moulds and bacteria to build up in the air conditioning ducting. Lack of adequate ventilation, glare from lights, ozone and chemical fumes from photocopiers and computers can make people feel unwell. Volatile chemicals from carpets, chipboard, plastics, etc. can all cause problems. Buildings that are too hot or too cold, and exposure to perfume from other employees can distress and dissatisfy employees.

People feeling that they have no control over their environment may also exacerbate the physical problems. For example, employees cannot adjust the temperature in sealed, centrally controlled, air-conditioned buildings to suit themselves. This leads

people to feel powerless, a major source of stress in its own right. In addition, many modern open-plan buildings offer little individual privacy. Some buildings have very little, if any, natural light. This may lead to longer has the stimulus from the natural environment.

In1995, the Inland Revenue decided to demolish a 19-story office where half of the [illegible] suffered frequently from flu-like symptoms for more than 5 years, even though biocides had been used to counteract the proliferation of bacteria etc. in the water reservoir of the air-conditioning system (the Perils of Progress by John Ashton).

The Evidence

Some scientists and employers skeptical about the existence of sick building syndrome. The UK Health & Safety Executive (Local Authority Circular 75/1) definition reflects this:

SBS is a term used to describe a building in which the occupants experience a range of symptoms causing discomfort and a sense of being unwell, rather than specific illnesses. These buildings are typically modern offices which have mechanical ventilation or air conditioning. It is a complex and much of the evidence for it is inconclusive and circumstantial. Both physical and psychological causes have been suggested.

J F Marmot et al published a study in Occupational and Environmental Medicine (2000;63:283-289). The subjects were 4052 office-based government employees aged 42-62 years working in 44 buildings. They looked at the physical environment of the workplace and self-reported symptoms. Respondents were asked if they had experienced in the last 14 days any of ten symptoms commonly associated with sick building syndrome.

The symptoms included headaches, dry itchy eyes and dry throats. One in seven of the men, and almost one in five of the women reported experiencing at least five of the symptoms. The buildings were also assessed for temperature, lighting intensity, levels of airborne pollution, etc.

The study did not find a link between the usual sick building factors and employee illness and absenteeism:

The physical environment of office buildings appears appears to be less important than features of the psychosocial work environment (including high job demands and low support) in explaining differences in the prevalence of symptoms.

Professor Alan Hedge, of the Department of Design & Environmental Analysis at Cornell University, USA, offers an explanation of why it may be difficult to establish a link. In a paper he presented at the 1st Asian Indoor Air Quality Seminar in China in 1996 he said:

Questionnaires usually collect data on workers' perceptions of environmental conditions and health over extended periods of time, such as one month, 3 months, 1 year, whereas measures of periods. Moreover, such measurements normally are not taken for each individual location in a building. Thus, it is perhaps not surprising that little association between self-reported symptoms and measured IAQ (indoor air quality) has been found.

In his conclusion to this paper he says:

Research shows that IAQ problems and reports of the SBS (sick building syndrome) generally are not caused simply by exposure to poor IAQ, but rather they occur because of the combined effects of various physical environment and non-

environment factors. IAQ complaints and the SBS are the outcome of complex processes, initiated by a set of stressful multiple risks which create personal strain. One of the problems for any analysis in this area is that buildings that are bad physically often also have mangers who have a disrespectful attitude to their work force. It can be difficult then to isolate the symptoms that are solely attributable to the building itself.

This is undeniably a complex area, which is further complicated by the often contrasting demands of employers and employees. It is clear that if geopathic stress is included as one of the components contributing to SBS, analysis of the situation becomes even more complex.

Read, Jane, "Geopathic Stress & Subtle Energy", USA, California:Life-wok potential, 2006.

Appendix C

Chronological Survey on Form

The following survey covers some of the more important stages in the development of form:

A. Different conception of "form" and

B. knowledge of natural and cultural forms, in the West.

The dates are approximate, and frequently indicate the midpoint of an individual's life. English Dictionary.

The word form has some twenty distinguishable meanings, but these mainly derive from the Latin forma, and hence from the Greek (idea, intelligible structure, species) and (sensible shape).

Contrasted usages are brought together in order to indicate the changing emphasis of the Western intellect in its effort to come to grips with "form" in all its manifestations. Eastern ideas are excluded, because their different setting prevents summarization. Caution is necessary in using this survey as all ideas have earlier roots.

B.C. 25000 Estimated date of earliest known cave drawings.

