

**THE PERSONALITY / PRODUCT RELATIONSHIP IN  
ARCHITECTURE**

**An Empirical Investigation of the Relationship between the Designer's  
Personality Profile and the Nature of his Architectural Product**

**By**

**Nermine Abdel Gelil Mohamed Abdel Halim**

**A Thesis Submitted to the  
Faculty of Engineering at Cairo University  
In Partial Fulfillment of the  
Requirements for the Degree of  
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العلاقة بين الشخصية و النتاج في العمارة  
دراسة تجريبية عن العلاقة بين بروفيل شخصية المصمم و طبيعة نتاجه  
المعماري

إعداد

نرمين عبد الجليل محمد عبد الحليم

رسالة مقدمة إلى كلية الهندسة ، جامعة القاهرة  
كجزء من متطلبات الحصول على درجة الماجستير في العمارة

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## **ABSTRACT**

The epistemological crux of the entire design process is located at the moment of passing from a descriptive to a normative procedure, that is at the moment of decision making. All efforts of design methodologists and theorists tend to let us believe that there exists between the two distinct phases a logical sequence and implies the search for it.

Architecture has been affected since the 50s and during the 60s and 70s by the modernist systematic design theories. Studies by Asimow (1962), Page (1962), Christopherson (1962), Archer (1963), Alexander (1964), Mesarovic (1964), the RIBA Handbook (1965), Markus (1969), Maver (1970), and Jones (1970) are based on formulating methodological maps to be followed during design. They consisted generally of three main phases: *analysis*, *synthesis*, and *evaluation*. These methods tend to be both theoretical and prescriptive. These maps are about how design goes as methodologists see it and not necessarily as architects approach it in the real world.

The second half of the 70s and the beginning of the 80s have witnessed many shifts and attempts to formulate a new thinking method based on observing designers when they are designing and believing that the designer's prestructures play a principal role in overcoming the dilemmas confronting all decision making in the design phases. Studies by Hillier et al (1972), Darke (1979), Cross (1984), and Lawson (1980 & 1994), based on the concept of *conjecture*, were the major attempts in formulating a Contemporary Theory of Design Epistemology in architecture.

According to this contemporary shift in design theories, the criteria of choice when confronting a decision making process do not arise, as in science, only from truth, and thus depends on an evaluative judgment of an essentially qualitative type besides the quantitative one. The decision making is value-laden and is influenced by the designer's attitudes and interests. In the light of the Contemporary Theories of Design Epistemology, the next hypothesis could be identified and stated:

*Within the design process there always remain a margin of freedom and a range of choices for the architect sufficient to make subjective decision, and where his personality plays a principal role in determining the form of the final product, to the extent that **we could find a relationship between the designer's personality profile and the nature of his architectural product.***

The main aim of this research is to develop empirical evidence that may indicate the degree of the designer's intuition during the design process and explain the nature of the relationship between the architect's personality and his architectural product.

In order to reach this main objective, three sub-objectives must be attained:

1- **Assessment of the designer's personality profile:**

This goal can be achieved empirically by making use of some developed psychological techniques borrowed from the field of psychology.

2- **Assessment of the architectural product's nature:**

The nature of the designer's architectural product can be assessed by analyzing a sample of his works and developing a profile indicating the nature of each of them.

3- **Comparison between the designer's personality profile and the nature of his architectural product:**

Such a comparison will then indicate to what extent the designer's personality profile is reflected on his product.

## ملخص البحث

تكمن الإشكالية المعرفية لعملية التصميم في لحظة التحول من الإجراء الوصفي إلى الإجراء المعياري، أي لحظة اتخاذ القرار، و تعتقد جميع المحاولات التنظيرية في التصميم في وجود عملية تحول منطقية بين هذين الإجراءين و تسعى جاهدة في البحث عنها.

تأثرت العمارة منذ الخمسينيات و على مدار الستينيات و السبعينات بنظريات التصميم الحديثة أو التصميم الممنهج. حيث تعتمد نظريات كل من أزيمو (1926) Asimow و بيج (1962) Page و كريستوفر سن Christopherson (1962) و ألكسندر (1964) Alexander و مافر (1970) Maver و جونز (1970) Jones على صياغة منهج لاتباعه أثناء التصميم، و يتكون عامة من ثلاث مراحل: التحليل ثم التركيب ثم التقييم. و يمكن وصف هذه المحاولات بأنها فرضية، و تعتمد على رؤية المنهجيين للتصميم كما يجب أن يكون و ليس كما يتم في الواقع.

شهد النصف الثاني من السبعينات و بداية الثمانينات محاولات عدة لصياغة فكر جديد يركز على مشاهدة المصمم أثناء عملية التصميم و على الاعتراف بأن مسبقاته الفكرية تلعب دورا أساسيا في اجتياز المأزق و الحيرة التي يواجهها لحظة اتخاذ القرار. و من أهم الدراسات التي صاغت النظرية المعرفية الحديثة للتصميم و التي اعتمدت على فكرة الحدس هي التي قام بها كل من هيلير (1972) Hillier و دارك (1979) Darke و لوسون (1980) Lawson (1980-1994). و بناء على هذه النقلة في نظريات التصميم يمكن القول أنه لحظة اتخاذ القرار لا تعتمد معايير التقييم فقط على الحقيقة كما يحدث في العلم، بل تعتمد أيضا على حكم تقييمي من النوع الكيفي بجانب النوع الكمي، و يكون القرار في هذه الحالة محملا بالقيمة و متأثرا بقيم و اتجاهات المصمم.

