

**THE IDEAL AND THE TECHNO-ECONOMIC CITY:
A CRITICAL ANALYSIS OF THE CITY OF TOMORROW BY LE
CORBUSIER**

by

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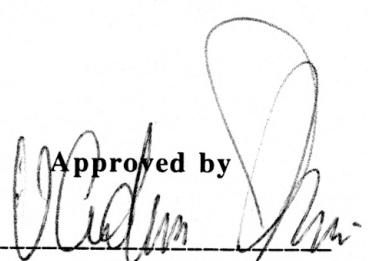
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ABSTRACT

This thesis is a critical analysis of The City of Tomorrow by Le Corbusier. The analysis is centered around two key notions, namely, the Ideal and the techno-economic system.

The Ideal, as read in The City of Tomorrow, is a system in which all natural phenomena, all artifice and all humanity belong to a totality called Nature. Nature, in other words is universal and binds all creation, the city included. The Ideal in the text is described as being based on the principles of modern science and the idea of Reason that stems from the Enlightenment.

The techno-economic system is the one that governs material production by the power-driven machine. It is the underlying structure of the machine, so to speak, one that orders the human, nature and the machine itself to make such production a singular possibility. As is the Ideal, so also the techno-economic system is based on modern science and forms a boundary within which all activity related to production may be described.

In The City of Tomorrow, Le Corbusier attempts to synthesize these two systems to draw a blueprint for a techno-economic city which also signifies the Ideal. To achieve this synthesis, he uses two broad ideas. The first is that of order, represented in both Nature and the techno-economic system by geometry and the laws of physics. The second is that of architecture, wherein Reason and the laws of geometry are combined with the profoundly human creative force that Le Corbusier calls passion to devise a work of art.

With architecture, not only would the Ideal be signified in the techno-economic city, but also the city itself would have an enduring quality.

The aim of this thesis is to explicate that the Ideal and the techno-economic system are in fact incompatible, and that despite similarities, a synthesis between them is not possible. Rather, the techno-economic system tends to suppress the Ideal and appropriate the laws of modern science for its own purpose, which is production. By describing this incompatibility, the thesis will implicitly put to question the role that is given to architecture in The City of Tomorrow.

The first section of the thesis is offers an understanding of the Ideal as read in The City of Tomorrow. The second section describes the techno-economic system which forms the context for the book, and the manner in which it suppresses the Ideal. The third section is a reading of the Contemporary City, in which Le Corbusier aims to achieve a synthesis of the Ideal and the techno-economic system.

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Note: The acronym COT denotes The City of Tomorrow both on this page and in the rest of the thesis.

PREFACE

When I began my education at Kansas State University, my familiarity with Le Corbusier's The City of Tomorrow was at best hazy - hazy because I did not understand the deep socio-cultural implications that the text continues to have even in the present day. I became aware of its importance during Prof. Vladimir Krstic's Urban Design Seminar. Upon choosing to lead (along with a colleague) a discussion on Le Corbusier's ideas on urbanism, I got the chance to read for the first time The City of Tomorrow in its entirety. Since then my interest in his work has never flagged...neither has my belief that The City of Tomorrow is as relevant today, both socio-culturally and architecturally, as it was over a sixty years ago when it was first published.

I had only a broad and an underdeveloped proposal when I first approached Prof. Krstic regarding my thesis. I wanted to do a critical analysis of The City of Tomorrow, and thereby carry out a study that would broaden my own understanding of the relation between architecture and the city, between artifact and culture, between utopian Ideal and material reality. Early discussions with Prof. Krstic helped considerably in focussing my analysis; however, they were more crucial in identifying a broadly based framework within which the analysis could be carried out fruitfully. Ideas about structuralism and structural linguistics were discussed. Initially, we thought in terms of a rigorous method whereby the linguistic model of the referent and signification would be used analogically to put the utopian aspect of the text in relation with its realization in the material realm.

At about this stage, Dr. W. Mick Charney and Dr. Linda Brigham joined with Prof. Krstic to form my committee of advisors. The intellectual input of my committee was most crucial both in the formative and the later stages of my analysis and critique. As I proceeded with the work, as the terms of analysis became better defined, the rigors of this method were abandoned. In what was to become primarily a socio-cultural critique, two structuralist notions, however, were to remain crucially important: first, that all cultural manifestations are possible only within the confines of an underlying system, and that this system could be approached by analyzing the manifestations; second, that structuralism is a study of relations, relation within manifestations as much as between the underlying system and manifestations. While structuralism as a method may not be overtly perceptible, the "spirit" of structuralism is surely present in the thesis.

A final word on structuralism - it might be pointed out that a structuralist approach does not provide a suitable answer to the question "What is a system?" Rather, it confronts the system, as the case may be, with the question "How does the system work?" In other words, it is the mechanism of the system that this approach explicates rather than its substance (in the traditional sense of the word). It is with this idea of mechanism in mind that I analyze Le Corbusier's work; it is with this notion that I define the most crucial terms in the thesis - the Ideal and the techno-economic system - in the discussion that follows.

ACKNOWLEDGEMENTS

I wish to thank a number of people who have knowingly or otherwise made possible the completion of this work. Not all of them have been named here; by no means does this undermine their support and help.

I feel fortunate to have had advisors who are at the same time supportive and intellectually demanding. I am deeply grateful to Prof. Vladimir Krstic, my major advisor. His advise and criticism made the writing of this thesis a true learning process. I feel privileged to have had a chance to work with him. I thank Dr. W. Mick Charney for being a willing reader of my thesis, for the encouragement he offered, and for his suggestions, which lent a much needed coherence to my document. I am grateful to Dr. Linda Brigham for her willingness to participate in a project quite outside her discipline of study. I thank her for her critical readings of the work-in-progress, and for her incisive and frank comments.

I thank my friends for being party to an exchange of ideas, for their help and their support. I am grateful to the workers at the K-State Union Food Service for allowing me a peek into a system that is, in a way, the subject of my analysis.

I thank Niyati for her love and for her amazing capacity to bear with me. I thank my family for their love and confidence in me. This thesis is dedicated to my grandfather,

who would certainly have been glad to read it, but who could not wait.

SECTION I

INTRODUCTION

A town-planning section was organized at the Salon d'Automne of 1922. The head of the section came to see Le Corbusier and asked him for his collaboration. "What is town-planning?" asked Le Corbusier. "Well, its a sort of street art - for shops, shop-signs and so on; it includes such things as the glass knobs on the stair ramps of houses."

Le Corbusier: "All right. I will do for you a monumental fountain, and behind it I will put a city of 3 million inhabitants. "¹

Le Corbusier's plan of the Contemporary City, displayed in the *l'Esprit Nouveau* pavilion at the Salon, was first published in book form in *Urbanisme* (1925), of which *The City of Tomorrow* (1929) is the English edition.² The plan is a technological solution to the city ravaged by rapid industrialization, and is designed as a realizable project to answer the need for building activity in the post-war city. *The City of Tomorrow*, a treatise on philosophical, moral and aesthetic issues related to the city indicates a larger purpose behind the plan; it indicates that the plan was not just a technological solution that answered the needs for a technological society, but one that in fact harbored an Ideal that was firmly rooted in Reason.

This thesis is an analysis of Le Corbusier's *The City of Tomorrow*, centered around two broad concepts or systems that are inherent in the text. These systems are the Ideal and

¹Cited from *Creation is a Patient Search* by Le Corbusier, Frederick A Praeger, NY, 1960, p.62.

²Along with the Contemporary City, the Plan Voisin, town-planning solution pertaining to the centre of Paris, also found its place in both the exhibition and the book.

the techno-economic.³ The analysis is aimed at an understanding of the mechanisms of these systems and their relationship with each other. This means two things: first, the identification of different elements internal to each system and a description of their relation with each other; second, an appraisal of the relation between the Ideal and the techno-economic system.

Le Corbusier's whole attempt is to structure a city in which these two systems are not only internally perfect but also exist in harmonious unity. However, when compared in their mechanisms, they stand in contradistinction to each other. It is the purpose of this analysis to explicate this polarity. It is necessary, however, to briefly describe the mechanism of the techno-economic and the Ideal at the very onset. This will not only define the terms of the analysis but also point towards the strong polarities that exist between the two.

THE IDEAL

The two notions that dominate the Ideal in The City of Tomorrow are Nature and Reason. In Le Corbusier's text, Nature has a universal quality -it is omnipresent, all-encompassing. The Ideal condition is such that all physical nature, all artifice, all technology, all

³Systems is an apt word to describe both the Ideal and the techno-economic because both can be described in terms of the dictionary definition of the word "system." According to Webster's Dictionary, a system is "a group of units so combined as to form a whole and to operate in unison."

humanity belong to a totality called Nature.

Physical nature appears amorphous, chaotic - yet it operates according to well-defined universal laws. To reach the Ideal condition in which all belong to Nature, the human must understand and create according to universal laws. Reason is the completely human tool to understand and formulate universal laws, which may then be used for creative activity. The idea of Reason as a totally human way of understanding stems from the Enlightenment. Kant's definition of Enlightenment in his response to the question "What is Enlightenment?" elucidates this idea of Reason.

Enlightenment is man's release from self-incurred tutelage. Tutelage is man's inability to make use of his reason without direction from another. Self-incurred is the tutelage when its cause is not the lack of reason but in the lack of courage to use it without direction from another. Sapare Aude - 'Have courage to use your own reason!' - that is the motto of enlightenment.

It appears that Ideal creation, dependent on understanding of universal laws, is not bound so much by Nature as by Reason. But this would be an over-simplification of the relation between Nature and Reason forwarded in The City of Tomorrow. Reason, according to Le Corbusier, cannot operate outside universal laws. As he asserts:

What would happen if he [the human] were to invent a perfectly rational system in contradiction to the laws of nature, and tried to put his theoretic conceptions into practice in the world around him? He would come to a full stop at the first step (COT, p.24).

While freed from the notion of the Divine, Reason is bound by Nature itself, and can only

operate within its limits. Second, Le Corbusier stresses that Reason is not a gift that is suddenly thrust upon the human; rather, the human gradually evolves from savagery to reason. This evolutionary history belongs to the realm of Nature in that it is a natural process. Reason, therefore, must be a natural thing in every respect; in addition, the human in the most evolved state is also an integrally natural being who can understand and create according to its laws.

THE TECHNO-ECONOMIC SYSTEM

The techno-economic system is the one that governs material production by the power-driven machine and the consumption of that which is produced. In the usual sense, modern technology refers to material production by the machine. The techno-economic system has greater significance. It is the underlying structure of the machine, the mechanism that orders the human, Nature and the machine itself to make such production and consumption a singular possibility.

A distinction needs to be made between the techno-economic system that governs production in the existing city and that which is forwarded in The City of Tomorrow. In the perfected system proposed by Le Corbusier, the forces of consumption and individualistic competition (so vital in the capitalist city) are all but obliterated. The techno-economic system proposed in The City of Tomorrow is by and large one of

production - Capitalist in the sense that Capital is accumulated without so much as a breathing pause, accumulated by a singular and therefore non-competitive producing body, accumulated without being consumed.

When understood in relation with this techno-economic system, the meanings of Nature, of reason and of the human itself undergo significant transformations from their Ideal meanings. The human in this system is not the individual with the ability to reason freely. The human (or "man" in Le Corbusier's terms) is the mass society comprised of like-minded individuals who cannot understand universal laws but can follow them unthinkingly. The human is reasonable rather than reasoning, a follower of the laws of Reason with the well-defined aim of production and unending development.

Further, the human in this context is no child of Nature; the human is instead the one who takes possession of Nature; Nature is turned into a resource totally available for production and techno-economic development. Nature does not occupy the privileged position it does in the Ideal; rather, it is subordinated by the techno-economic system.

In the techno-economic system, universal laws are an absolute that do not need to be understood; the notion of a natural evolutionary history is therefore rendered redundant. There is, however, a notion of progress which is quite different from the earlier idea of history. Progress is development in its most techno-economic sense and is signified by the continuous and dynamic process of production. If the term "history" is to be used to

denote this progress, it would describe only statistics, economic projections, predictability.

It is apparent that the Ideal and the techno-economic system describe a kind of a polarity, even at this early stage of discussion. The notions embodied by one are all but overturned by the other to signify something quite different. Yet, analogically speaking, there are two fundamental similarities between them. First, both have the appearance of tumult and dynamism. Second, both are described by an underlying order.

Le Corbusier attempts to synthesize the two. To achieve this synthesis, he uses two broad ideas. The first is that of order, which is inherent in both the Ideal and the techno-economic system. The second is the idea of Architecture, which works from the outside to harmonize diverse elements. This synthesis is to be formalized in the Contemporary City.

ORDER AND GEOMETRY

Both the techno-economic system and the Ideal manifest themselves in ordering, although the order represented by one is significantly different from that by the other. The Ideal presents an order in which all is in harmony with Nature and is thereby "naturalized". Nature and the universal laws that are inherent in it order all artifice, the city included.

The techno-economic system also orders. The basis of this order lies in the machine, in the factory, in the process of production. Order is imperative in a perfected techno-economic system for efficient production and continuous development.

It is in the very process of ordering as much as the idea of order that Le Corbusier finds a common tool that can bring together the two disparate concepts. This tool is geometry; as Le Corbusier writes, "Geometry is the means, created by ourselves, whereby we perceive the external world and express the world within us (COT, p.1)." Nature, chaotic as it might appear, obeys the laws of geometry; the vertical and horizontal forces in Nature represent a right-angle that is unique and unchanging in the entire universe. The geometry of the right-angle is the human basis to understand and carry out an ordered creation according to universal laws.

Geometry is also the basis of modern technology; the guiding principle of efficient production is the straight line. In The City of Tomorrow, modern technology is seen as something natural; its evolution is seen as a parallel to human evolution to reason. In the machine that operates on geometric principles, Le Corbusier finds that vital tool that can synthesize the Ideal with the techno-economic. A human creation - such as the city - designed in accordance with geometric principles would not only provide for efficient production but also signify the Ideal.

The thesis will put into question the claim of such a synthesis; geometry, it will argue,

works more to suppress and appropriate the Ideal for techno-economic production than to bring about a synthesis wherein all is bound by Nature.

ARCHITECTURE

Architecture, as understood in The City of Tomorrow, operates from a plane above both the Ideal and the techno-economic system. It is above the Ideal because it is not strictly representative of Reason and universal laws. Architecture is unique because it combines Reason with passion, the human feeling which might be responsible for great destruction, but which is driven by Architecture towards great creation; as Le Corbusier writes, "...it is only Architecture which can give all things which go *beyond* calculation (COT, p.59)." Second, Le Corbusier asserts that products of technology by themselves do not possess the enduring quality of the Parthenon and the great cathedrals - only the combination of Reason and passion in Architecture can create such works. In The City of Tomorrow, only the poet-architect is capable of producing works of art. Unlike the reasonable engineer, who is bound to follow the laws of geometry unthinkingly, the combination of Reason and passion finds its fruition in the poet-architect.

If geometry works from within to order and synthesize the Ideal and the techno-economic, such a synthesis can be achieved nobly through Architecture in the creation of a work of art. The importance of Architecture can be judged by Le Corbusier's assertion that the city

- whose planning (in the modern sense) belongs to the realm of the techno-economic - must endure, must be a work of art, for "...it is the city's business to make itself permanent (COT, p.59)."

The Ideal and the techno-economic system, Nature and Reason, Order and geometry: the thesis describes the relationship between these notions and explore their meanings as articulated in The City of Tomorrow. It proposes that no synthesis is possible between the Ideal and the techno-economic system, and that an attempted synthesis would really imply the suppression of one by the other. By denying the possibility of a synthesis, this thesis implicitly questions the powerful role given to art in The City of Tomorrow, which supposedly makes such synthesis possible.

CHAPTER 1: NATURE AND REASON

In The City of Tomorrow, Nature is a doubly-coded word. The polarity present within the word is as old as Western thought. The opposition between substance and appearance is found in Plato, in his Theory of Ideas; it can be located in Hegelian thought and as Karl Popper asserts, even in Marx's Capital.⁴ While it is not within the scope of this thesis to locate the congruency (or incongruency) in the idea expressed by these thinkers, it may be asserted that the duality is as important in Le Corbusier as is in Marx, Hegel, or Plato. Its importance can be judged from the fact that the duality arises out of Nature, one of the two bulwarks (the other being Reason) that support the Ideal.