Before 4000. The regular motions of the sun, moon, and the changing shape of the moon give rise to the idea of a supreme power of the calendar controlling all existence.

About 300. The Mesopotamians build monumental temples, and the Egyptians use the principle of mathematical form in a decimal system. Hieroglyphic scripts.

2800. Egyptian step pyramids.

2000. Mesopotamian and Egyptian menstruation and on simple geometrical solids.

582. THALES founds abstract geometry.

580. ANAXIMANDROS constructs a map of the known world and speculates on organic evolution. A Babylonian document predicts relative positions of sun, moon, and planets.

550 . the school of PYTHAGORAS studies number, geometry, and music. Numbers are the essence of things. The conception of form as the characteristic principle of a thing begins to appear, correlative to the conception of matter. The limit gives form to the unlimited. The five regular solids are probably known.

415. DEMOCRITUS speculates on atoms, treating form as a secondary consequence of atomic arrangements, and the variety of forms as due to different arrangements of the atoms.

385. PLATO regards ideas as pure forms, and the world as forms in process of being realized. Analogy between natural and artistic production. In Plato's later years his conception of form may have evolved towards number. Discovers conic sections. Introduces definitions.

335. ARISTOTLE distinguishes form matter, and recognizes a formative principle by which the potentialities of stuff are realised. Everything strives towards form, which is qualitative essence of things, though related to quantity. Formal causes. Organic form is the result of function. Studies the comparative morphology of political states.

320. EUCLID creates the first deductive theory of geometry and thus establishes the conception of formal reasoning. Light travels in straight lines.

250. ARCHIMEDES studies geometrical forms, such as spiral, sphere, cylinder, cone, etc.

225. APPOLONIOS develops the synthetic mathematics of form using geometrical, non-algebraic, methods, e.g. all conics as sections of one cone.

125. HIPPARCHUS proposes the use of geometry to describe the planetary motions.

A.D. **130.** PTOLEMY develops trigonometry, astronomy, and geography, and studies refraction of light.

237. PLOTINUTS considers that the ideas of pure intelligence, when embodied in material, suffer loss in value and significance.

280. PAPPUS consolidates Greek mathematic, give the theory of seven simple machines, and considers bees to possess geometrical fore-thought.

400/700. Hindu arithmetic, algebra, trigonometry. Use of zero.

830. AL-KHWARIZI, of Bagdad, surveys Hindu mathematic, and extends algebra, trigonometry, and astronomy.

1205. LEONARDO of Pisa surveys Hindu and Moslem mathematic, and carries them further.

Early Scholastic develop the conception of formal proof as the result of Greek texts, mainly Aristotle and Euclid.

1214. GROSSETESTE defines form as that by which a thing is what it is.

The Oxford School of logicians, from Grosseteste to OCCAM, seek to define the form of any selected pheneomenon, i.e. the conditions which are necessary and sufficient to produce it.

1243. ALBERTUS MAGNUS discusses the hierarchy of organic forms, following Aristotle.

THOMAS AQUINAS uses Aristotelian ideas and develops the Scholastic doctrine of form as the essential creative quality or determinant principle of a thing, and the root principle of activity. Education, the emergence of form from the potentiality of stuff. The world as a hierarchy of forms. Essential form is either bound up with matter, or exists immaterially in pure intelligence, the primary forms being in the mind of god. Hylo-morphism: the Scholastic theory of matter and form.

1254. ROGER BACON regards mathematics as the alphabet of philosophy.

Form is latent in matter.

1300. four me, of form used for the character, nature, or structure of a thing: for its visible aspect or shape; for its image, representation, or likeness; for the manner or procedure of doing anything; and soon after for model, type or example. Also for beauty, comeliness, and in general the appearance of a living thing or person.

1304. THEODORIC of Freiberg and AL-FARASI of Persia independently give correct non-quantitative theory of the rainbow.

1411. BRUNELLESCHI discovers the mathematical laws of perspective.

1486. LEONARDO DA VINCI displays a comprehensive interest in all natural forms, in manner which in the following centuries becomes differentiated and separated into the aesthetic, scientific, and practical activities of specialized individuals. Compares the forms of woman's hair and falling water, etc.

form used for arrangement or order of parts in a whole, in literature and music. Also logical arrangement, orderly arrangement, regularity.

1596. FRANCIS BACON defines form as the objective conditions on which a sensible body or quality depends for its existence and the knowledge of arrangement and constitution. " the form of a thing is its very essence" " the form of heat ...., therefore, means no more than the law of heat" .the latent process towards form.