في ضوء النظرية المعرفية الحديثة للتصميم يمكن طرح الفرضية التالية:

"خلال عملية التصميم، يكمن دائما هامش من الحرية و مجال للاختيار أمام المعماري كافي لاتخاذ قرار شخصي تلعب فيه شخصيته دورا رئيسيا في صياغة الشكل النهائي للمنتج، إلي حد أنه يمكن إيجاد علاقة ما بين بروفييل شخصية المصمم و طبيعة نتاجه المعماري."

و الهدف الرئيسي من هذا البحث هو تطوير دليل تجريبي يمكن من خلاله اختبار هذه الفرضية و تحديد درجة حدس المعماري أثناء عملية التصميم و مدى انعكاس شخصيته على الشكل النهائي للمنتج. يمكن إحراز هذا الهدف من خلال ثلاث أهداف فرعية:

- 1- تقدير بروفييل شخصية المصمم. يمكن إحراز هذا الهدف من خلال الاستعانة ببعض الوسائل و الاختبارات من مجال علم النفس.
- 2- تقدير طبيعة نتاج المعماري. يمكن إحراز هذا الهدف من خلال تحليل عينة من أعمال المصمم المعماري و تطوير بروفييل يحدد طبيعة كل منهم.
- 3- مقارنة بروفييل شخصية المصمم و طبيعة نتاجه المعماري. هذه المقارنة سوف تحدد درجة انعكاس شخصيته على الشكل النهائي للنتاج المعماري.

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## **INTRODUCTION**

The epistemological crux of the entire design process is located at the moment of passing from a descriptive to a normative procedure, that is at the moment of decision making. All efforts of design methodologists and theorists tend to let us believe that there exists between the two distinct phases a logical sequence and implies the search on it<sup>1</sup>.

Architecture has been affected since the 50s and during the 60s and 70s by the modernist systematic design theories. Studies by Asimow (1962), Page (1962), Christopherson (1962), Archer (1963), Alexander (1964), Mesarovic (1964), the RIBA Handbook (1965), Markus (1969), Maver (1970), and Jones (1970) are based on formulating methodological maps to be followed during design. They consisted generally of three main phases: *analysis*, *synthesis*, and *evaluation*. Before going through these phases, the designer must clear his mind from any intellectual preconceptions, then, begins the analysis phase by gathering data about the design problem. All kinds of information must be visible and measurable so as any aspect that does not submit to calculation and verification according to the stated requirements is considered "nonsense". Generally stated, *analysis* involves breaking down the problem into the simplest possible sub-problems each of which could be factorized in isolation. On the other hand, *synthesis* phase is characterized by an attempt to move forward and create a response to the sub-problems in the form of sub-solutions, then synthesizing them into a general solution. *Evaluation* involves testing the suggested solutions against the objectives identified in the analysis by means of checklists and other measurable methods.

These methods tend to be both theoretical and prescriptive. They seem to have been derived more by thinking about design than experimentally observing it, and characteristically they are logical and systematic. These maps are how design goes as methodologists see it and not necessarily as architects approach it in the real world.

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<sup>1</sup> Findeli, A. (1994), *Ethics, Aesthetics, and Design*, Design Issues, Vol.10, No.2.



The second half of the 70s and the beginning of the 80s have witnessed many shifts and attempts to formulate a new thinking method based on observing designers when they are designing and believing that the designer's prestructures play a principal role in overcoming the dilemmas confronting all decision making in the design phases. Studies by Hillier et al (1972), Darke (1979), Cross (1984), and Lawson (1980 &1994), based on the concept of *conjecture*, were the major attempts in formulating a Contemporary Theory of Design Epistemology in architecture. Darke<sup>2</sup> observed that a use of few simple objectives to reach an initial concept is a characteristic of the way an architect approaches design. The objective generating a solution is called primary generator or conjecture. Hillier<sup>3</sup> concluded that conjecture and problem specification proceed side by side (conjecture / analysis), and conjectures do not arise from data analysis, but from the designer's pre-existing cognitive capability. According to Cross<sup>4</sup>, conjectures become more sharply defined as relevant data are used to test them. Lawson recognized three main points: first, design situations vary not just because the problems are dissimilar, but also because designers habitually adopt different approaches; second, designers discovered much more about the problem as they critically evaluated their own solutions; third; wider thoughts and attitudes of the designer influence his methods and his ways in approaching design problems. These attitudes can be called, according to him, philosophies.<sup>5</sup>

## **HYPOTHESIS**

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<sup>2</sup>Darke, J. (1978), *The Primary Generator and the Design Process*, in Lawson, B. (1980), *How Designers Think*, The Architectural Press Ltd, London, p 33-34.

<sup>3</sup>Salama, A. (1994), *New Trends in Architecture Education: Designing the Design Studio*, Tailored Text & Unlimited Potential Publishing, North Carolina, p 85.

<sup>4</sup>Cross, N. (1984), *Developments in Design Methodology*, in Salama, A. (1995), op. Cit., p 85.