The Ideal harbors two primary elements - Reason and Nature. The first belongs to the human domain while the second is brought into the human realm with Reason. Therefore, no analysis of Nature in The City of Tomorrow would be complete without an explication of its relation with the human. The Ideal would be meaningless without the human element (as would the techno-economic). This chapter will analyze the different relationships that substance and appearance of Nature have with the human.

⁴ Karl Popper offers an illuminating, albeit critical discussion of the duality of substance and appearance in Plato, Marx and Hegel. While his thrust is more on the political than the philosophical aspects of their works, he makes an important observation that might be explored even in Le Corbusier's work: this is that while the notion of substance/appearance remained a vital ingredient of Western thought as exemplified by the above troika, the actual debate was centered around what constituted "reality" - substance or appearance.

See Popper's The Open Society and its Enemies, Princeton University Press, Princeton, NJ, 1950.

In The City of Tomorrow, Le Corbusier explains in eloquent terms the deception played by Nature on the human - one in which its substance is brilliantly disguised by its appearance. "Nature", according to him,

presents itself to us as a chaos; the vaults of the heavens, the shapes of the lakes and the seas, the outlines of the hills. The actual scene which lies before our eyes, with its kaleidoscopic fragments and vague distances, is a confusion (COT,p.24-25).

This is how Nature is seen to appear to the human - 'picturesque', perhaps, but wholly tumultuous and utterly disordered - a chaos that is counter to ordered creation of the human.

The sphere of human activity and creation is symbolized in The City of Tomorrow by the straight path.⁵ The straight path is the line of order, of equilibrium; it is the path of a clearly defined goal, a lucid vision. In its appearance, Nature is opposed to all that defines the human being and its activity - it is the summation of tumult as opposed to the ordered path. Its picturesque beauty is not only contrary to order, but quite literally allows no perspective, nor the announcement of well-defined goals, nor a lucid vision.

Ironically, despite its opposition to the human (more correctly, *because of it*), this chaotic manifestation fosters even in the "primitive" human activity and creation. The basis of this creation is not Reason; it is not the idea of a harmonious totality; it is not the Ideal.

⁵"Man walks in a straight line because he has a goal and knows where he is going; he has made up his mind to reach some particular place and he goes straight to it (COT, p.11)."

Rather, the activity is born out of a need to be protected from and to possess and control Nature, as it appears to the primeval human, who⁶

for his own security creates and surrounds himself with a zone of protection in harmony with what he is and what he thinks; he needs a retreat, a citadel in which he can feel secure...(COT, p.28).

With the citadel, the human draws for itself a boundary that separates chaos and contingencies of Nature (which in themselves defy human understanding); within this boundary, Nature is brought into human dominion; within this boundary is a structure that relieves the as yet unreasoning human from the condition of insecurity and fear brought about by the dynamic appearance of Nature.

It is in the city that the dual purpose of the human retreat - protection from and possession of Nature - reaches its highest manifestation. Early in the book, Le Corbusier defines the city in terms of its action on Nature:

A city!

It is the grip of man upon nature. It is a human operation directed against nature, a human organism both for protection and work. It is a creation (COT, p.1).

What is defined here is not so much the relation the city is to have with Nature in the Ideal condition - whereby it is to belong harmoniously to the realm of Nature. Rather, the

⁶The need for the primitive to master Nature as it appears in all its chaos is discussed in the next chapter. At the same time, the need to master Nature is manifested by the techno-economic system in its ordering it into a source of energy. This need is not lost to the modern human, it will be discussed later.

city defined as such represents a limited understanding of Nature - limited in the sense that the aim of this understanding is to act on and master Nature.⁷

In The City of Tomorrow the words "substance" and "spirit" are used synonymously; but a distinction needs to be made between the traditional usage of these words and the manner in which Le Corbusier explains them. In the Platonic sense, these words describe an essence, a single Truth - to understand this truth one needs to ask the question "What is the substance?" However, in a text that is so involved in the signification of the Ideal, in the process of production of meaning, the pertinent question is "What is the mechanism of the substance?" Substance is thereby described as mechanism, a set of rules, an ordering system - analogically, a *language*.⁸ Within this ordering system all natural manifestation, however chaotic it may appear, is possible. The set of rules - universal laws of Nature - limit all natural manifestation and all artifice, if the latter is to belong to the

⁷It is indeed significant that the city is the location of the synthesis between the Ideal and the techno-economic. In its most "primeval" state, the city may be the ultimate space of possession and protection from Nature; in its most advanced state, the Ideal condition, the city is to become the place of confluence of Nature and Reason, of the substance of the former and the artifice created with the latter in harmony with Nature itself. But aphorisms such as the one quoted above contradict the very idea of achieving such a harmony - for it is virtually impossible for the human to be master of and bound by Nature at the same time. This notion is further explicated when "The Ordering of Nature" is discussed.

⁸ The use of the word "language" is very meaningful if one considers the close relation between an Ideal based on universal laws and Purism developed by Le Corbusier and Ozenfant. In her well researched study, Ozenfant and Purism, Susan Ball points out a basic similarity between early structuralist work by Saussure and Co. and Purism, in that both were a "Call to Order" and had a clear concern for universals. According to Ball, "...in Purism, the concern with language, universal laws underlying all Nature and use of language, as well as the study of grammar and syntax in painting took on the characteristics of a structural linguistic investigation..." While this effort in the early development was largely Ozenfant's, the notion of universals is found in many joint writings by Le Corbusier and Ozenfant. Ball cites them as saying that the Purist "quest" was for a "universally transmittable plastic language." As much as Purist thought, the ideas in The City of Tomorrow are deeply rooted in this quest.

See Ozenfant and Purism: The Evolution of a Style, UMI Press, Ann Arbor, MI, 1981.

totality of Nature.⁹

Second, the substance of Nature is closely tied in with the human and with the idea of Reason to the extent that it appears to exist to justify Reason itself. However, this notion of all-encompassing Reason is most strongly refuted in The City of Tomorrow with the argument that Reason is operational only within the *diktat* of Nature.

The idea of substance or spirit of Nature is introduced in The City of Tomorrow as the antithesis of its appearance:

But the spirit which animates Nature is a spirit of order; we come to know it. We differentiate between what we see and what we know. Human toil is regulated by what we know. We therefore reject appearance and attach ourselves to the substance (COT.,p.25).

This passage is significant in two ways. First, it brings together all the primary elements that comprise the Ideal: Nature, substance, order, Reason. Second, it makes the all important connection between substance and the material, wherein the substance defines the underlying system within which all manifestation is possible. It becomes clear that the idea of Nature that has such an overwhelming presence in the Ideal is the order its substance represents rather than the chaos of its appearance.

⁹The duality of a chaotic and dynamic appearance and a substance that defines order itself is to become a basis in the analysis of the Contemporary City. Le Corbusier's city is "naturalized" to the extent that for the human involved in its mechanism, the city is to take on the appearance of dynamism. This dynamism only serves to disguise the underlying order that defines the city. Clearly, the aesthetic that the Contemporary City is to represent is analogous to Le Corbusier's idea of Nature - wherein its chaotic manifestations disguise the rigidly defined laws that bind them.

When Le Corbusier equates the spirit of Nature with order, he is in effect equating one abstract concept with another, albeit to a lesser degree, abstract concept. If at first it was a problem of defining substance or spirit, the problem now is to understand the notion of order - to define it in a way that the spirit of order becomes formally realizable (or *signifiable*). To achieve this it seems imperative to define order in terms of the laws that govern it; by creating according to the laws that underlie Nature, the creation can be "naturalized" and the Ideal signified.¹⁰

The manner in which these laws are formulated is unique in itself:

The laws of gravity seems to resolve for us the conflict of the forces and to maintain the universe in equilibrium; as a result we have the vertical. The horizon gives us the horizontal, the line of the transcendental plane of immobility. The vertical in conjunction with the horizontal gives us two right angles. There is only one vertical, one horizontal; they are the two constants (COT., p.26,27).

The uniqueness of this resolution lies in that it combines a completely scientific notion with a non-scientific one to formulate a principle that is mathematically precise, geometrically sound. The reference to the law of gravity is derived from Newtonian physics.¹¹ That the law has universal implications is important; equally important is that

¹⁰At this stage order seems sufficient to create a work of art. "If the creation is ordered, it lasts throughout time and remains an object of admiration in every mind. This is a work of art, the human creation which, while no longer bearing evident aspects of Nature, yet submits to the same laws (COT.,p.29)." Later in The City of Tomorrow, the relation between Nature, order and creation is complicated with the induction of passion in this relationship. As Le Corbusier says, "Human passion...is the gauge by which we can measure the permanence of human creations (COT., p.52)."

¹¹ Stephen Hawking very succinctly describes Newton's contribution in the idea of gravity. "...Newton postulated a law of universal gravitation according to which each body in the universe was attracted by every other body by a force that was stronger the more massive the bodies and the closer they were to each other. It was the same force that caused objects to fall on the ground."

the vertical humanizes the universal. The gravitational forces act "vertically" on earth and objects on it, on the human domain; the verticality of a force that is universal is the human understanding of it as it relates to the earth. It is an aspect of the universal laws that must limit all human activity and creation in the Ideal condition.

In The City of Tomorrow, the horizon is given a vastly different character from the vertical; it owes little to science and a lot to what must be called "spirit". The key words in defining the horizontal are "transcendental plane". To be transcendental is to transcend the material, to transcend the appearance of Nature and the human world of artifice and to dive deep into the substance. With the induction of the horizon, the definition of substance takes on a paradoxical character - a law that defines its mechanism is "substantial"!¹²

Much more important than the individual characters of the vertical and the horizontal is the fact that they are brought into relation with each other to reach a higher level of resolution. This resolution is arrived at with the right-angle - a symbol of pure, universal geometry easily understood by the human. Geometry had traditionally been used to symbolize the Divine. When geometry is understood in conjunction with Reason, with the

See A Brief History of Time, Bantam Books, Toronto and New York, 1988, p.6.

¹²The horizontal plane is to be of utmost importance in the signification of the Ideal in the Contemporary City. Le Corbusier views the plan of the Contemporary City from a point above it so as to be able to perceive it along the horizontal plane. It is only after he has literally transcended the material reality of the city that its pure geometry becomes visible, and the Ideal is signified. This idea is described in some detail in the last chapter of the thesis.

idea of gaining "freedom from tutelage of another," all such meaning disappears (see p.3 of the thesis). What remains is the scientific/mathematical meaning pertinent to the Reasoning mind.

This is the right-angle that is "the essential and sufficient instrument of action because it enables us to determine space with absolute exactness." It is this right-angle which is "lawful, it is a part of our determinism, it is obligatory." Finally, it is this right-angle that cannot be ignored if the human is to work, that satisfies the human "need for constants."¹³

This argument for the right-angle and for geometry has two powerful implications. First, the right-angle is the law that not only underlies Nature, but also all human work, every action. It limits both order and ordering, both the Ideal and its signification. The right-angle marks the boundary for all manifestation in the Ideal condition.

Second, the notion of the human need for constants has great historic significance. It outlines a critical concern of the Enlightenment and the age of scientific discovery, as well as a primary problem of the larger condition of modernity. In the pre-Enlightenment period, the human need for constants was satisfied by the Divine. The Divine was the

¹³The entire quote reads:

In order to work, man has a need for constants. Without them he would not be able to put one foot before the other. The right-angle is, it may be said, the essential and sufficient instrument of action because it enables us to determine space with an absolute exactness. The right-angle is lawful, it is a part of our determinism, it is obligatory (COT, p.27).

final explanation for all manifestation - natural and human, the Divine evaded Reason. The geometry of the right-angle, then, represents a new type of a constant - an obligatory law, perhaps, but one that can with surety be understood by the human. Certainly, geometry marks a natural boundary, but it also functions as an instrument of Reason; it represents an extension of the Enlightenment project - to free human ability to Reason from the shackles of the Divine. Geometry abolishes all other intermediaries between the human and Nature and allows the human to act directly with/on Nature.

What becomes very evident is that geometry puts the human in direct relation with Nature, thereby drawing the analysis towards the notion of Reason. The intricate relation between the human and Nature, of Reason and the understanding of the universe, is brilliantly expressed in the following passage:

Man, created by the universe is the sum total of that universe as far as he himself is concerned; he proceeds according to its laws and believes he can read them; he has formulated them and made of them a coherent scheme, a rational body of knowledge on which he can act, adapt and produce (COT., p.18).

With this statement, Le Corbusier establishes a direct relation between human understanding and the universe representing the totality of Nature. To begin with, the human is created by the universe, and is in this sense subordinate to and bound by it. This notion establishes a vital link within the mechanism of the Ideal. In the Ideal, it may be reiterated, Nature is the universe in the broadest sense of the word, within which physical nature, the human and its tools and all artifice fall. The human is bound to obey universal

laws in order to be in harmony with the universe. This seems to be clearly an attempt to place the human within a stable universe, harmoniously balanced with well-defined laws. However, the induction of the idea of Reason puts the entire relationship in an uncomfortable disequilibrium.

The human that Le Corbusier is talking about here is one who has faith in its own ability to understand universal laws, a complete belief in Reason. With Reason, not only can the universe be understood, but its laws can also be formulated to be put to use for all human action and creation. The understanding of the universe occurs not from any philosophical or theological perspective, but from the point of view of a rational and scientific analysis. In other words, the universe is made into the object of such an analysis, with the implication that the human must occupy a position of distance from rather than belonging to the universal Nature.¹⁴ The disequilibrium arises from this dual relation of belonging to/distance from the universe.

But this does not represent a real crisis for Le Corbusier. As he implies, once the human has formulated these laws, "a rational body of knowledge," its position within the totality

¹⁴Referring to the notion of rational and scientific analysis, Hannah Arendt asserts in her powerful work The Human Condition that "Instead of the old dichotomy between earth and sky we have a new one between man and the universe, or between the capabilities of the human mind for understanding and the universal laws which man can discover and handle without true comprehension." This statement is important in two ways. First, it explicates the new duality that arose with the replacement of the Divine with Reason - the duality of man and universe. Second is the notion that the human can formulate and handle universal laws without true comprehension. This is arguably true for The City Of Tomorrow whose main purpose is not to find essences in the philosophical sense; it is rather to formulate universal laws that enable the human to work in the universe.

See The Human Condition, University of Chicago Press, Chicago, 1959, p.270.

of the universal Nature can be reestablished. With these laws, the human can "act, adapt and produce" and occupy a central position within it. But it should be noted that action is something quite different from comprehending the nature of the universe and thereby finding one's place in it (see footnote #12). Thus, Reason seems to offer a freedom that is essential for establishing the human's position within the universe.

While Reason does offer freedom from the Divine, it does not imply boundless capacity to think. There is a notion in The City of Tomorrow that Reason itself cannot operate outside of universal laws or, in more humanly understandable terms, outside the formulated laws of the universe. In other words, the human is free to Reason, but the very process of Reasoning is bound by well-defined, rational, geometric laws that order thought itself. It is in this sense that Reason becomes self-serving; in finding its limits in rational principles it is in the end more an instrument to prove the workability of its own principles than to throw light on the universe.¹⁵

¹⁵In a significant paragraph, physicist and astronomer Stephen Hawking talks about the rational analysis of the universe and refers to the very dilemma cited above:

"Now, if you believe that the universe is not arbitrary, but is governed by definite laws, you ultimately have to combine the partial theories into a completely unified theory that will describe everything in the universe. But there is a fundamental paradox in the search for such a complete unified theory. The ideas about...scientific theories assume we are rational beings free to observe the universe as we want and to draw logical deductions from what we see. In such a scheme it is reasonable to suppose that we might progress even closer to the laws that govern our universe. Yet, if there is a complete unified theory, it would presumably determine our actions. And so the theory itself would determine the outcome of our search for it!"

The paradox which Hawking describes in The Brief History of Time is found in The City of Tomorrow. However "primitive" universal laws may be in Le Corbusier's work when compared with those of astrophysics, they still work on the same rational basis to describe the entire universe. In this sense, they represent a "unified theory". In as much as they determine human action, they do not represent the correctness of such action, nor a real comprehension of the universe as much as they serve the purpose of self-validation.