1593. VESALIUS' anatomical drawings.

1600. KEPLER identifies the planetary ellipses, and studies the symmetry of honey-combs.

1603. GALLIEO recognizes that the form of many mechanical phenomena is independent of their size (dynamical similarity). Uses the telescope to see Saturn's rings.

1623. DESCARTS' idea of a universal mathematics. Under his influence the earlier interest in spatial forms.

1640/70. formal is used for the first time as meaning "merely a matter of form", e.g. a mere formality (1647), thus implying the Democritan-Cartesian view that the effective agencies or basic principles are not matters of form. From is regarded less as a primary active principle, as in Aristotelian thought, and more as the static, passive, and relatively trivial configuration of a number of parts, as in atomic theory.

But other usages continue: "the form by which a thing is what it is" (MILTON). "the plastic or formative tendency from matter apparently homogeneous and of a similar substance exciteth bones, membranes, veynes, and arteries" the figure of a crystal arises "from a seminal root and formative principle of its own".

" The formative operator.... Will endeavour the formation of the whole" (THOMAS BROWNE). Also form as feminine style.

1664/75 .The microscope is used by HOOKE, and by LEEUWENHOEK of reasoning.

1684. NEWTORN'S "principia", etc. "the particles cohere in regular figures"."..... it is not be conceived that mere mechanical causes could give birth to so many regular motions", i.e. the planetary motions which are nearly planar and in the same direction. Newton recognised that the history of specific forms lay outside the scope of his natural philosophy.

1693. SHAFTESBURY develops the idea of inward form, or inner process by which form is realized.

1720/50. Organism and organization come into use, connoting harmonious arrangement of parts.

1725. VICO in "Scienzia Nuova" emphasizes the morphological approach to the study of cultures and history.

1750/90. BUFFON, ERASMUS DARWIN, LAMARK, and others arrange organic species in sequences in accordance with their morphology.

1764. KANT. views space and time as a prior subjective forms. Form as the principle which holds together the several elements of a thing.

1750-1800. MATHEMATICS becomes explicitly concerned with numerical and algebraic forms.

1771. Nebulae discovered.

1790. GOEFTHE studies form in many natural and human processes; uses the terms Morphologie, Gestalt, Bildung (development of form, but after Goethe mainly cultural self-development). "the formative process is the supreme process, indeed the only one, alike in nature and art". "if nature in her non-living foundation were not so basically stereo metric, how could she finally attain the incalculable variety of life". Goethe, like Leonardo, displays the comprehensive interest in form which today is differentiated into specialised activities.

1794. WEDGWOOD produces first photograph, using camera.

1796. BLUMENEBACH'S Bildungstrieb (nisus formatives), or general formative principle which develops, sustains, restores, and reproduces organic forms.

1800. HEGEL regards form as the active determining principle which becomes content in the course of the historical process.

(These conceptions of a formative process remain infertile for exact science, through their neglect of specific structural factors. The Teutonic romantic sense of "warden" (becoming) leads to impatience with the specific stabilized forms of the Latin peoples).

1805. CUVIER'S classical studies in comparative anatomy.

1807. YONG'S wave theory of light.

1811. MECKEL draws parallel between phylogenetic and ontogenetic development.

1815. SCHELLING recognizes a single formative energy as the inner aspect of nature transcending mechanism and teleology.

1822. FOURIER'S analysis of mathematic and spatial forms into harmonic wave components.

1830. HESSEL shows that crystals fall into 32 symmetry classes.

1842. VON BAER recognizes that more general characters appear before more special ones in the course of embryonic development.

1851. form used for abstract aspect of the plastic arts and soon after for grammatical form, and for formal logic.

1852. HUXLEY recognizes the importance of the temporal aspect of organic form: "The individual animal is the sum of the phenomena presented by a single life:- it is all those forms which proceed from a single egg taken together".

1859. DARWIN'S "Origin of species" gives the first systematic theory of the evolution of organic forms.

1873. FECHNER suggests that the widespread tendency towards regularity is related to the tendency towards stability. (FEEUD, 1920, treats the Pleasure Principle as special case of Fechner's principle.)

1874. DE MORGAN'S "Formal Logic" .

1877/8. form used for the plastic energy of the imagination; also for crystallographic form. formative now used les for an active property or principle, and more for the period of time in which formation occurs, e.g. the formative years of adolescence.