<sup>5</sup>Lawson, B. (1980), *How Designers Think*, The Architectural Press Ltd, London.

According to this contemporary shift in design theories, designers are always subjectively involved in the design process through all its phases and levels. The criteria of choice when confronting a decision making process do not arise, as in science, only from truth: a solution is never true or false, it is more or less acceptable or satisfactory, and thus depends on an evaluative judgment of an essentially qualitative type besides the quantitative one. The decision making is value-laden and is influenced by the designer's attitudes and interests.

Therefore, we must accept that subjectivity, that is the deliberate involvement of the subject into the object, plays a principal role in all decisions when confronting a problem posing options for action. In the light of the Contemporary Theories of Design Epistemology, the next hypothesis could be identified and stated:

Within the design process there always remain a margin of freedom and a range of choices for the architect sufficient to make subjective decision, and where his personality plays a principal role in determining the form of the final product, to the extent that ***we could find a relationship between the designer's personality profile and the nature of his architectural product.***

The more specific the requirements of design are, and the stronger the constraints imposed on it, the narrower the range of choices available to the designer; for instance, designing a hospital offers less freedom than of a memorial, but there always remains a margin of freedom sufficient to show the architect's personality.

### **OBJECTIVES**

The main aim of this research is ***to develop empirical evidence that may indicate the degree of the designer's intuition during the design process and explain the nature of the relationship between the architect's personality and his architectural product.***

In order to reach this main objective, three sub-objectives must be attained:

1- **Assessment of the designer's personality profile:**

This goal can be achieved empirically by making use of some developed psychological techniques borrowed from the field of psychology. (Chapter three and four).

2- **Assessment of the architectural product's nature:**

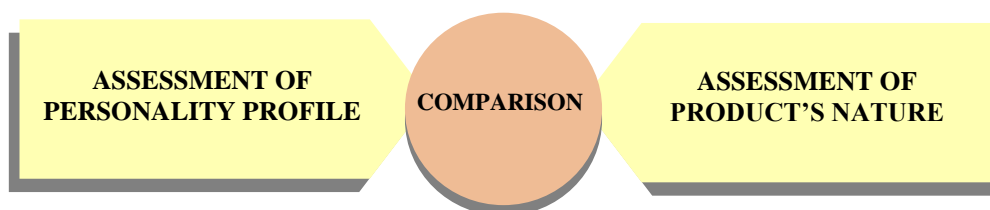
The nature of the designer's architectural product can be assessed by analyzing a sample of his works and developing a profile indicating the nature of each of them. (Chapter five, six, and seven).

3- **Comparison between the designer's personality profile and the nature of his architectural product:**

Such a comparison will then indicate to what extent the designer's personality profile is reflected on his product.

## **METHODOLOGY**

The methodology consists simply of three main stages:



A detailed Methodology is illustrated in fig.1.