Lastly, a perceptible change in the very nature of the universe occurs in this passage, and this change is very meaningful in the context of the entire work. There are two universes that Le Corbusier talks about in this passage. The first is the universal Nature (the laws that form its substance) that the human attempts to understand. On the other hand the universe in which the human practices belongs to the material realm. In the passage, "to act" is to establish with human creation a "grip on Nature." To adapt is to use these laws to create "a zone of protection in harmony with what [the human is] and what he thinks." To produce is to be in the material realm, for production in The City of Tomorrow is representative of the human toil towards civilization. Production results in the "capital of the society...long in accumulating but sooner or later to be the nourishment of a spirit (COT., p.36)."

It is equally interesting to note that Hawking supports the idea of the unified theory with Darwin's evolutionary model and the idea of natural selection. Le Corbusier himself reverts to the idea of a "natural" evolution to validate the notion that Reason represents a truth that need not be questioned.

See A Brief History of Time, p.12.

CHAPTER 2: HISTORY AND PROGRESS

The Webster's New World Dictionary defines the term "progress" as "the action or process of advancing or improving by marked stages or degrees, especially, progressive development or evolution of mankind (there was a general belief in the inevitable or universal progress)." Even while it does not signify the broad implications of the word "progress" in The City of Tomorrow,¹⁶ this definition outlines the very basis of the word as it is understood from the text. As shall be explicated, the entire notion of the history of civilization is immersed in a belief in the "inevitable" and "universal" progress of the human; but this notion has very important functions to perform in The City of Tomorrow.

History in The City of Tomorrow is a description of the progress of the human from the "primitive" to Reason - an evolution. In this evolution, the human is bound to follow universal laws, for no rational system can be evolved in contradiction with these laws. If such an attempt is made, then, as quoted earlier, the human "would come to a full stop at the first step (COT, p.24)." The notion of history serves a dual purpose. First, it

¹⁶According to Manual and Manual, Condorcet's understanding of the word progress can be seen as the root of the meanings the word has taken on since. In the aforementioned Enlightenment utopian's work, the word progress "and its derivations broke through all hitherto accepted bounds of meanings and became at one and the same time a capsulated description of empirical history, a chartered goal for men's activities in the present and the future, a definition of good at any historic moment and the identification of the moral man." In the course of this thesis, it will be seen that the word "progress" implies all these things in The City of Tomorrow, apart from the fact that the word is put in the context of a different age, one that has benefitted the leaps and suffered the traumas of the industrial revolution.

See, Manual and Manual, Utopian Thought in the Western World, Belknap Press, Cambridge, MA, 1979.

describes the Ideal as the final and the most evolved stage of civilization, one which allows a full understanding of the universal laws that bind the human and result in creation of the highest order. Second, it serves to justify the notion of Reason itself; Reason understood to be the most evolved state of mind and the destination of history is the proof of its superiority over "tutelage from another." In short, Le Corbusier's idea of evolution offers a "historic" justification of the Ideal and of Reason.

There is, however, another history described in The City of Tomorrow, one that is so intricately woven with the evolution to Reason that the two must be analyzed in conjunction. This history describes the evolution of the instrument, from the primitive tool to the modern machine - the perfected version of technology. If the different stages of civilization are manifest in the construction of artifice, in architecture and in the city, then such creation is made possible with the instrument. The relation between the two histories can be described thus in a simplified manner: the higher the stage of civilization, the more evolved is the instrument and the more ordered is human creation. The instrument is the mediator between culture and its manifestation; the instrument is the very means of realization - this defines the role that it plays in the Ideal scheme of things, wherein all is bound by Nature and its laws. What follows is an explication of the evolution to Reason and the parallel evolution of the instrument that is essential in signifying the Ideal.

Le Corbusier describes the "natural" evolution of the human in a manner that does not

distinguish between different peoples. Every civilization follows the same sure path of progress - one that inevitably leads to Reason. This path is defined by universal laws. Every civilization manifests its crests with the creation of ordered forms. In this sense, there is no distinction between the Greek, the Egyptian or the Chinese civilizations; each of these are quoted, whether in the written text (the references to Parthenon as a symbol of Art) or with illustrations which capture the image of a geometric order.

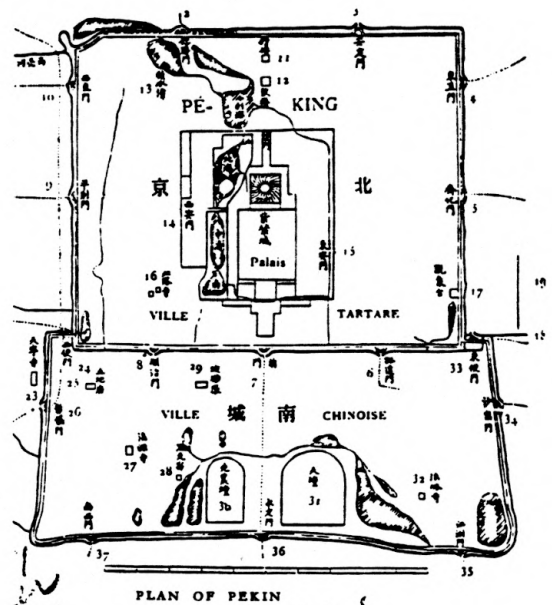
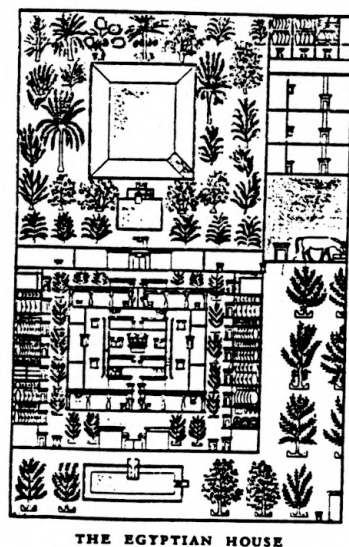


Fig.1&2: Illustrations from The City of Tomorrow that exemplify the idea of geometry in Egyptian and Chinese civilizations, at the level of the house and the city respectively. (From COT, p.25-26)

This absence of distinction is significant. It furthers the notion that laws that govern the

entire universe must necessarily govern the evolution of the entire humanity. In other words, the evolution of the human, in as much as it is governed by universal laws, is a natural process - that is, it is bound by Nature.

However, in The City of Tomorrow evolutionary history is itself marked by different stages which are treated as distinct segments of the entire process. The whole of human history is divided into three stages - those of the primitive, the barbarian and the Reasoning human.¹⁷ The first stage is that of the "human animal", the savage who is seen as "using pure geometric forms, for instinctively he submits to those universal laws which he does not try to understand, from which he makes no attempt to liberate himself (COT., p.41)." Certainly, the human has its tools for construction. But these tools are not made with an understanding of the universe; these are not the tools of Reason. Yet, Le Corbusier asserts that the construction of the most primitive artifice is completely bound by universal laws. The order and geometry of the "Native Hut" is indicator enough of this submission to universal laws. Therefore, even while Reason had not as yet entered the mind of the human, its creation was surely guided by laws to be understood and formulated only later.

¹⁷ While all civilizations undergo evolution towards pure geometry and the order of the straight line, this does not mean that they are at the same stage of evolution at the same time. The distinction between the different stages of evolution does allow for differentiation between different civilizations, even when the evolution itself follows a similar path, ordered by Nature.

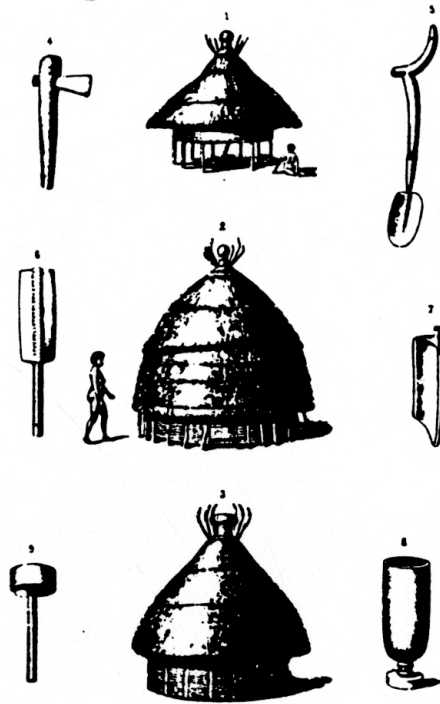


Fig.3: The native hut and the primitive tool used for its construction.(From COT, p.24)

The first stage of evolution, the beginning of the history of the human is significant in The City of Tomorrow. It points to the very origins of Reason, of human knowledge of the universe. It locates the origins of Reason in Nature, and Reason as something natural needs no further validation to authenticate it as an absolute truth.¹⁸

¹⁸ The idea of returning to the origin was an important part of the discourse in the age of Reason - the Enlightenment. Anthony Vidler quotes d'Alembert as saying, "The first step we have to make is to examine, if we are allowed the term, the genealogy and the filiation of our ideas, the causes that have given rise to them, and the characteristics that distinguish them; in a word, to return to the origin and generation of our

The second stage describes the emergence of nations and the human from "animal existence." This stage is significant in two ways. First, in its emergence from animal existence, the human does not rely on instincts. This, however, does not mean a sudden emergence to Reason. The human is a barbarian at this stage - unreasoning, certainly, but nonetheless searching for those principles that govern Nature. This age, then, is one of questioning, of following an unknown and dangerous route that will inevitably lead to Reason. "The path," according to Le Corbusier, "is rough, here and there there are rallying points that can be recognized, but off the road there are unknown gulfs, dangerous attempts and the inability to go further." This is a chaotic age, but it is also one when the human learns to separate itself from the chaos that Nature presents itself as, if not to understand its substance just as yet. This age marks, in Le Corbusier's terms, a movement to "culture."¹⁹

knowledge." Le Corbusier's effort of delineating the evolution to Reason may be seen in the same light. He begins, so to speak, at the very beginning, and finds in Nature the validation for the idea of Reason.

Further, Le Corbusier's primitive bears an uncanny resemblance to Laugier's noble savage, who lives and creates "in his first origin, with no other assistance or guide than the natural instincts of his needs." Instincts, and not understanding, back Laugier's human to build the primitive hut. However, this instinctive construction is inherently rational and pure geometry is manifested in the hut. Despite a complete reliance on instinct, Laugier's noble savage "brought to materials a rational faculty of reflection, quite naturally thinking in terms of pure geometry as a rule for assembling his structure." Le Corbusier's primitive similarly relies on its instincts, submits to universal laws of nature and creates entirely rational structures.

But there is a difference between Le Corbusier and Laugier. The primitive hut is the culmination of Laugier's ideas on architecture. With the hut as a paradigm, he outlines the basic principle as "...architecture might be demonstrated to imitate...not the outer appearances but the inner procedures of nature - the cause and effect of physical sensation and need." Le Corbusier goes beyond physical appearance and need, to the establishment of the rational structure of science and technology, which in the present age must guide all creation.

See The Writing of the Walls, Princeton Architectural Press, Princeton, NJ, 1987, p.17-21.

¹⁹It is necessary to understand the usage of the term "culture" in The City of Tomorrow. Culture and the Ideal are closely related in the text - the former expresses, more than anything else, the idea of Reason, to the extent that culture, as Le Corbusier sees it can only be manifested in geometric forms that signify

The third stage of evolution marks the great moment when everything has been proven: "The period of struggle is over. The period of construction has arrived (COT., p.41)." This stage is one which is reached when the universal laws have been formulated and the instruments of creation have been perfected.²⁰ In other words, the third stage of the evolution marks an age when the Ideal can justifiably be realized. Le Corbusier sees himself at the point when the third stage is about to commence, when Reason and science have given the human a well-defined structure within which it can create with the perfected instrument - modern technology.²¹

ordering by the human. According to him, "When man begins to draw straight lines he bears witness that he has gained control of himself and has reached a condition of order. Culture is an orthogonal state of mind (COT, p.43)." It will be explicated later that the "cultured" human is the one who has gained control of itself but is also one who believes it can order Nature - a notion that runs counter to the universal ideal (and also one that is intimately related to the techno-economic system).

²⁰ It is interesting to note that Le Corbusier sees himself on the threshold of such an age. "Where the eighteenth century [Enlightenment] defines the fundamental principles of reason, the nineteenth century [the age of the Industrial Revolution], by a magnificent effort gave itself up to analysis and experiment and created an equipment which was entirely new, formidable and revolutionary and destined to revolutionize the entire society, We are the heirs to that effort; we are aware of our modern feeling and we know that an era of creation is about to commence (COT., p.44)." In *The City of Tomorrow*, the age itself justifies the creative effort of the architect towards realizing the Ideal - for the means of such a realization are readily available.

²¹ The distinction between the primitive and the modern instrument can be better understood through Levi-Strauss's own distinction between the bricoleur and the engineer. According to him, "The Bricoleur is adept at performing a large number of diverse tasks, but unlike the engineer, he does not subordinate each of them to the availability of materials and tools procured for the purpose of the project." Bricolage is an inalienable part of primitive thought, wherein "reasoning" involved is not a structure in itself that guides all thought, but is evolved and dependent on the perception of events (in nature). Science, on the other hand, "'in operation' simply by virtue of coming into being, creates its means and results in the form of events, thanks to the structures it is constantly elaborating, and which are its hypothesis and theories."

It is inconceivable to argue congruency in the thinking of Le Corbusier and Levi-Strauss. Yet, the evolution of the human and its instruments can be understood in terms of Levi-Strauss's distinction between the bricoleur and the engineer. Le Corbusier can be seen as differentiating between the human who has a fixed set of tools and the perceived events of Nature to build on, and the human who is bound by the rational structure of science and has to its disposal the purpose-made instruments of technology with which to build. Le Corbusier's consistent stress on Universal laws, on Reason, on science and technology clearly announces a point of view which sees the engineer as superior.

In The City of Tomorrow, the instrument, the tool of construction bears a strong relation to every stage of evolution. If the earlier stages correspond to the primitive instrument and the search for the rational instrument for creation, the final stage - the age of Reason - corresponds to the perfected instrument - one that is based on universal laws and is thereby a part of Nature.

The final stage of evolution clearly marks the tone of Le Corbusier's project in The City of Tomorrow. As explicated earlier, the major notions in the text are not defined so much in their essences as in their mechanisms - their relation with each other and the manner in which they work. Now the purpose of such an approach becomes clear. For the human on the threshold of realization, it is not essential to know the essence of a notion such as nature; it is necessary to know, on the other hand, the working of nature and the relation it has or could have with the human. As Arendt suggests, rational and scientific analyses do not give the human a true comprehension of the universe but a working knowledge of it (see footnote #12, p.19-20). A working knowledge is all that is required to realize an Ideal.

The third stage marks an obvious shift from the notion of understanding of the universe to that of signifying it, that is, of realizing the Ideal in actual, formal terms. In this age of realization, it is the process of production that needs to be understood - a knowledge of ordering is needed if order is to be realized. It is in the process rather than in the final

See The Savage Mind, U. of Chicago Press, Chicago, 1966.

product that the mechanism of the instrument becomes an indispensable part of knowledge, knowledge that is now understood in the narrower sense of know-how. This stage is the one in which the universe is opened out to the human. It is the one in which progress is not bound by and to the earth. It is also an age in which the availability of instruments gives the idea of limitless progress an unprecedented credibility. The human is seemingly on the threshold of infinite freedom to reason and thereby realize - but only seemingly so. Reason and the instruments themselves serve to limit this freedom in an equally unprecedented manner.

One needs to go back to the ushering in of modern science to understand that it depends on the means to demonstrate what might have otherwise been mere hypothesis or pure speculation. One needs to recall that the means of mathematical reason and abstract geometry were indispensable for Newton to demonstrate that the earth was affected by forces outside its hitherto accepted boundary. One needs to remember that the universal nature of scientific laws was demonstrated by means of an instrument - Galileo's telescope. One needs to understand that modern science not only opened the boundary of human thought and action to the universe, but paradoxically, built another boundary - an iron curtain of Reason and its instruments.²²

By the time the third stage has arrived, Le Corbusier's idea of evolutionary history has completed serving its purpose; in justifying the Ideal, Reason and modern technology as

²²Hannah Arendt offers an illuminating discussion of this paradox of science and reason in The Human Condition, Ch.6, "The *Vita Activa* and the Modern Age," p.248-280.

the natural instrument, evolution in The City of Tomorrow justifies the age Le Corbusier finds himself on the threshold of - the age of construction. The third stage marks an end, as shall be seen in the following chapters, not just to evolutionary history, but to all history. At this stage, the order of Nature is understood, its apparent relation to technology is rendered transparent, opening up the world of artifice to ordering.