1890. VON EHRENFELS discusses Gestalt- qualities.

1890/94. FEDEROV, SCHONFLIES, and BARLOW independently establish the mathematical theory of the 230 crystal types, based on regular Cartesian arrays.

1893. ROUX studies the mechanics of animal development.

1893.CURIE. examines symmetry in physics. "C'est la dissymetrie qui cree le phenomene"

The developments of the latest period are conveniently grouped into various tends:-

1893. Psychology. FREUD initiates the new systematic study of the morphology of personality, in sense of non-spatial structure.

1897. Particle physics. Thomson confirms the discovery of the electron, and the atomic theory of matter is confirmed by countless subsequent experiments, including the direct observation of the tracks of fundamental particles. Here atomism tends to drive form into the background.

1899. Mathematics. HILBERT'S "Foundation of Geometry", RUSSELL'S "Principia Mathematics"(1902), and RUSSELL and WHITEHAD'S

"Principia Mathematica" (1911-13) heighten the nineteenth century interest in abstract mathematical and logical form, i.e. in the morphology of mathematical structures.

1907. Speculative Philosophy. BERGSON, in "Creative Evolution", suggests that the qualities of "duration" escape exact science.

1912. Crystal structure. LAUE proposes the use of X-rays to reveal the internal structure of crystals, and the BRAGGS open up this new field.

1912. Gestalt theory of perception. During the period from 1912 onwards (mainly 1920-35) the work of WERTHEIMER, KOEHLER, KOFFKA, and others emphasises the role of the Gestalt (configuration) in the processes of perception, etc.

1917. Organic Form. D'ARCY THOMPSON'S "Growth and Form" calls attention to the mathematical study of the forms of organisms.

1917. The Universe. EINSTEIN proposes the first mathematical model of the physical universe, and initiates study of the grand morphology of the cosmos.

1918. Sociology. DURKHEIM, MALINOWSKI, and RADCLIFFE-BROWN in their anthropological studies and SPENGLER in "Decline of the West" develop the morphological approach to individual cultures and to history. BENEDICT'S "Patterns of Culture" (1934).

1921. Human Constitution. KRESTCHMER'S "physique and Character", and later SHELDON'S "Varieties of Human Physique' (1940) attempt to correlate physique and temperament i.e. the forms of body and of character.

1923. Symbolic forms in human culture. CASSIRER'S " Philosophy of Symbolic forms" and LANGER'S "philosophy in a new key" (1942) examine the symbolizing activity of the human mind in all aspects of culture, of which ritual, art, psychological symbols (FREUD, JUNG), language, and mathematical symbolism are special examples.

1925. Patterns in fundamental physics. SCHRODINGER'S wave mechanics, following on DE BROGLIE'S suggestions, emphasizes the presence of regular patterns in atomic processes, thought these partly fade out in an abstract statistical theory.

1924. Biological Organisation. CHILD'S "Physiological Foundations of Behaviour" exploits the "pattern concept in describing the organization of physiological processes and of animal behaviour.

This illustrates a tendency in biological theory (BERTALANFFY, WOODGER, etc.) to overcome the mechanism-vitalism conflict by studying the changing pattern or

structural organisation of living systems. Recent experiments, (e.g. on the rapid exchange of individual atoms and chemical groups, which continually slip out of position and are continually replaced) suggest that the special properties of organisms, such as the stability of organic structure and form, are pattern rather than atomic properties.

Here too it becomes clear that the characteristic forms and properties of adult organisms are partly the expression of the structural properties of individual minute units of protein (genes, enzymes, etc.) of characteristic pattern. Experiments on embryological development also demonstrate the importance of dominant organizing tissues, organ forming substances of which express pattern properties.

1928. Brian Rhythms. BERGER records the electrical rhythms due to patterns of synchronous nervous activity in the human brain, and thus opens up the study of brain activity patterns, anew field of incalculable importance.

1929. New Aim of a Synthesis of Quantitative Physics. EDDINGTON'S speculations on the numerical constants of atomic and cosmological physics establish a new aim in basic physics: a comprehensive morphology of the realm of measured quantity, from the atomic nucleus to the cosmos, providing a rational synthesis of all phydical constants.

1936. Crisis in Particle Physics. The discovery of "unstable elementary particles" (e.g. the meson), the steady accumulation of new types of " elementary particles" (1932-50), and the growing difficulties of nuclear theory, suggest that the classical concept of the elementary material particle is inappropriate, and an abstract statistics is used in its place, pending further clarification.