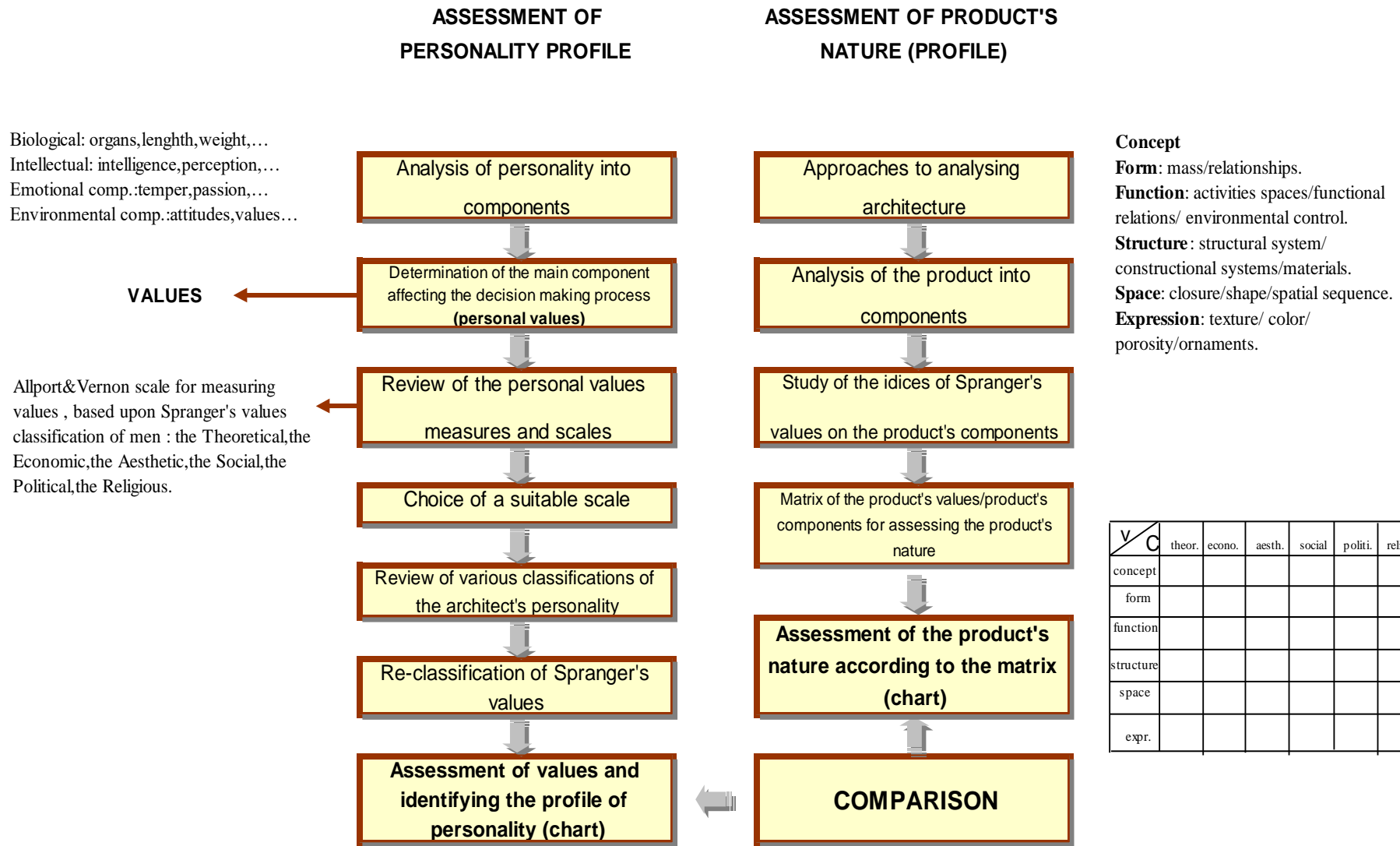


Figure 1. Thesis Methodology

**First stage: ASSESSMENT OF PERSONALITY PROFILE.**

The main goal of this stage is to find a way for assessing the architect's personality type. Personality is a very general world and is characterized by its ambiguity. It has many confusing sides. This stage consists of:

**Step one: Analysis of Personality into Components.**

By reviewing the major attempts in dividing personality into its components, we realized that it consists of four main components: biological, intellectual, emotional, and environmental. *Biological* means organic such as height, weight, organs, glands, etc; *intellectual* is concerned with perception, intelligence, remembrance, attention, etc; *emotional* means sentimental such as strain, emotions, temperament, etc; *environmental* consists of believes, attitudes, and values.

**Step two: Determination of the Main Component Affecting the Decision Making Process.**

*Environmental or social components* are found to be the significant factor influencing the decision-making. They consist of *believes, attitudes, and values*. Each architect develops a view of the world that is value structured in ways unique to him; and whenever a problem occurs, the designer imposes his already-established values on it. When he is confronted with a choice problem, he asks himself whether it fits with him and with the way he sees himself or not, in other words it is compatible with his value pattern or not. Therefore, the architect's decision is value laden, his personal interests and values.

**Step three: Review of the Personal Values' Measures and Scales.**

This step consists of reviewing the most famous scales for measuring values. They are *Allport - Vernon - Lindzey* scale<sup>1</sup>, *Work Values Inventory* by Super<sup>2</sup>,

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<sup>1</sup> Allport, G. W. & Vernon, P. E. (1931), *A Study of Values*, Houghton Mifflin Co., Boston, p 12-24.

<sup>2</sup> Anastasi, A. (1970), *Psychological Testing*, The Macmillan Co., London, p 554.

*Personal Value Inventory* by Hawkes<sup>3</sup>, *Value Scale* by Scott<sup>4</sup>, and *Value Survey* by Rokeach<sup>5</sup>.

**Step four: Choice of the Suitable Scale:**

Allport - Vernon - Lindzey scale was chosen for assessing the architect's personality for several reasons stated in detail in the body of the thesis. It is based on Spranger's book *Types of Men* where he has classified men according to six types of values: theoretical, economic, aesthetic, social, political, and religious.

Although Spranger's classification covers a wide range of human types and he has analyzed in detail the values of each type, a re-classification of them according to architectural terms is necessary in explaining specifically the architectural values. In order to attain this goal, we must review the various classifications of the architects' personalities and attitudes and then re-explain each of Spranger's values.

**Step five: Review of Various Classifications of the Architects' Personality.**

The most famous classifications are of Ackerman (1969)<sup>6</sup>, Burgess et al. (1981)<sup>7</sup>, Ledewitz (1983)<sup>8</sup>, Broadbent (1973)<sup>9</sup>, Jenks (1973)<sup>10</sup>, Roger (1985)<sup>11</sup>, Campbell (19)<sup>12</sup>.

**Ackerman** described the architect as *egoist* and *pragmatist*. **Burgess et al.** added a third architect model which he referred to as *facilitator*. To the three previous

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<sup>3</sup>Hawkes, G. R. (1950), *A Study of the Personal Values of Elementary School Children*, in Khalifa, A. M. (1987), *Phylaxis of Values Pattern in the human being*, PhD thesis, Cairo University, p 16.

<sup>4</sup>Scott, W. A. (1965), *Values and Organizations*, in Khalifa, A. M. (1987), *op. Cit.*, p 15.

<sup>5</sup> Rokeach, M. (1973), *The Nature of Human Values*, The Free Press, New York, p 357-361.

<sup>6</sup> Ackerman, J. (1969), *Listening to Architecture*, in Salama, A. (1994), *op Cit.*, p 25-27.

<sup>7</sup> Burgess, P. (1981), *Architectural Education and Values*, in Salama, A. (1994), *op Cit.*, p 25-26.