SECTION II

THE TECHNO-ECONOMIC SYSTEM.

This section is an explication of the techno-economic system, the one that allows for production in its most material sense, as read in The City of Tomorrow. This explication is carried out by means of an analysis of the activity promoted by the techno-economic system. What is meant by "activity" here is ordering - which allows the system to manifest itself and to work. Ordering, or to order, according to The Webster's Third New International Dictionary, is "to put into an interrelationship thought of as reasoned or effective or to dispose so that system is achieved or confusion or friction is eliminated."

This section will study ordering related to the techno-economic system in The City of Tomorrow. It explores ordering in the techno-economic system with reference to three main ideas. First, it explicates the ordering of history in The City of Tomorrow into an instrument for measurement and prediction. It will be seen that this instrumentalization serves not only to eliminate future contingencies but also to make obsolete the very idea of evolutionary history. Second, it explicates the ordering of Nature into a resource and a storehouse of energy to be tapped for production. Third, it explicates the ordering of the human from the reasoning to the reasonable - one who is completely and blindly involved in the process of production, so that even the larger idea of history as something inherently political is suppressed.

It was understood in the previous chapter that the signification of the Ideal also meant an

ordering - one which assured the universality of Nature. This chapter will show the improbability of achieving synthesis between the two types of "orderings". It will explicate that the Ideal proposed by Le Corbusier is suppressed by the techno-economic system, so that not even the poet-architect, who stands in contradistinction to the reasonable human, can achieve a true synthesis . This section will pave the way for the analysis of the Contemporary City, wherein such a synthesis is supposedly realized.

CHAPTER 3: PROGRESS AS DEVELOPMENT: THE NEGATION OF HISTORY.

Referring to the early twentieth-century thinkers who propagated utopia as a realizable project, Manfredo Tafuri writes: "For these men the dominant theme is that of a future into which the entire present is projected, of a 'rational' dominion of the future, of the elimination of the risk it brings with it."²³ Le Corbusier can be seen to belong to this milieu of thinkers; his continual insistence that the Ideal can and must be realized is testimony to this. But it is not of primary importance to locate Le Corbusier within a genre, or even to identify such a genre of progressive thinkers. What is pertinent to this thesis is the question - What gives the project of realizable utopia, of the establishment of a rational and friction-free future credibility. Tafuri attributes progressive thought to the "unproductiveness of intellectual work" in the nineteenth century, which advanced ideologies had to overcome.²⁴ This is certainly an important observation that leads to the understanding of the genesis of such thought. But it does not explain the realizability of utopia as a valid notion. The validation can be found in The City of Tomorrow, in the description of the evolution to reason.

²³See Architecture and Utopia, MIT Press, Cambridge, MA, Ch.3, p.52.

²⁴Tafuri goes on to add that "To turn ideology into utopia thus became imperative. In order to survive, ideology had to negate itself as such, break its own crystallized forms, and throw itself entirely into the 'construction of the future.'" Ibid., p.50.

The history described in The City of Tomorrow, universal as it might purportedly be, bears the presence of actual events in Western Civilization. The victory of Reason is an obvious reference to the Enlightenment - an intellectually productive period wherein the roots of modernity can be found. The crystallization of the perfect instrument is an equally obvious reference to the Industrial Revolution, wherein the laws of science and Reason were applied to the actual process of industrial production and the instrument of modern technology evolved. As suggested earlier, it is not surprising that Le Corbusier saw himself on the edge of a new era in which the intellectual, scientific and technological work done earlier could be formalized in actual construction. He justifiably writes - "What gives our dreams their daring is that they can be realized." (COT, p.138)

The realization (of the modern city, as the case may be) is not seen to occur in some unforeseeable future, but in the present because, as Le Corbusier asserts early in the book, "...the future belongs to nobody (COT, p.3)." A future that belongs to nobody is in Tafuri's terms one into which the entire present is projected. It is a future that is wholly understood and thereby rendered predictable. Past history is treated as an instrument of measure, to make possible this understanding of the future. The word "future" in its historic sense, as shall be explicated, is rendered meaningless.

In The City of Tomorrow, Reason is seen as a mandatory step towards the age of realization - the one in which the future is rational. The veracity of this notion can be elucidated with the explication of the relation between Reason and measurement. Reason,

in its most primal sense, is signified by freedom from tutelage of another. This implies a reliance and the belief of the human in its own capacity to understand. Such an understanding is not based on random and anarchic thought, but on certain fundamental notions that the human mind already embodies.

In his essay "Modern Science, Metaphysics and Mathematics", Martin Heidegger makes some important observations on the process of understanding or learning, which he calls Mathematical. According to him, "The genuine learning is ... an extremely peculiar taking, a taking where he who takes only takes what he basically already has."²⁵ Where does the human get this knowledge that "he already has"? - the answer to this found in The City of Tomorrow has as its basis empirical knowledge, and yet one that is rooted in Reason. The human, according to Le Corbusier "rules brute creation with his intelligence. His intelligence formulates laws which are a product of experience (COT, p.11-12)." Seen with natural evolution in mind, it is in the universal history that the human experiences; in experiencing, it accumulates fundamental knowledge without ever realizing it. Reason, which is Mathematical in Heideggeran sense, is a process of self-realization - whereby the human understands the knowledge of the universe that it has already acquired. Le Corbusier's definition of intuition points to this idea: "...on the basis of rational elements; it might well be expressed by intuition is the sum of acquired knowledge." (COT, p.39-40)

²⁵From Basic Writings, ed. David Farrell Krell, Harper and Row, NY, 1977, p.251.

Heidegger goes on to explicate the relation between mathematics, seen narrowly in terms of numbers, calculations and measurements, and the Mathematical. According to him, the Mathematical is not a part of mathematics, rather it is the latter that is Mathematical. The human has an intuitive understanding of numbers, without ever being able to define what a number is.²⁶ "Numbers are the most familiar form of the mathematical because, in our usual dealing with things, when we calculate or count, numbers are the closest to what we can recognize in things without deriving it from them."²⁷ Mathematics is therefore a fundamental way in which the human applies Reason in its usual dealing with things, in which it applies Reason for its activity. Le Corbusier suggests that the new era that is about to begin is submerged in such activity, when he writes - "The period of construction has arrived. And the spirit of construction has entered our minds; we are able to appreciate and to measure... (COT, p.42)" While this chapter deals specifically with the idea of "history," it will be seen that the Heideggerian idea of mathematics, in its very reasonableness, pervades not just history but also the role Nature and the human are to play in the techno-economic system.

History, in The City of Tomorrow, cannot escape the domain of measurement. As explicated earlier, history is governed by universal laws. When the power of reasoning is fully developed in the human, it implies that universal laws are fully comprehended.

²⁶Heidegger explains this notion with an example. "We see three chairs and say that there are three. What 'three' is the three chairs do not tell us, nor three apples, three cats, nor any other three things. Rather, we can count three things only if we already know 'three.'" - Ibid., p.252.

²⁷Ibid., p.253

Such a comprehension naturally leads to the understanding of the whole of history. In Heidegger's terms, such an understanding of history has as its basis the Mathematical. In an age completely involved in the activity of construction in its material sense, in as Heidegger says, "the usual dealing with things", it is equally natural that the understanding of history is formulated in terms of pure mathematics. In the age of realization, history is measurable; Reason itself with its relation to mathematics creates a domain in which history is linear and literally chartable on a graph, to make possible calculation, measurement and projection into a predictable future. The grounding in Reason and its natural relation to mathematics validates such an ordering of history - to something ultimately scientific - to a tool that is incredibly useful for the techno-economic system.

History, seen through the eyes of Reason - the Mathematical - is quite naturally linear. In The City of Tomorrow, this is how history is perceived even when it belongs to the Ideal condition of being bound by universal laws. It is quite pertinent that a graph is used to illustrate and rationalize evolutionary history.

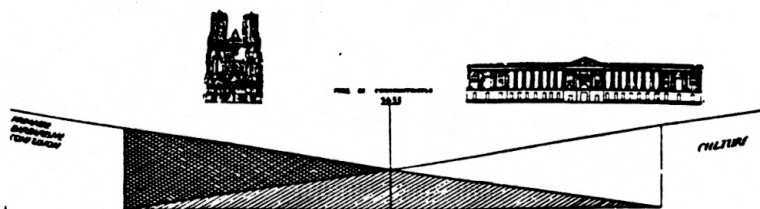


Fig.4: The graph Le Corbusier uses to illustrate the inverse relation between "barbarism" and "culture". (From COT, p.43)

Perhaps this graph is an oversimplification of what Le Corbusier actually writes about history. Even so, it is quite pertinent to see how this graph can be described in terms of mathematics. As the graph signifies, when barbarism is at its zenith, Reason is insignificant. The rise of Reason corresponds to a "proportional" drop in barbarism (and the creation of great works of architecture) - until the latter is all but erased, and a permanent state of "culture" is reached. It can be said, and not without wryness, that Reason varies inversely as barbarism and that a rise in one corresponds to a proportional drop in the other.

In all correctness, this is a graphic representation of evolutionary history, and one that seems somewhat reductive of the whole idea. It certainly does not allow for exact mathematical calculation of ideas like "barbarism" and "Reason." Nonetheless, it is suggestive of an extreme rationalization of history. Suggestive also in the graph is the notion of the projection of the present into the future, and the use of the past to foretell and control a rational future, of the role "history" is to play in the techno-economic system.

Through his equipment, man is in a position to know everything that has happened in the world just as he has been able to acquaint himself with the whole of human effort in the past and the present. We are justified in believing that an even more delicate sensibility will come about, since our field of choice is immense and we have the power to choose (illustration and quote from COT, p.43).

The possibility of graphical representation of history is a significant contributor to the

power of choice that the human has. Such a representation allows the foretelling of the future course of events. An entire body of work, of creation and construction can be guided by this projection into the future, by the appropriate choice based on foreseen events. Such a charting out of the past and the present and the projection into the future is possible with mathematical exactness with statistics.²⁸ As Arendt asserts, statistics is the "chief technical tool of modern economics."²⁹ In The City of Tomorrow, the economic implications of a scientific history are not camouflaged in the slightest.

Statistics can be seen clearly as a novel version of history in Le Corbusier's assertion that "Statistics show us the past and foreshadow the future; they provide us with the necessary figures and interpret our graphs and curves...Statistics help formulate the problem (COT, p.106)." Certainly statistics implies understanding. But it is not understanding of Natural history that statistics allows. Neither is the need for this understanding described by understanding itself. Statistics dissect and decipher history with the purpose of action in its most material sense. The problem which statistics help formulate is one of realization -

²⁸Le Corbusier writes, "By virtue of statistics we can achieve an almost instantaneous grasp of a problem of whose complexities we are altogether ignorant; and thus choose a path towards fresh creations (COT, p.108)."

²⁹Statistics has other deep implications in a society guided by the techno-economic system. In The Human Condition, Arendt says, "It is the same conformism, the assumption that men behave and do not act with respect to each other, that lies at the root of modern science of economics, whose birth coincided with the rise of modern society and which, together with its chief technical tool, statistics, became the social structure par excellence (P.41-42)."

It will be explicated later in this chapter that the techno-economic ordering of the human makes it reasonable, conforming - a mass of humanity that behaves. Statistics plays an important role in the perception of the human as such a mass, and the implications of planning a "future" based on such a perception are quite grave.

of creation, not simply of the work of art but also in terms of techno-economic production.

It must be realized that Le Corbusier sees statistics as the foundation of the poet's work in the coming era. He writes, "Statistics are the jumping ground for poetry, the base from which the poet may leap into the future and the unknown, although his feet remain firmly planted on the solid groundwork of figures, graphs, the eternal verities (COT, p.107)."³⁰ At the same time, the problem that statistics helps formulate is one of modern town-planning, itself a product of the nineteenth century industrialization. For Le Corbusier, the problem is truly one of the city. He writes:

Under such dangerous conditions as regards the future there is being slowly pursued the long drawn out task whose aim is to organize our cities, to police them and discipline them, to keep them efficient for production, to lift them out of the chaos which stifles them...(COT, p.108);

in short, to order the city to carry out techno-economic production. Such is the base from

³⁰The idea of the poet-architect - the one who combines his passion with Reason to create works of art - is discussed briefly on p.7-8 of the thesis. This idea will be discussed in some detail later. However, it may be understood that by finding its base on something whose own basis is economics, the poet-architect in The City of Tomorrow is submitting to the techno-economic system, even if only to regain its position in the creation of a work of art - which only the poet-architect is capable of doing.

Alan Colquhoun expresses this idea in his essay "The Significance of Le Corbusier" - "...Le Corbusier adjusts both classicism and historicism, the idea of perennial beauty and technological progress, so that they interact, while retaining a certain dialectical independence. At the same time, by an apparent act of submission, the architect comes to dominate the engineer and the world of material reality is swallowed up by an aesthetic intention."

See "The Significance of Le Corbusier", from H. Allen Brooks, ed. Le Corbusier, Princeton University Press, Princeton, NJ, 1987, p.17-18.

which the poet-architect is to create, a base which is described as "the spirit of analysis, not of invention (COT, p.109)."

As admitted by Le Corbusier, statistics itself does not provide an understanding of the whole of evolutionary history, nor make way for a total vision of what should be. In statistics, the earlier idea of history is now fragmented, so to speak, "individualized" so that even its most trivial aspects can be put under microscopic study. The study is not of evolution at all, rather, it is of change, of growth - the growth of population, the change in motor-car production and so on, as these graphs from The City of Tomorrow amply illustrate.

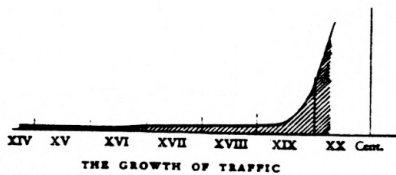
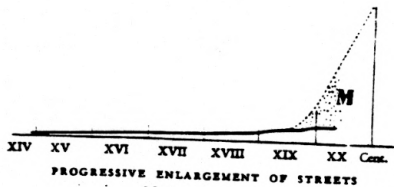
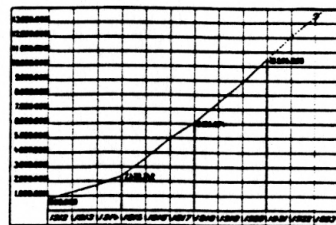


Fig. 11.—The twentieth century marks a violent break from a long-established state of things. The development of the curve leads to a state of things absolutely unimagined.



—ANNUAL INCREASE IN THE PRODUCTION OF MOTOR-CARS AS SHOWN BY FIGURES PUBLISHED IN 1922
The record does not go further back than 1912.

Fig.5: Statistical graphs used by Le Corbusier to describe the actual and projected enlargement of streets, growth of traffic, and the increase in motor-car production. (From COT, p.117-118)

With statistics, history is removed from the embrace of Nature and transferred, via human intervention, into the invisible hands of the techno-economic system. This can be called a first level of ordering in the techno-economic system - wherein the technique of scientific history is used to predict and thereby control the course of development. As the Mathematical takes on the narrow sense of mathematics and calculation, the notion of history bound by the Ideal of universal Nature is all but negated. What takes its place is progress for its own sake as signified by techno-economic development, in other words, infinite ordering and continuous production. The Ideal, which can be signified through architecture, now begins to occupy a different realm from the techno-economic system. Already a fissure appears between the Ideal and the techno-economic system, so as to make the poet-architect's task of attaining a synthesis between the two practically impossible.

CHAPTER 4: THE ORDERING OF NATURE

Levi-Strauss makes a significant observation in The Savage Mind about the relationship that a modern scientist harbors with Nature. He writes, "...the scientist never carries on a dialogue with Nature pure and simple but rather with a particular relationship between nature and culture definable in terms of his particular period and civilization and the material means at his disposal."³¹ This observation marks the parameters for understanding the relationship between the techno-economic system and Nature as it pertains to The City of Tomorrow.