The above are recognised steps in the history of the exploration of form. During the last fifteen years other similar advances have doubtless been made, thought not yet recognised. One example may be suggested:

1962, Spherical Point Patterns. FEJES initiates the study of the regular, and most nearly regular, arrangements of a small number of points on sphere. This may be the [illegible] application to spherical arrangements (to complement the developed [illegible] of linear or Cartesian forms), and to asymmetrical or nearly regular forms (as against the perfect symmetry of the platonic solids, crystal arrangements, etc.)

[illegible] for the reader to fill in items which have been omitted, or further steps made in the coming years.

Source: Why Lancelot," Aspects of Form" Landon: Lund Humphries, 1968

Appendix D

COLOR THERAPY

For centuries it has been known that colors can dramatically affect our health, inner harmony and even our emotions. With the help of color the medical effect can be got which the conventional West medicine cannot receive with traditional approaches.

Color is a living energy. It is a property of light. Light is an electromagnetic energy produced by the sun in different wavelengths. As the light is absorbed and reflected we end up with different colors. Everything in nature is full of color. Vibration forms everything in life. The universe is only the energy in vibration. Our body has energy fields (called charkas). All of our organs are comprised of vibrating atoms. All of us have our own unique energy system and our organs have different vibrational patterns. We all emit color.

Light has different particles called photons and microwaves. Light penetrates everything, even our bodies. Light also emits wavelengths that we cannot see (ultraviolet). These wavelengths contain radiation, which is energy. Energy is Qi and life. Now it is revealed that the length of a wave defines its color. In our environment there is an enormous quantity of waves with different frequency characteristics. Moreover, concrete frequency and color correspond to each organ. Having the electromagnetic nature the color cooperates with the energetic structures of a human body, strengthening or suppressing their vibrations. Significant changes in energy structure of the person invariable entail changes at a physical level.

HOW DOES COLOR THERAPY WORK?

The method of color therapy is based on the law of resonant colors interaction, conterminous to frequency characteristics of body. There is a resonant interaction of zones of hands and feet (chakras energy points, acupuncture points of meridians and waves surrounding them) to similar frequency of a color source (artificial or natural). The set of frequencies related to musical notes is an example how colors works. If you place two properly tuned guitars in the same room and pluck the A string on one guitar, the A string on the second guitar will also ring. This is because the sound frequency of the A note traveled across the room causing the resonant frequency of

the A string on the second guitar to sound. Likewise, the body's organs have their own resonant frequencies related to the charkas and meridians. Hence, we can "tune " our bodies for optimal wellness through color therapy by exposing our chakras and meridians to the specific color needed. The light beam is as a language of the organism cells which communicate with each other, and they do so via photons and microwaves. The color scale promotes restoration of the energy balance broken by illness. Different colors give off different wavelength frequencies and these different frequencies have different effects on physical and psychological functions and consequently different disorders.

Colored light can be used directly on the body's health and immune strength, affecting the body and the emotions. It does not alter the material make up of the body, but rather the vibrational aspect, similar to homeopathy.

The treatment itself involves the application of colored light to the acupuncture points on the skin with an instrument that resembles a simple pen light. It does not use needles or pierce the skin. Rather, the color sensitivity of acupuncture receptors on the skin is used to absorb the colored light. Acupuncture meridians then channel healing information encoded in the light to targeted cells and the brain where it is needed.

On 'jogas' representation, every chakra depending on frequency of vibrations prevailing in it has own color. The aura of the healthy person has pure colors. The mechanism of many illnesses is caused by infringement of color (electromagnetic) harmony, mixture of colors, and also deficiency of the certain color necessary for normal activity of the organs and mind-emotional condition of the person.

The idea of linking color and behavior is reasonable enough. Anyone who has ever felt blue, seen red, blacked out, or tuned green knows we are prone to make emotional associations with different shades. We respond to colors physiologically- our eyes physically respond differently to different colors, as to different light conditions and those who believe we react psychologically as well generally claim that "warm" ones, such as reds, yellow, and oranges, stimulate us, even to the point of inducing aggression. From this point of view, red subway-station walls, where it could further stir up already vexed passengers waiting for a late train. On the other hand, "cool" colors such as blue and green are thought to calm the nerves, while the too-cool gray, black, and white fashionable of late are so understimulating that they can invite depression. Thus ships and planes are often painted in warm tones to counter the blues

of sky and sea, while décor in deserts and other hot places often features greens. Though extroverts need cool shades to calm them down, introverts require energizing warm ones- there is little solid research to support the notion "right" colors for certain people or activities. (Winifred Gallagher, 1993)

Below is a very brief guide to using colors. This is not a substitute for medical treatment.