<sup>8</sup> Ledwitz, S. (1983), *Community Design: Creating Public Architecture*, in Salama, A. (1994), *op Cit.*, p 25-27.

<sup>9</sup> Broadbent, G. (1973), *Design in Architecture*, John Willy & sons, London, p 58.

<sup>10</sup>Jencks, C. (1973), *Modern Movements in Architecture*, Penguin Books Ltd., Harmondworth, England, p 29-94.

<sup>11</sup> Roger, K. L. (1985), *Architect?: a candid guide to the profession*, The MIT Press, London, p 229-246.

<sup>12</sup> Campbell, S. (19) *Architectural values as a Measure of Design Decision Making*, in Raman, P. G., ed., *Architecture and Social Sciences*, selected papers, University of Edinburg.

basic approaches, **Ledewitz** added two types or models which are the architect as a *technical assistant giver* and the architect as *advocate*. **Broadbent** explained the differences between the *rationalist* and *empiricist* architect. **Jenks** has described six attitudes or traditions which architects could be classified according to them: the *idealist*, the *self-conscious*, the *supersensualists*, the *intuitive*, the *logical*, and the *unselfconscious* tradition. According to **Roger** the architects' types are the *philosopher*, the *intellectual*, the *down-to-earthier*, the *social worker*, and the *fantaziser*. **Campbell** describes two types of architects: the *pragmatic* and the *ideologue*.

**Step six: Reclassification of Spranger's Values:**

We can observe from the previous review of the architects' classifications that some architects' types are mono-dimensional and some others are multi-dimensional. By comparing these dimensions with the values of Spranger and inserting each of them within the six types, we arrived to a reformulation of Spranger's classification according to these architectural dimensions.

**Step seven: Measurement of Values.**

**Allport - Vernon - Lindzey** scale was designed to measure six basic values: **Theoretical**: characterized by a dominant interest in the discovery of truth and by an empirical, critical, rational, intellectual approach. **Economic**: emphasizing useful and practical values; conforming closely to the prevailing stereotype of the "businessman." **Aesthetic**: placing the highest value on form and harmony; judging and enjoying each unique experience from the standpoint of its grace, symmetry, or fitness. **Social**: placing the highest value on unselfishness and love of people; whether of one or many, whether conjugal, filial, friendly, or philanthropic. **Political**: primarily interested in personal power, influence, and renown; not necessarily limited to the field of politics. **Religious**: mystical, concerned with the unity of all experience, and seeking to comprehend the cosmos as a whole.

**Second stage: ASSESSMENT OF PRODUCT'S NATURE.**

The goal of this stage is the assessment of the architectural product' s values.

**Step one: Approaches to Analysis of Architecture.**

Three of the most important and mature approaches to analyze *architecture* are of Vitruvius, Schulz (1965), Tschumi (1996)<sup>13</sup>, and Allsopp (1977)<sup>14</sup>.

**Step two: Analysis of Architectural Product into Components.**

According to the above review, we could distinguish between six main components: **Concept, Form, Function, Structure, Space, and Expression**. A more detailed analysis for the previous components must be done. We must know what sub-components they consist of.

- **Form** consists of *masses* and *relations*.

*Masses* are classified according to Caudill into: *plastic, skeletal, and planar masses*. Raafat classifies forms into *geometric form, organic form, sculpturesque form, and figurative form*.

**Relations:** Scale is classified into *physical scale, associative scale, and effectual scale*. Proportions are classified into *musical proportions, historical proportions, natural proportions, and arithmetic proportions*.

- **Function** consists of *providing spaces for activities: existence of the needed spaces and their functional relationships*; and **environmental controls:** *site control, climate control, heat control, light control, sound control, smell control, and things control*.

- **Structure** consists of *structural system, constructional system, and materials* which have *formal and functional* properties.

- **Space** consists of *structure of space and spatial sequence*.

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<sup>13</sup> Mofid, R. (2000), *Criticism and Theory in Architecture*, unpublished Ph.D. thesis, Cairo University, p60-62.

<sup>14</sup> Allsopp, B. (1977), *A Modern Theory of Architecture*, Routledge & Kegan Paul Ltd., London.



The structure of space could be classified on the basis of *closure: internal and external space*; and *shape: static and dynamic shape*.

**- Expression** consists of *color, texture, porosity, and ornaments*.

There are three types of colors: *environmental colors, expressive colors, and symbolic colors*. *Texture is involved with hardness or softness, heaviness or lightness, tautness or slackness*. *Porosity* could be an indicator of the building's *function or style*. Ornaments are used for six reasons: the pleasing qualities of the material used in building, moldings from a simple plinth or panel mould to a full classical cornice or the complex subtleties of a Gothic pier, the making of transitions between differing materials, between one structural element and another, the giving of emphasis without increasing size or proportion, the giving of appropriate significance to a building, often by the use of symbols or architectural metaphors, or finally purely for delight.

After analyzing the product's levels into sub-levels or elements, and knowing the characteristics and various types and classifications of each of them, we have now a large and detailed base which will be useful in observing the implications of Spranger's six values upon the architectural product.