It has already been explained earlier that the understanding of Nature in Le Corbusier's text is strongly rooted in modern physics. In this chapter, this notion will be explored further in the very foundation of science as it is understood in the present day. An explication of Newton's First Law of Motion will lead to a deeper understanding of the modern conception of Nature which is strongly visible in The City of Tomorrow. It will also elucidate that the such a conception of the universe necessitates that the human must act on it in order to exist in it. This is the very basic relationship that the human has with a scientifically conceptualized universe.

A further description here deals with the mechanism of action on Nature. Such action in

³¹See The Savage Mind, University of Chicago Press, Chicago, 1966, p.19.

The City of Tomorrow is firmly rooted in the material means at disposal - modern technology. It will be seen that the action on Nature follows the guiding principles of techno-economic production. When the techno-economic system is at work, Nature is not seen as something that is all-encompassing, which holds within its limits all creation and all human activity. Rather, the goal of techno-economic activity is to reveal Nature as a resource and a source of energy, which can be tapped in the service of material production and development in its most modern sense. To be sure, Nature is universal, but this universality opens the scope for such activity towards infinity.

In The City of Tomorrow, as suggested earlier, the understanding of Nature is fundamentally modern. This means that it derives from ideas developed in the classical period, to the extent that it can be understood in terms of the foundation of modern science laid by the likes of Newton. The clear cut reference to the laws of gravity in Le Corbusier's book as a basis for understanding the substance of Nature is testimony to this. This understanding has grave implications on the very nature of human activity and its relation to Nature. It is best to go back to the very roots of this "new" understanding of the Nature to explicate the gravity of this relationship, which is implicit in The City of Tomorrow.

Up to the seventeenth century, Aristotle's view of Nature was the generally accepted one, and accepted with a blindness that was ironically in contradiction with his scientific mode

of reasoning.³² According to this view, earthly and celestial bodies were fundamentally different; their location and motion in the universe was subject to the essence inherent in them. All motion in sympathy with Nature was directed to the natural location of the body in the universe, and every motion opposed to this was considered a violence to Nature. Further, celestial bodies were considered superior to earthly bodies; their circular motion derived from this superiority and was considered to be of a higher order to the straight line motion of earthly bodies. To put it succinctly, the pre-modern view of Nature was based on a well-defined duality between the earth and the sky.

Newton's Principia Mathematica may be considered a treatise on the modern conception of the universe. It embodies within it the most fundamental ideas that linked science to astronomy to culminate in astrophysics. More important from the point of view of this thesis is that it opened the human mind to an idea of the universe that affected all human action. As Heidegger argues, this idea can be understood from a reading of Newton's First Law of Motion, which states:

Every body continues in its state of rest, or of uniform motion in a straight line, unless it is compelled to change that state by a force impressed upon it.

Heidegger offers a pointed description of Nature as it is understood from this law. This law implies, according to him, that:

³²Aristotle's view of Nature derived from the sensory perception of bodies. Heidegger cites him as saying, "And that issue, which in the case of productive knowledge is the product, in the knowledge is the unimpeachable evidence of the senses as to each fact."

See "Modern Science, Metaphysics and Mathematics" from Basic Writings, p.257-265 for a lucid comparison between Aristotle's and Newton's idea of Nature.

all bodies are alike. No motion is special. Every place is like every other, each moment like any other. Every force becomes determinable only by a change of motion it causes -this change in motion being understood as a change of place. *All determinations of bodies have one basic blueprint, according to which the natural process is nothing but the space-time determination of points of mass. This fundamental design of nature at the same time circumscribes its realm as everywhere uniform* [italics, mine].³³

The dissolution of distinction between different bodies and their location offers a fundamentally new conception of the universe. The prior duality between earth and the sky disappears, to be replaced by a Nature that is in substance "everywhere uniform." Hannah Arendt argues with a high degree of credibility that human action and progress in the modern age has been guided by this conception of Nature, which opens the boundary of such action for one fundamental reason: the reference for such action does not have to be the earth itself; such action can be relative to any point in the uniform universe, even when it pertains to the earth itself.³⁴

Equally pertinent is the manner in which motion (or change, in the widest sense of the term) of a body and force, the act that causes it, are related. Motion is something taken for granted; every body changes its location linearly. The entire investigation is directed towards what causes a change in motion, and towards the proposition that it is action

³³ibid, p.267.

³⁴Talking of the great scientific achievements of the present day, Arendt says, "While these achievements were anticipated by no one, and while most present day theories contradict those formulated during the first centuries of the modern age, this development was itself possible because the old dichotomy between earth and sky was abolished and a unification of the universe affected, so that from then on nothing occurring in earthly nature was viewed as mere earthly happening. All events were considered to be subjected to a universally valid law in the fullest sense of the word."

See The Human Condition, p.262.

outside the body itself that is responsible for such change. The law of gravity, to which Le Corbusier makes an unfailing reference, is an investigation of the forces that cause the circular motion of heavenly bodies. What is important here is the notion that action from the outside is responsible for the change of state of any body in Nature.

Le Corbusier's Ideal is one in which all, including the human, is bound by Nature. Nature is scientifically conceptualized, in which action is the basis. To belong harmoniously to this Nature, the human must act in it. Action in the fullest sense of the word is the basic premise on which the human relates with Nature, and this relation is defined by the geometry of the straight line. Le Corbusier's aphorism, "The straight line enters into all human history, into all human aim, into every human act," (COT, p.16) is rendered more meaningful when the relation of the human with Nature is understood.

So long as the human acts *in* nature, the foundation of the universal Ideal is not disturbed. In this instance the human does not attempt to challenge Nature, it only acts in accord with it. What causes the early cracks to appear in this hitherto strong foundation is the desire of the human to master Nature. Understanding and formulating the laws of Nature, reducing it, in Le Corbusier's terms to "simple equations"³⁵ is only a step towards attaining this mastery. To attain mastery, the human must act *on and not simply in* Nature. The idea of the city which Le Corbusier forwards in the first page of The City of Tomorrow embodies within it this desire to control Nature, to order it in the service of

³⁵The entire quote reads: "And so we may say that though Nature is multiform, prolific and illimitable, yet man can extract simple laws therefrom, with which to make simple equations (COT, p.146)."

the human. To recollect his "definition" of the city,

A city!

It is the grip of man upon nature. It is an operation directed against nature, a human organism both for protection and work. (COT,p.1)

It is implicit here that the city is a tool not simply to assist the human to act in Nature, but one that challenges Nature, acts on it and establishes a grip on it. This is the point at which a divergence from the Ideal takes place, so that the human is no more a part of the ordering in Nature but rather one whose action is based on the idea of ordering Nature to satisfy its own purpose.

The action on Nature, so closely connected with the scientific conception of it, is in no way arbitrary; on the contrary it is motivated - motivated, in Levi-Strauss' terms by "a particular relationship between nature and culture definable in terms of [the] particular period and civilization and the material means at his disposal." In The City of Tomorrow, it may be recalled that Nature and culture are intimately connected. Culture in Le Corbusier's book is a monolithic word that refers to that stage in civilization when the substance of Nature has been grasped and the human thinks and creates in terms of geometric principles. To reiterate Le Corbusier's words, culture is an "orthogonal state of mind."

Further, in The City of Tomorrow, culture is also inextricably linked with means at disposal; as Le Corbusier asserts, "Culture manifests itself in a full realization of the

equipment at our disposal by choice, by classification and by evolution (COT, p.40)."
Equipment understood in terms of period and civilization (to paraphrase Levi-Strauss) is modern technology and its sibling, economics. This is clearly understood in The City of Tomorrow, when Le Corbusier writes, "Throughout the world we see an array of mighty powers, both in the industrial and social spheres; we can see emerging from the chaos, ordered and logical aspirations, and we feel they are in harmony with the means of realization we possess (COT, p.45)."³⁶

The idea of means, or the instrument designed for a specific purpose goes hand-in-hand with the development of modern science. The early scientific instrument was made with the purpose of understanding Nature - it was an instrument that made observation, measurement and calculation precise and "reliable" where human senses by themselves could not be depended on. In studying the substance of Nature, the instrument became the intermediary between the human and Nature itself.

The machine for production that is intricately linked with the Industrial Revolution

³⁶The overwhelming stress on the means and the equipment has its roots in modern science. The reliance on the instrument for measurement, observation and calculation was a major area in which it diverted from "traditional" science of Aristotle and Plato. Aristotle had complete faith in the human senses to understand Nature. With the advent of modern science, this faith was once and for all abolished. The human senses were now considered incapable of observation in their nakedness; they had to be clothed, so to speak, with the instrument. Galileo's telescope, an instrument finely modulated to the human eye and made for the purpose of observing the universe testifies to this (see The Human Condition by Hannah Arendt, p.257-268, for further discussion on the importance of the telescope in the modern age).

What is important is that modern science necessitated the use of the instrument built on the structure of its laws (see footnote #20, p.30-31). In the light of the Industrial Revolution, the instrument for understanding was transformed into equipment for action and realization. As will be seen later, even the human itself did not escape this instrumentalization.

worked up a similar relationship between the human and Nature - it was still an intermediary. Yet, there was a basic difference between the machine for production and the instrument for understanding Nature. The machine was designed to act on Nature in a manner that had no precedents. With the machine the accuracy of calculation and measurement was replaced by efficiency of production and the best utilization of energy. Not surprisingly, the birth of the modern machine was accompanied with the development of a science that had its roots in Newtonian physics but served a different purpose. This purpose is self evident in a question that Martin Heidegger raises:

Concerning the basic law of motion,...the question arises whether this law is not to be subordinated to a more general one, i.e., the law of conservation of energy, which is now determined in accordance with its expenditure and consumption as work - names for new basic representations which now enter the study of nature and betray a notable accord with economics and the calculation of success.³⁷

In The City of Tomorrow, Le Corbusier uses the example of the construction of the dam across a river to illustrate what he calls "our technical equipment".³⁸ In no uncertain terms this example exposes the relationship with Nature that the techno-economic system allows. The dam defines the way in which the river is allowed to be revealed by this system - no more a picturesque part of the landscape, not in its appearance. Indeed, the dam is concerned with the substance of the river, but it is substance which is understood in the most scientific sense - an understanding which allows for action on the river. The

³⁷From "Mathematics, Metaphysics and Modern Science," Basic Writings, p.270.

³⁸This is the heading of the chapter in which Le Corbusier describes the idea of modern construction and equipment, illustrating this description with the example of the dam.

understanding of the substance explains the force it harbors and the potential for energy to be tapped from it. The dam is that representation of modern technology which reveals the river as a resource - a storehouse and a source for energy that can be called upon for techno-economic production.³⁹ Significantly, Martin Heidegger also gives the example of a hydro-electric plant and a dam across the Rhine to illustrate this ordering by modern technology. The example reveals the river as "dammed up into the power works...What the river is now, namely, a water-power supplier, derives from the essence of the power-station."⁴⁰

³⁹The techno-economic system described in this thesis is the underlying structure of the power-driven machine for production. It follows a close parallel to Heidegger's idea of modern technology which in its essence is prior to the machine, and is a way of revealing Nature and the human as a resource for production of energy and material.

In his essay "The Question Concerning Technology," Heidegger asserts that technology in its essence is different from the equipment pure and simple. He goes back to the root of the word in Greek - *techne* which is "the name not only for the activity and skills of the craftsman but also for the arts of the mind and the fine arts. *Techne* belongs to bringing-forth, to *poiesis*..." *Techne* like *episteme* is a word "for knowing in the widest sense....What is decisive in *techne* does not lie at all in the making or manipulating nor in the using of means, but rather in the aforementioned revealing."

According to Heidegger, therefore, "Technology is a mode of revealing. Technology comes to presence in the realm where revealing and unconcealment take place, ... where truth happens." This clearly implies that the essence of technology lies in the very process of revealing, and that it is something that is prior to the industrial revolution.

Modern technology is usually understood in terms of the instrument and the use of the power-driven machine for production. Heidegger asserts that modern technology is also a revealing, but in a much narrower sense than *poiesis*. "The revealing that rules modern technology is a challenging, which puts to nature the unreasonable demand that it supply energy that can be extracted and stored as such." In other words, modern technology with its stress on the equipment reveals Nature as something that is to be mastered, controlled and ordered for production. As Heidegger says, "Everywhere, everything is ordered to stand by, to be immediately at hand, indeed to stand there so it can be called upon for further ordering."

See "The Question Concerning Technology" from Basic Writings, p.283-318.

⁴⁰Ibid., p.297.

In the example of the dam Le Corbusier presents modern technology in terms of the instrument and the process of construction. On the surface, this seems a shallower conception of modern technology than Heidegger's, who sees it as being essentially that which orders Nature (and as shall be explicated later, the human itself) as a resource, a "standing-reserve." Yet, Le Corbusier's description offers an insight not only into the larger idea of modern technology, of the ordering of Nature into such a resource, but also the process by which such ordering is carried out. In short, it offers an insight into the techno-economic system and its working.

Significantly, Le Corbusier begins his discussion with the idea of the collective phenomenon and the universal nature of "our technical equipment." He writes, referring in particular to the great city, that "neither our initiative, nor our powers, nor the means at our disposal are any longer individual as they once were...but that they proceed from an intense fusion of energy, a fusion which is a result of the particular form of progress which has made our age (COT, p.139-140)." Beyond the use of globally produced machinery (operating on universal laws) Le Corbusier is also talking about the ordering of the human into a collective - a collection of ordinary people driven by a singular purpose of action. Thus, he asserts, "No longer can a piece of work result solely from the effort of an individual...A man is a small thing and his mind may be mediocre; but he has the equipment of the world at his disposal (COT, p.140)." It will be explicated later that the ordering of humanity into a work-force strongly reminiscent of that of the factory is a necessary aspect of the techno-economic system, without which no great undertaking -

neither action on Nature nor the realization and the functioning of the modern city itself - is possible.

The construction of the dam is a great undertaking - a form of development that is peculiar to the techno-economic age. Le Corbusier repeats almost rhythmically that for any great undertaking, "The vital thing is to have an idea, a conception, a programme (COT, p.152 and again on p.154)." The plan phases out the goal and the entire process of construction. It also marks a vision of what must and can be - a vision that is at least as important in the construction of the modern city as it is in the construction of the dam.

The plan itself is of foremost importance in the construction of the dam (as it is in the realization of the Ideal city.) It is significant to see how the plan is chalked out in practical terms. "It is purely a technical problem," writes Le Corbusier, "Patience and precision are needed in order to raise the level of the valley and its slopes (COT, p.142)." In practice the plan is a question of mathematics and pure calculation. As if to highlight this notion, Le Corbusier begins the chapter with a structural drawing of the dam.

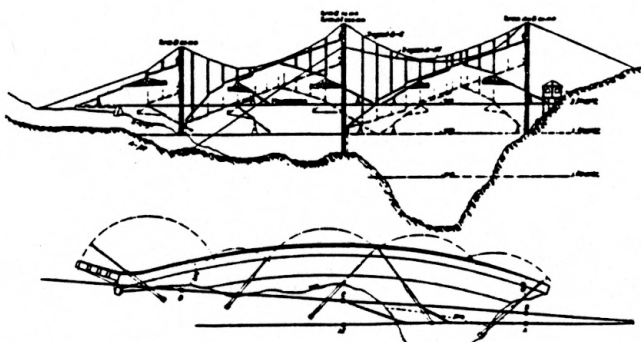


Fig.6: Structural drawing of the barrage used at the onset of the chapter "Our Technical Equipment". (From COT, p.139)

He goes on to say that "A simple multiplication sum will suffice to discover how much water the artificial lake so created will hold. A little use of the slide rule will resolve a few relatively simple formulae (COT, p.142)." This is where techno-economic action on the river takes hold. This is application of universal laws, certainly, but it is reason in the most narrow sense of the word. It is what Heidegger calls the mathematical reduced to its most readily understood form - mathematics. It is useful here to recall what Heidegger says about mathematics: "Numbers are the most familiar form of the mathematical because, in our usual dealing with things, when we calculate or count, numbers are the closest to what we recognize in things without deriving it from them."⁴¹

Thus the ordering of Nature begins at the stage of conception, wherein Nature is understood, but only in the simplified form of numbers - and no attempt is made to go beyond mathematics pure and simple. The river is challenged, to use Heidegger's terminology, at the planning stage itself, one which involves the calculation of the capacity of the dam to produce and store energy. The rest is a matter of construction, of realization.