Red

It stimulates brain wave activity, increases heart rate, respirations and blood pressure, and excites sexual glands. It energizes the first chakra (coccyx). It warms us and awakens us physically and energizes our blood. It is a good color to wear when we have colds and poor circulation. Too much red can over stimulate and make some illnesses worse. High blood pressure is an indicator of too much red energy in the body. It is a color for war, prosperity, fire, and rising sun. Spiritually, it is the root color of fire and connects us to our physical self.

- Affects the muscular system, simulates the sensory nerves.
- Affects the adrenals and releases adrenaline into the body.
- Good for circulation and to increase physical energy helps with colds.
- Do not use red for inflammations (blue is suggested).
- Do not use in cases of emotional disturbance. (can increase anger or anxiety)

Red is not recommended for heart problems. Rose tones can be used instead.

Pink

- For rejuvenation, calming and comfort
- For fertility issues to increase compassion

Orange

It is the color of joy and wisdom. It affects the second chakra (sacral). It gives an energy, stimulates appetite and it is a good color for illnesses of the colon and digestion. Spiritually, it is the color of joy. It connects us to our emotional self.

- As an antidote for depression, loneliness and tiredness.
- Is recommended for vegetarians to give them energy.
- For cramps and spasms, chest conditions, rheumatism and asthma.

Yellow

It is the solar plexus chakra. It energizes, relieves depression, improves memory, stimulates appetite and helps in digestive problems. Spiritually, it is the color of wisdom and connects us to our mental self.

- For the nervous system issues of mobility, neurological issues
- For skin ailments and nervous exhaustion.
- Intellectual clarity (before taking tests as an example)
- Do not use yellow for nervous breakdown, use blue and green.

Green

It affects the heart chakra. It has a calming effect and balances the nervous system. Green color is soothing, relaxing mentally as well as physically helps those suffering from depression, anxiety, nervousness. It is a good color for cardiac conditions, high blood pressure and ulcers. Since green stimulates growth, it should be avoided in cancers and other tumors. Spiritually, it is the color of love and connects us to perfect love.

- For the digestive system.
- To relieve tension. for shock,
- It helps to alleviate headaches
- light green for high blood pressure
- Dark green for low blood pressure
- It relaxes the heart.

Turquoise (blue green or aqua)

- Can help to calm hypersensitive children
- Mental calm
- also a good color for general meditation

Blue (light or sky)

It is the color for the throat chakra. It is a good color in respiratory illness or throat infections. Blue is calming and cooling to our system and hence, a good color to counteract hypertension. Spiritually, it is the color of health and connects us to holistic thought.

- To enhance antiseptic effects

- It calms the mind and nerves.
- For throat conditions, stings, itches and bites.
- Use for insomnia, teething troubles and inflamed eyes.
- For cases of shock.
- For cooling a fever
- Use a blue light for measles, chickenpox and mumps.

Indigo (deeper blue)

It is the color for healing of the brow chakra. It is a good color for sinusitis, immunity problems, and all face problems. Too much of this color can cause depression. Spiritually, it is the color of intuition and connects us to our unconscious self.

- Removing fear.
- Purifies the blood stream.
- For varicose veins, insomnia, boils, ulcers, bruising.

Violet

It is the color of the crown chakra. It is cleansing, strengthening, and awakening, suppresses appetite, provides a peaceful environment. It affects the skeletal system of the body. It is a good color for improving immunity, cancerous conditions, and arthritis. It also purifies the system and is an excellent color for headaches and migrains. Spiritually, it is the color of faith and connects us to our spiritual self.

- Can be good for mental and nervous disorders and emotional disturbances. (Some teachers disagree try sparingly at first)
- Maintains potassium balance.
- Reduces hunger.
- Sedates and subdues
- Purifies the entire system.
- Do not use for depression - use green or blue.

Source: http://www.crystalinks.com/colors.html

http://www.geocities.com/healingadvantage/david/pranic.html

جودة الفراغات المعمارية، وهذه المفاهيم هي: مبادىء علم الموجات،التوافقات الهرمونية ، والرنين، واستخدام فكرة زمن الصفر(Zero time) كبعد رابع والتي تفتح المجال للإبحار في مستويات الإدراك العليا، وعلي الرغم من أن هذه الأبعاد كانت موجودة علي مر التاريخ المعماري إلا إنها توارت تدريجيا حتي أصبحت أبعادا غائبة في عمارات القرن العشرين والواحد والعشرين ، الأمر الذى مكن البحث من صياغة مفهوم جديد تأسس علية مدخل جديد للسلام ودوره فى بناء التكوينات المعمارية.