**Step three: Study of Spranger's Values on the Product's Components.**

The aim of this step is to develop a matrix for measuring values on the architectural product components mentioned above; then by summing the values measured on each component, we come to a total type of product which could be compared with the type of personality measured by Allport - Vernon - Lindzey scale.

By reviewing the architect's type: theoretical, economic, aesthetic, social, political, and religious according to the reclassification, and studying their implications on each component, we could develop the required matrix where the lines represent the product's components and the columns represent the six values.

This matrix is developed by studying the implications of Spranger's values on the above components of the architectural product. We observed *the indices of values on concept, indices of values on form, indices of values on function, indices of*

*values on structure, indices of values on space, and finally indices of values on expression.*

**Step four: Development of the Matrix of the Architectural Product Assessment:**

**- Determination of the Relative Importance of Components:**

By reviewing the opinions of Schulz, Allsopp, and Lawson, we arrived that *concept, form, function, space, and expression* are very basic component in architecture upon which values must be assessed and must be of the same importance, whilst the *structural component* could be, relative to them, half important in scoring the indices of values upon them. Ten degrees are suggested to be given to the first five components and five degrees to the last.

- 10 degrees for the concept.
- 10 degrees for the form: 5 for the mass element and 5 for the relations between masses.
- 10 degrees for the function: 5 for the spaces for activities, and 5 for the physical control of the environment.
- 5 degrees for structure: 2 for the structural system, 1 for the constructional system, and 2 for materials. This is because we found that the importance of construction level in finding indices of values is relatively less than the other two elements.
- 10 degrees for the space: 5 for space and 5 for spatial sequence.
- 10 degrees for the expression: 2.5 for each of color, texture, porosity, and ornaments.

**- Scoring Values in each Component:**

We will deal with each value individually and we will score it according to the previous rating of the components. For example, in the column of theoretical values we will give a degree for the existence of this type of value according to each level. This existence is determined by the points arrived at earlier in the relation between levels and theoretical values. A scale rated from 0 to 10 (0 - 2.5 - 5 - 7.5 - 10) or 0 to 5 (0 - 1.25 - 2.5 - 3.75 - 5) is suggested to facilitate the rating and to reduce the subjectivity. We will sum at the end of each value column the scores resulting from each level, and this will be the degree of its existence in the product. By repeating this

sequence with each value type separately, we will come to 6 scores representing the degree of existence of the six values in the product. A chart could be obtained from these scores.

### **- Developing the Matrix**

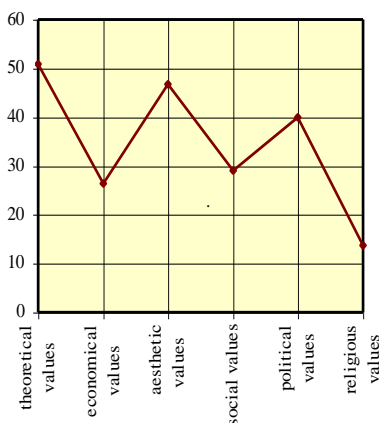
The matrix is resulting from the previous study between components and values and the ratings. The columns of the matrix represent the components and the lines represent the values. The result is in the form of a chart resembling the chart of the personality profile.

### **Third stage: COMPARISON BETWEEN FIRST AND SECOND STAGE.**

In this stage, a comparison between the chart resulting from the personality profile and the chart resulting from assessing the indices of values in the product will be done. By analyzing the results we shall test the hypothesis:

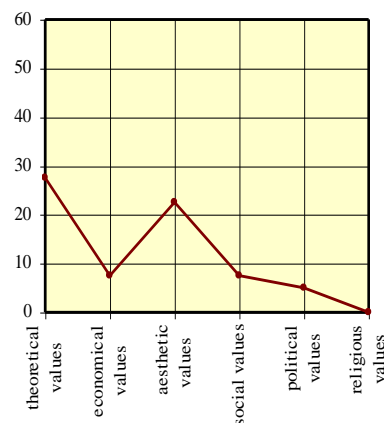
*Within the design process there always remain a margin of freedom and a range of choices for the architect sufficient to make subjective decision, and where his personality plays a principal role in determining the form of the final product, to the extent that we could find a relationship between the designer's personality profile and the nature of his architectural product.*

### **Example:**



**PERSONALITY PROFILE**  
Arch. Akram El Magdoub

### **COMPARISON**



**PRODUCT'S NATURE**  
Port Said Public Resort

## **LAYOUT OF THE THESIS:**

The thesis consists of four main parts:

### **PART ONE: SUBJECTIVITY IN DESIGN in the Light of the Contemporary Theory of Design Epistemology.**

The main goal of this part is reviewing the different approaches of the Modernist Systematic Theory on the one hand, and the recent shift in design epistemology on the other hand. Then establishing the role of the designer's personality through the different design stages.

It consists of two chapters: **Review of the Design Process Theories** and **Subjectivity in the Design Process Stages.**

#### **Chapter One: Review of the Design Process Theories.**

This chapter reviews **the Modernist Systematic Theories** according to Asimow (1962), Page (1962), Christopherson (1962), Archer (1963), Alexander (1964), Mesarovic (1964), the RIBA Handbook (1965), Markus (1969), Maver (1970), and Jones (1970). They are based on formulating methodological maps to be followed during design.