The construction is important in itself, for it describes the same order which is considered vital in The City of Tomorrow in the realization of the city. It is necessary to summarize the important features of the process of construction described in the book. The process of construction describes the order of the factory - from the fixed length of the working

⁴¹For a more complete explication of Heidegger's conception of the mathematical and mathematics, see p.40-42 of this thesis.

day, to the well-coordinated machinery of the human and the equipment, to the notion of communication and speed of construction, to the standardization of housing and mass production, to the benevolent dictator - the overseer who coordinates the whole undertaking. As Le Corbusier asserts, "Human toil to be successful must be carried out under a condition of order, and only this will bring a great undertaking to success (COT, p.146)."

CHAPTER 5: THE ENGINEER AND THE POET IN THE CITY OF TOMORROW

In The City of Tomorrow, Le Corbusier implies that mastering Nature is a great undertaking that needs to be carried out under a condition of order. The construction of the barrage exemplifies the process and defines the order by which mastery over Nature is to be attained in the present day. The order which this process of damming the river, of converting it into a storehouse of energy describes is that of the modern production machine. This process, initiated by the human, also engulfs the human itself into its mechanism. It orders the human into the reasonable being, one who works within the already defined laws of Reason without so much as attempting to understand their significance, its singular goal being the ordering of Nature *and* artifice for the purpose of techno-economic production. The word "engineer" as it is used by Le Corbusier describes this reasonable being.

The engineer, in The City of Tomorrow is the epitome of rationality; the engineer is ordered into ordering and is infinitely bound within the techno-economic system. The poet, by contrast, is the one who embodies the greatest freedom, although, as shall be seen, the role that Le Corbusier prescribes him does not offer complete freedom. The poet is the person of genius who has the ability to combine great passion with Reason - to create and draw up plans for the great works of art which describe what Le Corbusier calls permanence. Yet the figure of the poet represents a certain amount of ambiguity in

that its creation is not truly unrestrained. Impassioned as its work might be, this work is streamlined by Reason, the word Reason implying contemplation and understanding rather than reasonable behavior. Unbridled passion, according to Le Corbusier, could as well lead to chaos that defies the very order he attempts to achieve in the city. This section will first explore the idea of the engineer and its relation with the techno-economic system; further, it will explore the role of the poet and question the freedom for impassioned creation in The City of Tomorrow and by extension, in the modern city and the order it represents.

The reasoning and the reasonable are both rooted in the larger idea of Reason. The human in its reasoning mode attempts to understand and formulate the laws of Nature. Once the laws of Nature have been formulated, they form the boundary within which human activity can be described. To recapitulate what has been said earlier in this thesis, the laws of modern physics describe Nature as a realm of action, not discounting the possibility of action on it.⁴² With action that implies the attaining of mastery over Nature as the main goal, it is not the Heideggerian Mathematical but its sub-category, mathematics that is the primary tool. At a most basic level of understanding the reasonable human is one who is ordered into obeying such a prescribed set of rules to master Nature and work towards

⁴²That physics, as it was conceived is firmly rooted in the idea of Nature can be discerned from the root of the word in Greek *physis*. As understood from Aristotle, *physis* encompassed "All that which occurs in the natural order of things, in contrast to *techne*, which encompasses all that is created by the humans." There is a distinct similarity between Aristotle and Greek thought and Le Corbusier's ideal, in that the former believed that even *techne* finally falls within the realm of *physis*. However, as it is becoming increasingly evident, Le Corbusier's attempt at signifying the Ideal results in Nature being ordered by technology.

See Dictionary of Philosophy by Peter A. Angeles, HarperPerennial, 1991, p.212-3.

techno-economic production.

In The City of Tomorrow, the "engineer" is the representation of the ultimate reasonable human. Le Corbusier writes, "An engineer should stay fixed, and remain a calculator, for his particular justification is to work within the confines of mere reason (COT, p.58)." In the most literal sense the engineer is the technician who is responsible for the rational planning and realization of great undertakings, be it the construction of the barrage or that of the modern city itself. In a broader sense, the engineer may be understood from Le Corbusier's oft quoted machine metaphor.

Le Corbusier begins his book with the statement, "A town is a tool (COT, p.1)." The ordinary human is an essential part of this tool. The engineer is the metaphoric representation of ordinary humans, whose individual lives are indistinguishable from each other except in the functions they are ordered to perform in the city. "Men in general," writes Le Corbusier, "like the cogs of the wheel, appear to follow a path carefully marked for them. Their work is regular, fixed within narrow limits, their time-table is inexorable and exact, the year is divided into months as regards salary, into weeks as regards their Sunday rest, and into days as regards sleep; *the hours are identical* (COT, p.52, italics mine)."

Le Corbusier's conception of the human as a functional being is firmly entrenched in the techno-economic age. The utilitarian temporality of the laboring class that inhabits what

he calls the great city is described in this passage quite insightfully.⁴³ This reflection on the actuality of the laboring class as a significant majority in the city is vital in developing an understanding of modern society.⁴⁴

In The Human Condition, Hannah Arendt defines modern society as, "Society is the form in which the fact of mutual dependance for the sake of life and nothing else assumes public significance and where all activities connected with sheer survival are permitted to appear in public."⁴⁵ The exposure of this necessary activity for survival, which Arendt calls *labor*, to the public is extremely significant. Traditionally, *labor* belonged to the private realm, or more specifically the household, for "Natural community in the household ... was born of necessity, and necessity ruled over all activities performed in it."⁴⁶ By no means did *laboring* signify freedom, for by its very nature this activity was bound to the laws of survival of the human species. The word society as Arendt uses it signifies a dramatic change in the human condition; it dissolves the very idea of a private realm which got its meaning from this activity of *labor*.

The formation of society is closely related to the Industrial Revolution. As Engels points

⁴³Le Corbusier calls the great city an anachronism only after accepting the functional division of time as a necessary part of the production machine that the city represents. The city is seen as dated because its space does not represent a corresponding functionality.

⁴⁴It will be seen that there is a close relation between the form which the Contemporary City manifests and this conception of the modern society as one comprised of like-minded, laboring members, all working within the dynamics of techno-economic production.

⁴⁵See The Human Condition, p.46.

⁴⁶Ibid.,p.30.

out, the revolution brought about significant change in the manner of production.⁴⁷ Prior to the revolution, the activity of laboring, whether exemplified in spinning yarn or growing vegetables, was carried out within the boundary of household property. The induction of mass production machinery changed this situation. The human as *laborer* was forced to carry out its activity outside the household, in the factory. As such the human was now doubly bound - bound by the laws of survival to work in the industrial plant, and bound further to the very order that industrial production necessitated. Le Corbusier's prescribed role of the engineer who must remain a calculator, confined to "mere reason", following an "inexorable time-table" closely echoes this actual condition of the laboring class.

The human bound to the norms of mechanized production is one who undergoes a very specific kind of ordering. Just as technology reveals itself in the ordering of Nature and artifice into a "standing-reserve" of energy that can be recalled to the service of production, so also it reveals itself in the ordering of the human. The human, as Heidegger implies, is ordered into an ordering being, the one who is assigned the task of acting "to reveal the real as standing reserve."⁴⁸ This human can barely be defined as the one who is in control of technology; rather it is the techno-economic that orders the

⁴⁷see "The Condition of the Working Class in England" from Karl Marx and Fredrick Engels in Britain, Foreign Languages Publishing House, Moscow, 1953, p.29-30.

⁴⁸To elaborate upon Heidegger's idea of the ordered human, "Modern technology as an ordering revealing is, then no mere human doing. Therefore we must take that challenging that sets upon man to order the real as standing reserve in accordance with the way it shows itself. That challenging gathers man into ordering."

See "The Question Concerning Technology" from Basic Writings, p.300.

human into such revealing. The human, controlled by a system of production that its reasonable mind is not programmed to understand can quite easily be conceived of in terms of the utilitarian values of the machine of production.

In such an instance the Kantian idea of enlightenment as "freedom from tutelage of another" becomes a meaningless aphorism. Primordially bound to the necessity of *labor*, the human is now also ordered by the techno-economic system. With its goal of efficient production and continual development, the control which the system exerts is very different from that afforded by a monarch on its subjects, for instance. Yet, the mechanism of control has deep political significance; within it are inscribed the very norms which prevail upon modern society. Arendt asserts correctly that "...society expects from each of its members a certain kind of behavior, imposing innumerable and various rules, all of which tend to 'normalize' its members, to make them behave, to exclude spontaneous action or outstanding achievement."⁴⁹

For Arendt, the word *action* is politically significant. "Action, the only activity that goes on directly between men without the intermediary of things or matter, corresponds to the human condition of plurality, to the fact that men, not Man, live on the earth and inhabit the world." The plurality of humans is "specifically the condition of political life."⁵⁰

⁴⁹See The Human Condition, p.40-41.

⁵⁰Ibid., p.7.

In the thesis, the words *action* and *labor* when used in italics refer to the specific meanings they have in Arendt's work.

Traditionally the public realm was defined by *action* - it was the place where the humans exerted their individuality, the fact that they were born different from each other.⁵¹ The public realm provided the space for individual expression. It was the realm of freedom as much as the private realm was one of bondage to the necessities of life.

With the rise of modern society, the traditional division of the public realm for *action* and the private realm for *labor* is all but dissolved. Not only is *labor* exposed to public, but the disciplining of the members of society into what Foucault aptly calls "docile bodies" suppresses *action* - and with it the freedom of the human to express the condition of plurality.⁵² The plurality of "men" which Arendt talks about is replaced by a behaving, homogeneous mass, described as the collective "Man". This has an extremely important consequence; *action* as Arendt sees it is related with history. She writes, "Action, in so far as it engages in founding and preserving political bodies, creates the condition for

⁵¹In Greek thought, the word *polis* referred to the public realm. Life in the city was *political* by its very nature.

⁵²Foucault writes perceptively about this mechanism of societal control, which he describes as discipline:

The human body was now entering a machinery of power that explores it, breaks it down and rearranges it. A 'political anatomy' which was also a 'mechanism of power' was being born; it defined how one may have a hold over other bodies not only so that they may do as one wishes, but so that they may operate as one wishes, with the techniques, speed and efficiency one determines. Thus discipline produces subjected and practiced bodies, 'docile' bodies. Discipline increases the forces of the body (in economic terms of utility) and diminishes these same forces (in political terms of obedience).

Foucault talks about discipline as a social phenomenon, by no means restricted to the factory or the army. His incisive discussion demonstrates the manner in which the new mechanism of control permeates into the deepest strata of society.

See Discipline and Punish, Pantheon Books, NY, 1977, p.164. for a complete discussion on the idea of docile bodies see p.135-169.

remembrance, that is for history."⁵³ The suppression of *action* from the public realm implies the dissolution of the condition for remembrance, of history in the political sense as Arendt understands it. Thus modern society is thrown into a perpetual present, one in which the dynamics of politics in the broadest sense of the word is replaced by the dynamics of techno-economic progress - a dynamic which is only the facade for the total order that the system imposes.

In The City of Tomorrow, Le Corbusier writes:

The men who built the barrage are everyday units, like you and me...
Men can be paltry.
But the thing we call Man is great (COT, p.148).

"Cogs of the wheel", "everyday units": these are terms that describe the mass society, not only stressing the homogeneity of humans but, as can be seen from the above quote, glorifying it.⁵⁴ By "Man" Le Corbusier implies clearly the collective that is opposed to the plurality of the human as the foremost condition of *action*. "Man" is the one who carries with it the collective will described by "the spirit of construction". "Man" is the one who is involved in techno-economic production, whose achievement is described as "a masterly one," one that "carries all before it like a torrent....The torrent is in *mankind*,

⁵³ See The Human Condition, p.8-9.

⁵⁴Le Corbusier writes, "The engineer is a pearl among men, we agree. But he is a pearl on a string, and the only other pearls he knows are his two immediate *neighbors*, for his narrow researches lead him from an immediately anterior cause to a direct and immediate result (COT, P.53)." This is at once a glorification of the engineer who as a collective is responsible for great works, and an identification of the lack of vision in the engineer as an individual.

it is not the individuals themselves (COT, p.49-50)." "Man" in The City of Tomorrow not only epitomizes the engineer's existence, but aptly describes modern society, an agglomeration of docile bodies of high utilitarian value and little, if any, political value.

The social sphere described in The City of Tomorrow is ultimately static, with practically no freedom accorded to the engineer. While freedom, in the political sense of the word finds no place in society, in a different sense it is inscribed in the word passion as Le Corbusier uses it. "Real passion," writes Le Corbusier, "is the thing that inspires us to behave in ways that are not of reason, passion that is icy cold, or burning hot, meticulous or uncontrolled; it is the `potential' of the emotions which in the long run decide man's fate, and the determining emotions attached to things (COT, p.51)." Clearly enough, passion stands in opposition with the normalized behavior of the engineer.

While Le Corbusier connects passion with upheaval, war and chaos, he also connects it with creation in the highest sense; this is where the word takes on its most important meaning in The City of Tomorrow. Passion as that which decides "the determining emotions attached to things" already implies the relation it has with the human artifact. Passion is responsible for what Le Corbusier calls "permanence" in the works of art. Thus, he writes, "Where a man's passion for creation has taken form, his work will endure through the ages (COT, p.57)." Passion, in deciding the "emotions attached to things," goes beyond the realm of the reasonable, for permanence has little to do with pure

rationality and mathematics, even when one is referring to the "aesthetics" of machine.⁵⁵ Passion, in The City of Tomorrow, represents a struggle for immortality through creation, even in the machine age, when values attached to things have a functional and therefore ephemeral value. Unlike reason, in the sense of understanding, which knows no limits, passion in the human is constant throughout history. Thus, passion constitutes a wholly different realm from the Nature in the Ideal. Passion refers to nature that is the domain of the human and the human alone.

But the work of art in The City of Tomorrow is not born solely out of passion. As Le Corbusier writes, "And we may risk the hypothesis that the greatest of emotive works, works of art, are born from a happy conjunction of passion and knowledge." Knowledge refers to the understanding of Nature that the human has acquired over a long and often painful evolutionary process that has been described before. Knowledge has reason as its basis.⁵⁶ Therefore, Le Corbusier's idea of the work of art can be rephrased as: the work of art is born from a happy conjunction of Nature as a totality and nature that is particular to the human.

This is an extremely important concept for this thesis; it is in the work of art that

⁵⁵Le Corbusier writes: "If we could admit that mechanical beauty was a matter of *pure reason*, the question would be settled out of hand: mechanical creation could have no permanent aesthetic value (COT, p.55)."

⁵⁶That knowledge is born from reasoning, that it is ultimately rational, is implied in Le Corbusier's definition of the word intuition. He writes, "But intuition, apart from simple manifestations of instinct, can be defined, for our comfort on the basis of rational elements; it might well be expressed by *intuition is the sum of acquired knowledge* (COT, p.39-40)."

permanence is reached, because it is here that the human passion for creation reaches a crest. At the same time, the work of art signifies the Ideal, for in it passion is harmonized with reason. Thus, while the work of art is a product of passion, it is also bound by universal laws of nature. It is in art that human sensibility and universals that bind the human and physical nature alike find a meeting point. It will be seen in the final chapter that the Ideal is signified in the Contemporary City when it is understood as a work of art.

In The City of Tomorrow, the extreme limitations placed on the engineer, that is, the normalized, behaving society, once and for all puts true creation outside its sphere of activities. The poet is assigned the freedom to create for the simple reason that this person not only has vision and the ability to reason, which are denied to the engineer, but is also the embodiment of human passion. Unlike the engineer, a pearl in a necklace who cannot see beyond the immediate, the poet "sees the whole necklace: he perceives individuals with their reasons and their passions; behind them he sees the *thing we call man* (COT, p.53)." According to Le Corbusier, before the collective work of the engineer, "...the products of calculation, we stand face to face with a phenomenon of the highest poetic order...a platform raised by the mass of men over and above their individual circumscribed labors; this is the style of an epoch (COT, p.59)." The poet is the one who has the vantage position to start from the level of such a platform, to create "imperishable works, images of gods, Parthenons (COT, p.59)."