الباب الرابع: " نحو استوديو جديد للمعمار البيئى... "الطاقة والسلام"

استنادا الي المدخل الجديد، و تجسيدا لما توصلت اليه الرسالة، يأتي هذا الباب لطرح وبلورة منهج عملي للتصميم المعماري، استنادا الي فكرة السلام والطاقة فى العمارة، من خلال وضع أسس إنشاء أستوديو جديد تتكامل فيه الأبعاد المختلفة المطروحة فى هذه الرسالة، مع فكرة وأليات التصميم المعمارى بأبعاده المختلفة، من أجل الإرتقاء بنوعية ومضمون العمل المعماري، والوصول الي تحقيق فكرة السلام في العمارة. وقد تم فى هذا الباب وضع ملامح هذا الأستوديو، وأهدافه ومقاصده، والمبادىء التى بنى عليها، ومسار بناء وتطور عملية التكوين المعمارى وأسسها. كل ذلك تم صياغته فى مضمون منهجية تساعد المصمم على بلوغ هدفه وهو تحقيق السلام في العمارة، وقد تم اقتراح دليل مرجعى يساعد المعمارى على تقييم مدى تحقيق هذه المنهجية.

وقد خلصت الدراسة الى صياغة جديدة تشكل رؤية جديد للتكوين المعمارى وهى :

"إن السلام يشكل اصل تكويني وراثى (Morphogenesis) يجب تضمينه منذ البداية فى عملية الخلق المعمارى، هذا الأصل الوراثى يتمظهر فى كثير من الأعمال والتكوينات المعمارية المتوارثة على إمتداد التاريخ المعمارى، والتي ساعدت على إيجاد حالة من التوازن الفيزيقي ، والفسيولوجى ، والسيكولوجى، والعقلى، والوجودى، والبيولوجى للكائن الإنسانى في هذه التكوينات. هذه الحالة يمكن تحقيقها مجددا في تصميماتنا المعاصرة، من خلال إيجاد الرنين المتناغم الذى يوحد بين تأثيرات جميع أنواع حقول الطاقة، وإن تحقيق هذه الحالة المتوازنة تضمن الإرتقاء بنوعية الفراغات والتكوينات المعمارية، والتى تؤدى بدورها الى تحقيق السلام الإنسانى، المقصد الثابت والدائم والنهائى للبيئة المشيدة "

وصدق الله العظيم عندما مزج فى كتابه الخالد الدائم بين الراحة والطاقة والسلام فى قوله تعالى :

"قُلنَا يَا نَارُ كُونِي بَرْدًا وَسَلامًا عَلى إِبْرَاهِيمَ"

(سورة الانبياء، الآية 69)

وإثبات هذه الفرضيات يؤدي الى صياغة رؤية جديدة لمنظومة الطاقة ، والسلام، والعمارة والتى كانت منذ البدء هو مقصد هذه الرسالة. ووفقا لذلك قد تم بناء الرسالة علي مقدمة وأربعة أبواب كما يلي:

المقدمة: ***" العمارة والطاقة والسلام"***

يطرح فيها البحث قراءة للصراع المعاصر، الذي لم يحسم حتي الآن، بين البيئة والعمارة، وقدرة العمارة كأداة للتغيير، إستنادا الي تطور النظريات العلمية الحديثة والتي أثرت علي العمارة كعلم تكاملي في القرن الواحد والعشرين، وصولا إلي صياغة مبدئية لإشكالية السلام والطاقة في العمارة المعاصرة.

الباب الأول: ***" السلام ... البعد الخفى للعمارة "***

وفيه يتم مناقشة ونقد وتحليل فكرة السلام والفراغ المعمارى منذ بداية وجود الإنسان وهو مازال جنينا فى رحم أمه، حيث تتشكل تجربته الأولي وادراكه للفراغ، متتبعا تطور فكرة السلام فى الطروحات المختلفة والمتنامية مع نمو فكرة العمارة والسلام في الحضارات الإنسانية والأدبيات والنظريات العلمية والمعمارية العالمية . ولقد خلص هذا الباب من خلال هذا التحليل الى صياغة محددة لاتجاهات السلام فى العمارة، موسعا بذلك مفهوم السلام والعمارة معا.