In addition, it reviews **the Contemporary Theories of Design Epistemology** or the new shifts in design theories based on observing designers when they are designing. Studies by Hillier et al (1972), Darke (1979), Cross (1984), and Lawson (1980 & 1994), based on the concept of *conjecture* or *primary generator*, were the major attempts in formulating the Modern Scientific Thinking in architectural design.

#### **Chapter Two: Subjectivity in the Design Process Stages.**

The first point discussed in this chapter was **Decisions Types**. There are two kinds of decisions in the design process: on the one hand a *rational or objective decision* based on a rational weighing of the different qualities and performances of a design, on the other a *holistic or subjective decision*: an action based on the designer's

subjectivity, and the selection of a solution is made on the basis of its relative quality to him.

The second point was an observation of **Subjectivity in the Design Process Stages**: *primary generator, conjecture, analysis, and evaluation.*

## **PART TWO: ASSESSMENT OF THE PERSONALITY PROFILE.**

The main goal of this part is to develop a method for assessing the architect's personality profile. It consists of two chapters: ***Personality*** and ***Values as a Personality Component***.

### **Chapter Three: Personality.**

This chapter consists of three sections: **Personality Definition Attitudes**: definitions of *external effect, internal effect, and the positivist view*; **Personality Components**: *biological, intellectual, emotional, and social components*; and **Determination of the Component Affecting the Decision Making Process.**

### **Chapter Four: Values as a Personality Component.**

This chapter consists of four sections. **Value Definition Attitudes**: the confusion between the term *value* and the terms *need, motive, interest, belief, attitude, behavior*. **Hierarchy of Values**: *hierarchy according to Parker and hierarchy according to Scheler*. **Measurement of Values**: the most famous scales for measuring values are *Allport - Vernon - Lindzey* scale based on Spranger's values, *Work Values Inventory* by Super, *Personal Value Inventory* by Hawkes, *Value Scale* by Scott, and *Value Survey* by Rokeach. **Spranger Classification of Types of Men**: the *theoretical, economic, aesthetic, social, political, and religious*. **Re-classification of Spranger's Values**: *review of architects' types classifications* which are of Ackerman (1969), Burgess et al. (1981), Ledewitz (1983), Broadbent (1973), Jenks (1973), Roger (1985), Cambell (19), *dimensions of the architects' types, and re-classification of architects' personality types.*

### **PART THREE: ASSESSMENT OF THE PRODUCT NATURE.**

The problem of this part is the assessment of the product in terms of the six values of Spranger. In this part we must find a way for this assessment in order to compare it with the personality profile. By studying the indices of the theoretical, economic, aesthetic, social, political, and religious values on the product's components, then scoring each value on these components, and finally summing the scores, we could come to a profile similar to the one of the architect's personality.

This part consists of three chapters: *Architectural Product Components*, *Indices of Values in the Product's Components*, and *Matrix for the Product's Assessment in terms of Values*.

#### **Chapter Five: Components of the Architectural Product.**

Three of the most important and mature approaches to analyze *architecture* are of Vitruvius, Schulz (1965), Tschumi (1996), and Allsopp (1977). As a conclusion of this review, we analyzed the product into six components: *concept*, *form*, *function*, *structure*, *space*, and *expression*. Each one is individually analyzed into sub-components.

This chapter consists of six sections besides the approaches to analyze Architecture: **Concept**: *Concept definition and Sources of design concepts*; **Form**: *Masses and Relations*; **Function**: *Providing spaces for activities and Physical control of the environment*; **Structure**: *Structural system, Constructional system, and Materials*; **Space**: *Structure of the space and Spatial sequence*; and finally **Expression**: *Color, Texture, Porosity, and Ornaments*.

#### **Chapter Six: Indices of Values in the Product's Components.**

In this chapter we have observed the implications and the main aspects or indices of the six values: theoretical, economic, aesthetic, social, political, and religious on the six components of the architectural product. It consists of: **Indices of Values in Concept**, **Indices of Values in Form**: *Indices of Values in Mass* and *Indices of Values in Relations*; **Indices of Values in Function**: *Indices of Values in Activities'*

*Spaces and Indices of Values in Environmental Controls; **Indices of Values in Structure**: Indices of Values in Structural System, Indices of Values in Constructional System, and Indices of Values in Materials; **Indices of Values in Space**: Indices of Values in Space Structure and Indices of Values in Spatial Sequence; **Indices of Values in Expression**: Indices of Values in Color, Indices of Values in Texture, Indices of Values in Porosity, and Indices of Values in Ornaments.*

**Chapter Seven: Matrix of the Product's Assessment in Terms of Values.**

This matrix is formulated according to the previous indices of values in the product's components. The columns represent the six value types and the lines represent the six components with their sub-components. The idea is to score each value indices in each component on the basis of the existence of the former in the latter. Then by summing the scores in the column of each value we come to scoring the existence of the value in the whole product. The chapter consists of **Determination of the Relative Importance of Components**, **Scoring Indices of Values in each Component**, and **Developing the Matrix**.

**PART FOUR: EMPIRICAL APPLICATION.**

This part consists of four chapters.

**Chapter Eight: Methodology / Tools / Samples.**

This chapter discusses the methodology followed in the empirical study; the various tools used in the study, which are mainly *Allport - Vernon - Lindzey Scale* for the personality profile assessment in terms of values and *the Matrix of Values / Components* for the product's nature assessment in terms of values; and finally the Samples.