The duality of the poet and the engineer adds an important dimension to the text. The engineer represents the most primary tool of the techno-economic system. The ordering of Nature into a store-house of energy and the reduction of history into a science of development both converge to the techno-economic ordering of the human. Finally, the engineer in The City of Tomorrow is the epitome of the reasonable human who is ordered to reduce the Heideggerian Mathematical to mathematics pure and simple; it is this that makes possible the other forms of ordering described in the thesis. The engineer is the one who occupies the bound space of the techno-economic city, experiencing an illusion of freedom in the dynamics of ordering, not realizing that freedom itself is severely limited by a system that manifests itself in the instrumentalization of history, Nature and the human.

It is natural that the task of realizing the Ideal is beyond the engineer bound in its very reasonableness. On the other hand, in a different way, freedom finds an opening in the poet-architect. This is the freedom to create a work of art, in which Reason and passion find their space of convergence, in which the Ideal is signified. As Colquhoun writes:

Le Corbusier adjusts both classicism and historicism, the idea of perineal beauty and technological progress, so that they interact, while maintaining a certain dialectical independence. At the same time, by an apparent act of submission the architect comes to dominate the engineer and the world of material reality is swallowed up by an aesthetic intention [see footnote 31].

As far as Le Corbusier's *intention* is concerned, this is a valid and an important statement

indeed. But in the city, particularly one in which the aesthetic is based on technology, it is perhaps more valid to say that this aesthetic could well be absorbed into the system to which it owes its birth.

SECTION III

CHAPTER 6: THE IDEAL AND THE TECHNO-ECONOMIC IN THE CONTEMPORARY CITY

This chapter will explore an analogical relation that exists between the idea of Nature in the Ideal and the techno-economic system in The City of Tomorrow. In this exploration a reading of the Contemporary City, its aesthetic as Le Corbusier describes it and the inherent techno-economic system is of crucial importance; it is here that the relation between Nature and the techno-economic system attains a formal and perceptible clarity. But before embarking on this reading, it is necessary to recapitulate what Nature and the techno-economic system signify in The City of Tomorrow and how the two concepts define an analogy.

As has been discussed in some detail earlier in the thesis, the Ideal is the system in which both natural phenomena and human artifact and activity belong to a totality called Nature. Nature, whose essence is described by a field of interacting forces (understood in universally applicable terms of the laws of physics), thus forms a boundary for all creation; only that creation which is inscribed within the laws of Nature, which is geometric, can be universal in the fullest sense of the word. Further only such work can attain what Le Corbusier calls "permanence," that is, transcend human mortality and reach the status of art. Further, only the poet-architect with its vision and unique blend of Reason and passion can create the work of art. The signification of the Ideal in the Contemporary City is therefore the work of the poet-architect; the Ideal is signified in the

aesthetic of the city. In geometry Le Corbusier finds the universal language of Nature with which the Ideal can be signified, but the signification itself is only possible when this universal language is combined with passion .

Geometry is also the means by which the techno-economic system manifests itself in the ordering of the city. Laws of physics are as important for the techno-economic system as they are for understanding Nature. Yet, the techno-economic system appropriates them in a very different manner from the sense in which they are used for understanding Nature. If in the Ideal, Nature is described by a field of interacting forces, in the techno-economic system it is seen as a store-house of energy that can be tapped for technological progress. In turn, the role of the human is also altered; in case of the Ideal, the human activity is truly creative and implied an understanding of Nature, that is, reasoning in the truest sense of the word. In the techno-economic system, the human is reasonable rather than reasoning; the inhabitant of the Contemporary City is as Arendt would write, a *laboring* human. The space in the city is not divided into the public and private realms; the techno-economic city is predominantly a social space, a "normal" space, occupied by normalized beings who live and toil in it.

Despite the obvious differences in the idea of Nature and the techno-economic system that this reading affords, there is already a discernible analogy forming between the two. Both Nature, or as Le Corbusier would put it, the *substance* of Nature and the techno-economic are rigid, static and ordered systems; both form, as Barthes writes about language in

Writing Degree Zero, "a comforting area of ordered space."⁵⁷ In the very ordering that the techno-economic system allows, it may be understood as a second Nature, one that replaces the idea of Nature found in the Ideal to exert a totalizing control over all human activity.

The analogy does not end here. It is extendable to the relation between substance and appearance that Le Corbusier forwards while discussing Nature. While the substance of Nature is order itself, with laws of physics and the right-angle etched into it, nature as it appears, that is, the form it takes in its manifestation, is very different. Nature manifests itself in a chaos of everchanging appearances and events, signifying a dynamism that runs contrary and in fact camouflages the order underlying it.

The techno-economic system too is formalized in the dynamics of constant activity, activity for the sake of technological progress, a notion that becomes clear when Le Corbusier describes the modern age as one of construction. This activity involves not only mechanized production, but also the constant mastering of nature, of converting it into what Heidegger calls "standing-reserve" the energy of which may be tapped at any time for production and a frenzied accumulation of capital. The city, which is the center of such activity, is therefore perceived by its societal inhabitant as a place of extreme dynamism, a place where new innovations render the old obsolete in a matter of time. Yet, this appearance of dynamism hides the fact that the techno-economic system

⁵⁷See Writing Degree Zero by Roland Barthes, Cape, London, 1967.

describes a very static order; the very idea of society that it defines runs counter to what Arendt calls *action*, the expression and exchange of individual ideas in the public realm that is necessary to create a condition for history. With the public realm dissolved into the social sphere, with the condition for history suppressed, the city is thrown into a state of perpetual presentness.

Thus, both the Ideal and the techno-economic system have an underlying order, rigid and binding, and yet both are manifested as dynamic and exciting. In the Contemporary City, where the two come together, supposedly attaining synthesis, both the underlying order and the outward dynamism described above can be read; this is the place, fictional as it might be, where the Ideal is signified just as the techno-economic is formalized. It is a reading of the aesthetic of the city that allows an understanding of not just the signification of the Ideal but also its analogous counterpart.

For Le Corbusier, the automobile is the symbol of dynamism manifested by technological development; by extension, it is the signifier of the very process of ordering at work in the techno-economic system. Early in the book he writes, "Motor cars in all directions, going at all speeds. I was overwhelmed, an enthusiastic rapture filled me. Not the rapture of the shining coachwork under the gleaming lights, but the rapture of power. The simple and ingenuous pleasure of being in the centre of so much power, so much speed. We are a part of it. We are a part of the race whose dawn is just awakening (COT, p.3)." Le Corbusier also finds a pragmatic justification for the automobile and the speed and change

it represents. Describing a guiding principle in the Contemporary City, that of communication, he writes, "...the city which can achieve speed will achieve success -and this is the obvious truth...Work today is more intense and is carried out with a quicker rate. Actually the whole question becomes one of daily intercommunication with a view of settling the state of the market and the conditions of labour (COT, p.190-1)." Speed, and with it the automobile, are both metaphors for techno-economic development and the idea behind the network of the streets in the Contemporary City. It is significant that Le Corbusier describes, with a series of sketches and verbally, an aesthetic of the city as perceived through the eyes of the automobile traveller who is wholly absorbed into the city itself. And the picture that the city presents is of course everchanging, dynamic.

Under the subtitle "The City and its Aesthetic" (COT, p.177), Le Corbusier writes, "Though the gridiron arrangement of the streets every 400 yards is uniform...no two streets are in any way alike. This is where, in a magnificent contrapuntal symphony, the forces of geometry comes to play." Ironically, the forces of geometry do not suggest absolute order to the motorist, but rather "a wild variety in the general layout." Thus the motorist travelling by way of the Great Park at one end of the city first sees the skyscrapers in the distance against the sky, and then "suddenly we find ourselves at the feet of the first skyscrapers." With equal suddenness, the motorist leaves the centre and "runs gently" through the residential quarters. The entire city is in a park, in which stand Le Corbusier's "immense but radiant prisms." Puncturing his text are photograph-like sketches of the Contemporary City, which, when put together in series (as Le Corbusier

presents them in Ouveres Complete) describe the dynamic of an everchanging scene.

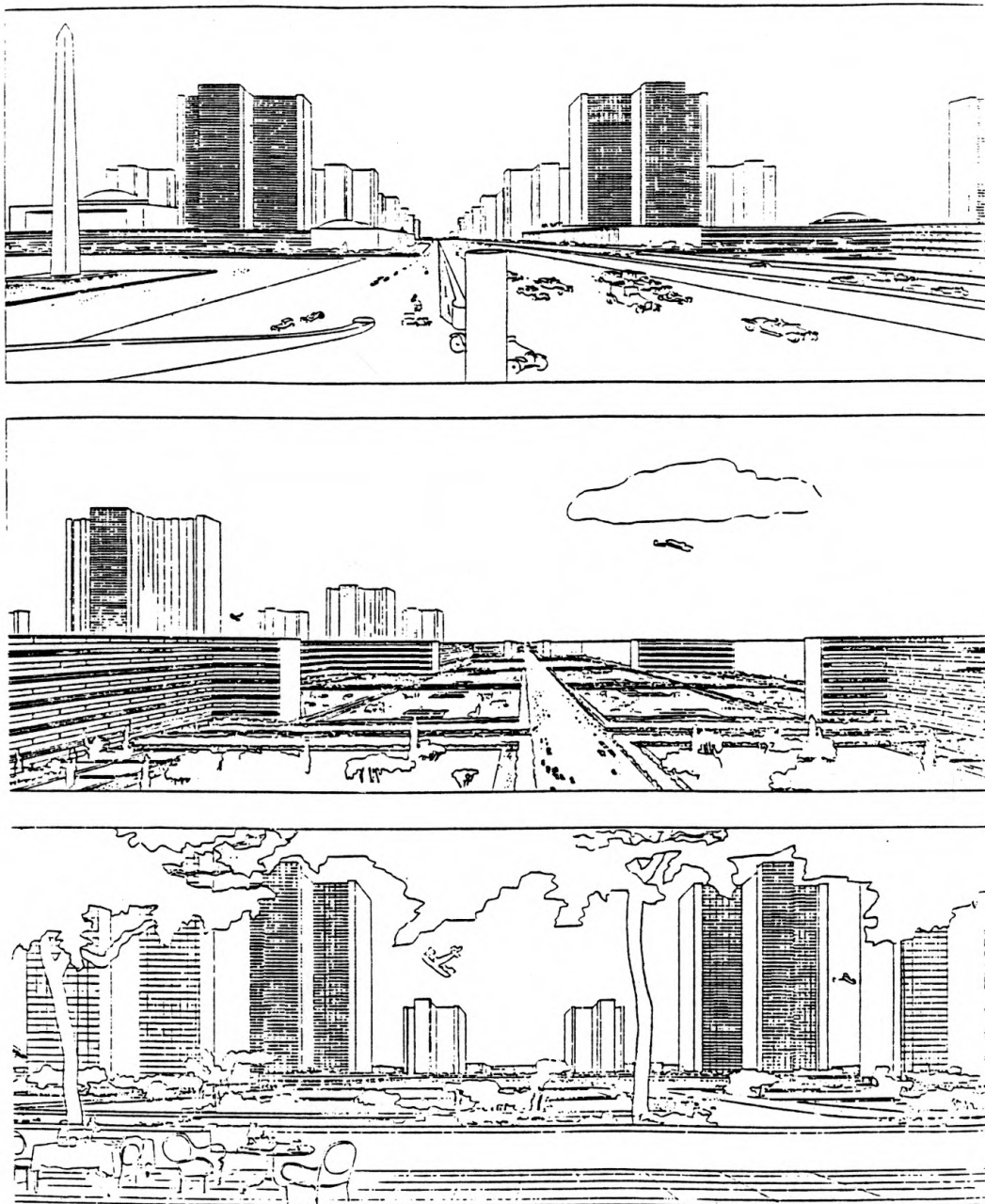


Fig.7: Sketches of the Contemporary City put together as a series of frames in a motion picture. (From Ouevres Complete)

The glorification of speed, of the automobile as the epitome of modern technology, in The City of Tomorrow has the undertones of Futurism. It might be recalled that the Futurist artist Boccioni very literally equated necessity in modern life with speed.⁵⁸ As Crispolti maintains in his lucid commentary on Futurism, two motives inspired the futurist artist and architect alike: "speed as a result of technological progress and the metropolis as a specific field of life."⁵⁹ If anything can be used to describe the experience of the motorist on the street, the expression of power felt in the automobile by Le Corbusier, it is the art of the Futurist that Le Corbusier takes great pain in renouncing. Boccioni's painting, "Forces of the Street" captures the dynamics of motion made possible by technology most disturbingly, and describes exactly the aesthetics of constant change in the Contemporary City.



Fig.8: Umberto Boccioni's painting "Forces of a Street", 1911. (From Cubism and Futurism by Maly and Dietfried Gerhardus, p.83.)

Despite this obviously futuristic undertone, Le Corbusier writes at the end of his

⁵⁸See Architettura Futurista by Enrico Crispolti, Galleria Fonte D'Abisso Edizioni. 1984, p.22.

⁵⁹ibid., p. 19.

description, "This is no dangerous futurism, a sort of literary dynamite flung at the spectator." This is a truly honest statement in the context of The City of Tomorrow. Although there are some striking similarities between Futurism and Le Corbusier's work, the most fundamental difference between them cannot be ignored. In Le Corbusier's purist search for a universal language, the duality between substance and appearance plays an important role; within this duality, as discussed in the first chapter, substance is given a superior position and can be discerned and understood only when the reasoning human has achieved distance from appearance, that is, material reality.

The Futurist, on the other hand, gave practically no importance to "substance"; Futurism saw little beyond appearance, which is the material reality of modern technology and its mode of operation. Boccioni, for example, demanded that the architect "Go back to a new fundamental which...is the architectonic which the conditions of life created by science impose on us as pure necessity."⁶⁰ The word necessity is of utmost importance here. While he equated necessity with speed, the word has deeper connotations, for it relates directly to the new methods of production that modern technology made possible. The futurist is often heard singing paeans to the working class.⁶¹ Thus, the futurist derived its aesthetic from modern society and the new condition for *labor* that it represented; the

⁶⁰ibid., p.23.

⁶¹Banham correctly points out that in the futurist Marinetti's work, the idea of the engineer as a noble savage made its first appearance. See Theory and Design in the First Machine Age by Rayner Banham, Frederick A. Praeger, NY, 1967, p.123.

futurist work represented "the pure and simple concept of *economy + utility + rapidity*."⁶² With such a complete faith in material reality, the notion of distance, so vital in Le Corbusier collapses. Thus, in Boccioni's painting, the idea of dynamism has an overwhelming presence. From within the automobile, which is really the moving center and the generator of the painting, the scene is surely perceived as everchanging; what is in direct contrast with Le Corbusier's work is that even when this painting is viewed from *without* its frame, that is, from a distance, it still signifies the dynamics of change. This is true to the Technical Manifesto of Futurism, which proclaims, "That the universal dynamism must be rendered as dynamic sensation."⁶³

While futurism presented a vision that was rooted in change and chaos, for Le Corbusier, the dynamic and changing scene of the city, just as that of Nature, is far removed from the underlying order that is its substance. This duality between appearance and substance, which never seems to be resolved in the Contemporary City, is convincingly explicated in Katherine Fraser Fischer's article "A Nature Morte".⁶⁴

Fischer's analysis of Le Corbusier's purist painting "A Nature Morte" of 1927 is significant in explaining the dual perception that he has of the city. Fischer identifies space as the central problem of purism, citing Ozenfant and Jeanneret (Le Corbusier) as

⁶²From *Architettura Futurista*, p.23.

⁶³See *Theory and Design in the First Machine Age*, p.108.