الباب الثانى: ***" حقول الطاقة فى العمارة "***

وفيه يتم مراجعة ونقد المفاهيم المختلفة للطاقة وأنواعها ومجالاتها وطرق قياسها، وشرح حقول الطاقات الأرضية المختلفة والإجهادات الإرضية، وحقول طاقات الإنسان، والأسس التي تحكم تفاعل هذه الحقول و المجالات، وكيف يؤثر ذلك كله على نوعية الفراغات المعمارية وقد خلص هذا الباب الى صياغة مفهوم جديد للطاقة.

الباب الثالث: ***" السلام فى العمارة كمفهوم جديد لنوعية الطاقة "***

وفيه تم بحث الجذور المشتركة لكل من العمارة والطاقة والسلام خلال التاريخ المعمارى وما تضمنه من أفكار انعكست في تجربة البناء في حضارات ما قبل الصناعة. ومدي توافق هذه الأفكار والمبادىء بشكل منفصل أو متكامل فى أحدث ثلاث إتجاهات معمارية معاصرة. وقد تم استعراض الفروق الدقيقة بين هذه الإتجاهات الجديدة في العمارة من منظور التعريفات التى تم طرحها في الأبواب السابقة، وقد ناقش هذا الباب أيضا مفاهيم غائبة عن العمارة علي الرغم من أهميتها في تشكيل الوعي المعماري المعاصر، و عظم تأثيرها علي تحقيق

ملخص الرسالة

أصبح العالم من حولنا مليء بالتناقضات والأزمات وفقدان الأمن والأمان، وغدا البحث عن السلام الداخلى والخارجى هو مطلب حيوى وملح للإنسانية من أجل إستمرارية وجودها، والذي لا يمكن تحقيقه الا من خلال عودة التوازن المفقود بين القيم المادية الوضعية وبين التطلعات الروحية، وحيث أن العمارة مرآة تعكس واقعنا المعاصر بكل متناقضاته، و فى إطار هذا الواقع يقف المعماريون المعاصرون فى مفترق الطرق بين أزمات ثلاث : أزمة العمارة ، أزمة الطاقة، أزمة السلام.

ومن هنا كان مقصد هذا البحث، وهو **احلال السلام وإستدامته فى بيئتنا المشيدة**، من خلال عودة ودعم التوازنات بين العمارة و الطاقة بمفهومها الشامل. وبين الانسان والبيئة والكون. هذة التوازنات كفيلة بالإرتقاء بنوعية التكوينات و الفراغات المعمارية والعمرانية على حد سواء. وانطلاقا من هذا التوجه فقد تأسست الرسالة على فرضيات أربع :

- *الفرضية الأولى*

السلام كان، ومازال ، وسوف يبقى المقصد الأسمى والنهائى لحياة الإنسان ووجوده وكل ما ينتجه من عمارة وعمران، ما دامت هناك حضارة إنسانية علي هذا الكوكب .

- *الفرضية الثانية*

إن الفراغات و التكوينات المعمارية "تخلق" حقول طاقتها الخاصة، والتى بدورها تؤدى الى تغيرات محسوسة فى الكيان الإنسانى بأبعاده المختلفة البيولوجية، والفسيولوجية، والسيكولوجية، والعقلية ، والوجودية سواء على مستوى الفرد أو الجماعة، وإن خصائص الطاقات الكلية للفراغات والتكوينات المعمارية تنتج من تفاعل وتكامل مجالات حقول الطاقات داخل وخارج هذه الفراغات مع مجالات طاقة الإنسان.

- *الفرضية الثالثة*

ان طاقة تكوينات الفراغات المعمارية والعمرانية تؤثر تأثيرا كبيرا على نوعية البيئة المشيدة، والتى تؤثر بدورها على نوعية الحياة التى يمارسها الإنسان والمجتمع .

- الفرضية الرابعة

إن خلق التوازن بين العمارة ونوعية الطاقة في بيئتنا المشيدة يمكن أن يصبح أداة فعالة فى إحداث تغيير الواقع الإنسانى المعاش من خلال التأثير على السلوك الإنسانى، وعلى علاقات البشر بعضهم ببعض، وعلاقتهم بالطبيعة، بل بالكون كله من أجل إسترجاع السلام المفقود داخل الذات الإنسانية أو خارجها.