⁶⁴"A Nature Morte", by Katherine Fraser Fischer, from *Oppositions*, Winter/Spring, 15/16, 1979, MIT Press, Cambridge, MA, p.156-165.

saying, "We think of a painting not as a surface, but *as a space*."⁶⁵ Thus as Fischer points out, "Having infused spatial quality into the paintings boundaries, Le Corbusier is able to realize the flatness of his medium as asset. He freezes his relationships in a temporary stasis by affixing them onto a plane." At the same time he introduces, along with objects of everyday use, elements that are distinctly

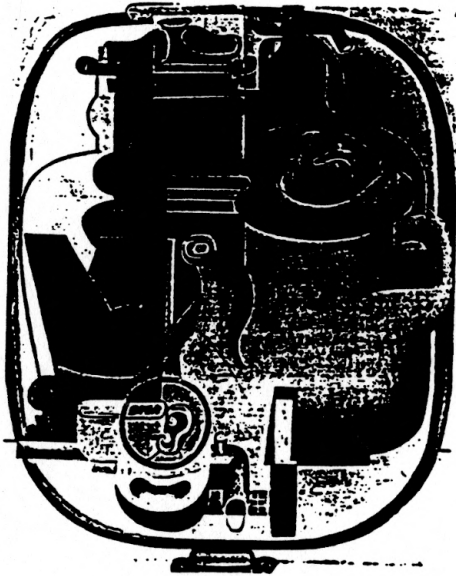


Fig.9: Le Corbusier, "Nature Morte", 1927. (From Oppositions, 15/16, p.156)

architectural; it is not surprising then that the objects along the horizontal line that he etches near the bottom of the painting reads like a street elevation. It is here that the dual perception talked about earlier comes into play. Fischer writes, "If one were to walk

⁶⁵ibid., p.160.

around these objects...they would, of course lose the unique confirmations that bind them to the picture. In such an experience, that of urbanism, the effects of parallax might be planned, but the process of perceiving would be more subjective..."⁶⁶

What Fischer is describing here matches exactly with the dynamic experience of the city; if anything, the effect of urbanism she is describing is even more dynamic than Le Corbusier writes about, if only because it is more subjective. Equally important is the fact that the painting can be perceived as an ordered whole *from outside of its frame*. The Contemporary City too can be seen as an ordered whole, significantly, in plan - an aerial vision along a horizontal plane that renders it flat and two-dimensional. It is from the distance afforded by the airplane that order is perceptible.

In his article "Fluctuation of Forms. The Airplane and Spatial Experience" Asendorf correctly identifies the totally new field of vision that the airplane afforded in the early years of this century.⁶⁷ Instead of the normal vision along the vertical plane, it was possible now to view the earth and the city itself along the horizontal plane, so that it would lose its three-dimensionality and be rendered flat. The form that the city took was that of the purist painting, the artifact being thrown into a state of stasis. For Le Corbusier, the airplane became a vital instrument for the vision it afforded. "Airplanes implicate - that is they implicate dysfunctional rank growth of civilization. In contrast he

⁶⁶ *ibid.*, p.160-161.

⁶⁷ The article appears in *Daidalos*, 37, 15 Sept. 1990, p.24-40.

puts new methods of urban planning to use, the airplane becoming one of his instruments."⁶⁸ It is by no means a mere coincidence that Le Corbusier will use aerial photographs of Paris to contrast its disorder with the order of the plan Voisin.

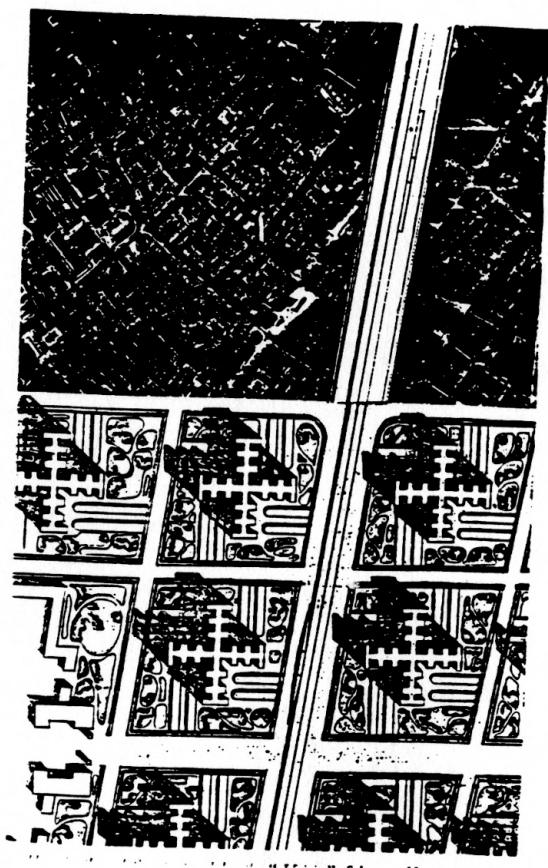


Fig.10: The Plan Voisin compared with an aerial view of a Paris district seen in the same scale. (From COT, p.289)

⁶⁸ibid., p.30.

It is in the plan of the Contemporary City that the Ideal is signified. Here the laws of physics, the guiding principle of pure geometry and the unique conformity of the right-angle, in other words the substance of Nature is formalized. From this view point, the street loses that absolute dynamism that the motorist experiences. Instead it becomes a rigidly regular grid-work of forces that not only relate different elements within it but also order the city as a whole, while at the same time confirming to Nature. Distance renders to the Contemporary City what according to Le Corbusier a town should be - "pure geometry."⁶⁹ This distance, which affords a unique and total vision, is also the place from where the poet-architect can create (for the realization of the Ideal is the poet-architect's work). In eloquent terms Le Corbusier describes the act of climbing the Eiffel Tower:

And in proportion as the horizon widens more and more, one's thought seem to take on a larger and more comprehensive cast: similarly, if everything in the physical sphere widens out, if the lungs expand more fully and the eye takes in vast distances, so to a spirit is roused to a vital activity (COT, p.186).

Distance allows the poet-architect a total vision of order. It is of no wonder that this figure is housed atop the sky-scraper in the Contemporary City.

⁶⁹Early in his book, Le Corbusier proposed the idea of distance as necessary for pure and geometric creation, creation that would ultimately stand the test of time. "We can say that the further human creations are removed from our immediate grasp, the more they tend to pure geometry; a violin or a chair, things which come into close contact with the body, are of a less pure geometry. A town is pure geometry (COT, p.28)." Thus, the airplane is a significant instrument in *physically* distancing the poet-architect from the city, and allowing pure and geometric form to take shape.

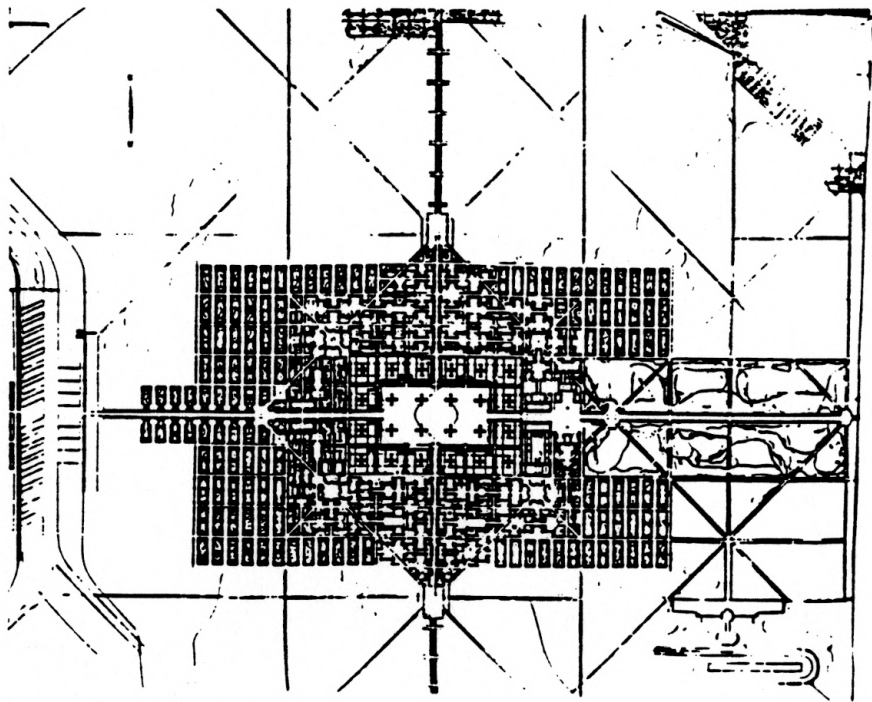


Fig.11: The plan of the Contemporary City. (From COT, p.172-3)

If involvement in the techno-economic system camouflages the underlying order, then this order can, like the Ideal be perceived from a distance. Thus the plan of the Contemporary City can be described in terms of its functional elements, and the interrelationships that

exist between them. Thus one can see in totality the two grand axes that intersect at the central station, the 24 skyscrapers rising up, surrounded by luxurious housing blocks with set-backs and the equally standardized cellular housing. One can see the obligatory green zone between the industrial buildings and town-ships and the city proper. One can even render transparent the superstructure and see the utility systems that run along the different layers of streets. One can perceive, in very functional basis, the town as a tool for techno-economic production, where even nature is preserved to ensure the health of a *laboring* population. One can perceive that the plan of the techno-economic city formalizes the idea of technological organization, a hierarchical organization of well-placed repeated units.

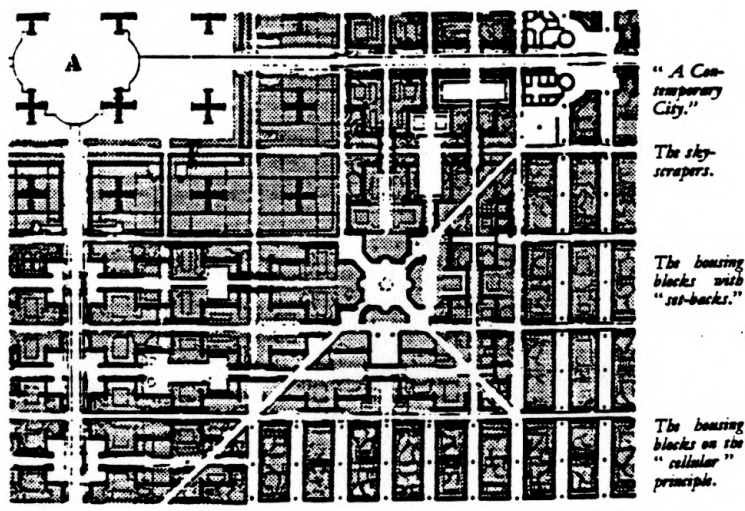


Fig.12: Part plan of the Contemporary City showing its functional units.

Seen in plan, the Contemporary City as the embodiment of the techno-economic system is disturbingly akin to the space that Foucault calls an *enclosure*, "a protected place of disciplinary monotony."⁷⁰ He writes, describing the *enclosure*, "In organizing `cells', `places', `ranks', the disciplines create complex spaces that are at once architectural, functional, and hierarchical. It is spaces that provide fixed positions and permit circulation; they carve out individual segments and establish operational link; they mark places and indicate values; they guarantee obedience of individuals, but also a better economy of time and gesture." Foucault's enclosure defines the rigid boundary, the well-defined horizon within which ordering is carried out and even possible in the techno-economic city. This is the ordering that takes on the appearance of a dynamic process, an appearance that in turn disguises the absolute limits placed on the inhabitants.

As stated earlier, the basis of the reading of the Contemporary City is the understanding of the Ideal and the techno-economic as having analogical structures. In the above analysis, these analogical structures are read as being almost mutually exclusive, thereby offering a double reading of the Contemporary City. Moreover, the reading has an ambivalent quality because in itself, it does not announce the suppression of the Ideal by the techno-economic. Yet, this analysis is important in two ways. First, it offers insight into the mechanism of a system whose dynamic manifestations act as a cover for the stasis of the underlying structure. The structure of the Ideal then becomes the key to understand the analogous structure of the techno-economic system. Second, even in its

⁷⁰ See Discipline and Punish.

ambivalence, it points to the different realms that the Ideal and the techno-economic system occupy, and by extension, to the impossibility of a synthesis between the two.

It is necessary to go beyond the Contemporary City to understand that not only is synthesis between the Ideal and the techno-economic not possible, but also that the latter is a dominant system that must suppress the Ideal to ensure its own existence. The description of the ordering of the human, Nature and history leads to the notion of this suppression, such that the ambivalence read from the Contemporary City is resolved with forceful violence on Ideal in the actuality of the techno-economic city. That this suppression, which was certainly manifested in the city in the early part of this century, is in the present day manifested in more advanced forms is certainly disconcerting, and has been my implicit concern.

This is by no means an "innocent" reading of The City of Tomorrow. Innocence implies maintaining neutrality, taking the place of the author, in this case of Le Corbusier, confirming completely to the time the book was written - in short being "true" to the work as and when it was written and disregarding the conditions the reader finds himself in. On the contrary, the condition of the present city and the society that attempts to dwell in it has always been in the back of the mind of this reader; this reading has been tainted by the space and time the reader finds himself in.

At the same time, the city has not changed so dramatically, nor is it so drastically different from the Contemporary City, so as to render The City of Tomorrow insignificant. If I may use Le Corbusier's terminology, the change has been far more in *appearance* than in *substance*. In other words, the techno-economic system that has been described in this thesis, the ordering of nature, of the human, and of history that it imposes, is a dominant system in the city today as much as it was in the time of Le Corbusier; what has definitely changed is the manner in which it manifests itself. As technologies for ordering become more and more sophisticated, so also ordering becomes far more devious in disguising itself in the dynamics of change. Le Corbusier's text is placed in a critical age when modern technology had begun to take its present form, when the human was "a part of the race whose dawn was just awakening (COT, p.3)," although the system of ordering described can be traced back to the time of Newton, as it has been in this thesis. Thus, the Contemporary City, as a techno-economic proposal finds itself absorbed in the

city today. This makes the reading of The City of Tomorrow all the more significant in the present day.

For Le Corbusier, it was relatively easy to give an abstract concept of communication spatial dimension in the Contemporary City. For him the automobile and the notion of physically travelling through the city in a radically new manner signified the power of the modern machine. He recognized the need for rapid travel and designed the geometry of a city with this as the pragmatic basis. Automobile travel was necessary to sustain the ordering of the techno-economic system, and this became in the Contemporary City the form-giver in a very direct sense.

The automobile becomes more important when understood in terms of the machine metaphor that pervades Le Corbusier's text. The automobile signified the entire mechanism of the techno-economic system; it was the epitome of economy + utility + rapidity, to use futurist jargon. By extension, it was the epitome of the activity of *labor* as it was carried out in the social sphere. The activity that *labor* signified in the early part of the century, although far removed from the private realm it was once confined to, still required space to be carried out. In other words, techno-economic space itself was born out of necessity. It is not surprising that the Contemporary City, in its very organization formalizes Foucault's idea of the *enclosure*.

While the need for physical space has not been done away with altogether in the city, its

significance has certainly been reduced by advanced telecommunication in the present day - this is something for everyone to see. The activity of *labor* as it can be understood from the early part of the century still forms a part of the material reality of the city; yet, this activity has been considerably marginalized by more advanced forms of *labor* which is based on the rapid flow of information. Yet, the significance of the system underlying this activity has certainly not reduced. It would not be wrong to propose that advanced technologies make for means of ordering that are also more advanced and devious. The space that the human finds itself in, although less "physical" is nonetheless not less normalized; it is all the more binding, rigid and repressive, and its ordering is all the more camouflaged to the human involved in it. The idea of *enclosure* is more important now as a metaphor of the ordering system rather than as the physical form it takes. The question ultimately becomes one of the possibility of freedom, of *action* in the light of such a normalizing system.

For Le Corbusier distance was essential to understand the underlying order of Nature. Distance, afforded by the airplane, also made possible the total planning of the techno-economic city. The idea of distance has also been crucial in understanding the contrast between Nature and its chaotic appearance *and* the techno-economic system and its dynamic manifestation. Le Corbusier is distanced from the city when in flight, certainly; but at the same time he is not uninvolved in its mechanism - the airplane is the machine that is instrumental in his vision and his understanding. Moreover, physical distance affords for him a mental proximity to what he feels is the very essence of Nature and of

technology.

Under the present condition, physical distance, and with it the very concept of actual space, seems to dissolve into the intangibility of "cyberspace". It is unlikely that Le Corbusier's idea of physical distance has the same relevance today as it did at the turn of the century. For understanding and reflecting on the underlying system that is no less relevant today, the word distance must necessarily take on a metaphorical rather than literal meaning. Perhaps it is possible that by maintaining a critical distance towards the system the human would be able to reflect on and understand the hidden rigidity of the system - an understanding that would in turn open up the possibility of freedom, freedom that lets the human use its own reason without tutelage from another.

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