**Chapter Nine: Results of Assessing Personalities.**

This chapter is the application of the study on a group of architects and students. It involves assessing the personality of Ali Raafat, Abdel Halim Ibrahim, Gamal Bakry, Ahmed Mito, Akram El Magdoub, Ali Abdel Raouf, Tarek Abu El Naga, Ahmed Emam, Amani Kamel, and 16 final undergraduate year students.

**Chapter Ten: Results of Assessing the Architectural Products.**

It involves the assessment of the products' nature or profile of each architect.

**Chapter Eleven: Comparison Between the Personality Profiles and the Nature (Profile) of the Architectural Products.**

In this chapter, a comparison between the personality profile of each architect or student and his product nature (profile) will be made. A table is suggested to facilitate the comparison. The first column will indicate the architect's personality profile (graph) and the remaining columns each will indicate the nature or profile (graph) of one of his products. This chapter represents the stated comparison and also summarizes the previous two chapters.

**CHAPTER TWELVE: DISCUSSION AND CONCLUSIONS**

In this chapter the results of the empirical study will be discussed, and the hypothesis of our research will be tested; then some recommendations will be stated.



**PART ONE: SUBJECTIVITY IN DESIGN in the Light  
of the Contemporary Theory of Design Epistemology**

**PART TWO: ASSESSMENT OF PERSONALITY**

**PART THREE: ASSESSMENT OF ARCHITECTURAL  
PRODUCT**

**PART FOUR: EMPIRICAL APPLICATION**

Architecture has been affected since the late 50s by the Modernist Systematic Thinking; and the 60s have witnessed the golden era of the methodological design. This movement has withdrawn during the 70s after a lot of critiques and after the failure of attaining its goals. During the second half of the 70s there has been many modifications and shifts in the approaches to design theory and their applications in architecture. Since 1980, there have been many attempts to formulate a Contemporary Theory of the Design Epistemology.<sup>1</sup>

The main goal of this part is to review the different approaches of the Modernist Systematic Theory<sup>2</sup> on the one hand, and the recent shift in design epistemology on the other hand<sup>3</sup>. Then establishing the role of the designer's personality throughout the different design stages.

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<sup>1</sup>Helmi, S., 1991, *Less Methodology.. More Creativity, Contemporary Scientific View of Architectural Theory*, Mimar Magazine, Issues 14-15.

<sup>2</sup>Which tries to put the design process under a specific methodology.

<sup>3</sup>Which cares for the designer's prestructure and its influence on the design process.

**PART ONE: SUBJECTIVITY IN DESIGN in the Light of the  
Contemporary Theory of Design Epistemology**

**Chapter One: REVIEW OF DESIGN PROCESS THEORIES**

**Chapter Two: SUBJECTIVITY IN THE DESIGN PROCESS  
STAGES**

## **1-1 Introduction:**

There are two main goals for this chapter. First, reviewing the different approaches of the Modernist Systematic Theory on the one hand, and the recent shift in design epistemology on the other hand; we shall call it the Contemporary Theory of Design Epistemology. Second, concluding the stages the architect follows during the design according to the previous review.

## **1-2 Modernist Systematic Theory:**

Systematic Design requires from the designer, for reaching the truth, to clear his mind from all his preconceptions, then to observe and gather the information needed and analyze it, all kinds of information must be measurable, visible, and weighable. Any aspect that does not submit to calculation and verification is dismissed as " nonsense ". Then synthesis phase begins to formulate a general rule which is then tested according to the information gathered. The process that begins from the parts to the whole is named *inductive logic* or *induction*<sup>1</sup>. Induction has three underlying steps: observing a large number of facts, formulating theories to explain these facts, and testing the theories by experimentation<sup>2</sup>.

The most famous Modernist Systematic Theories are of Asimow (1962), Page (1962), Christopherson (1962), Archer (1963), Alexander (1964), Mesarovic (1964), the RIBA Handbook (1965), Markus (1969), Maver (1970), and Jones (1970). The following section will illustrate the design process stages according to each of them.

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<sup>1</sup>Helmi, S. (1991), op. Cit.

<sup>2</sup>Salama, A. (1994), *New Trends in Architecture Education: Designing the Design Studio*, Tailored Text & Unlimited Potential Publishing, North Carolina, p 84.

### **1-2-1 Design Process According to Asimow ( 1962 ):<sup>3</sup>**

His method derives from systems engineering and he describes design almost entirely in terms of information processes. It consists, he says, of:

*The gathering, handling and creative organizing of information relevant to the problem situation; it prescribes the derivation of decisions which are optimized, communicated and tested or otherwise evaluated; it has an iterative character, for often, in the doing, new information becomes available or new insights are gained which require the repetition of earlier operations.*<sup>4</sup>

He outlines a general process for solving problems:

1. Analysis
2. Synthesis
3. Evaluation and decision
4. Optimization
5. Revision
6. Implementation

### **1-2-2 Design process According to Page (1962) and Christopherson (1962):**

During the Conference on Design Methods 1962, Christopherson and Page detected a three-phase sequence at the center of design method<sup>5</sup>. They called it by various names; **Christopherson** spoke of:

- (a) Conception
- (b) Realization
- (c) Communication

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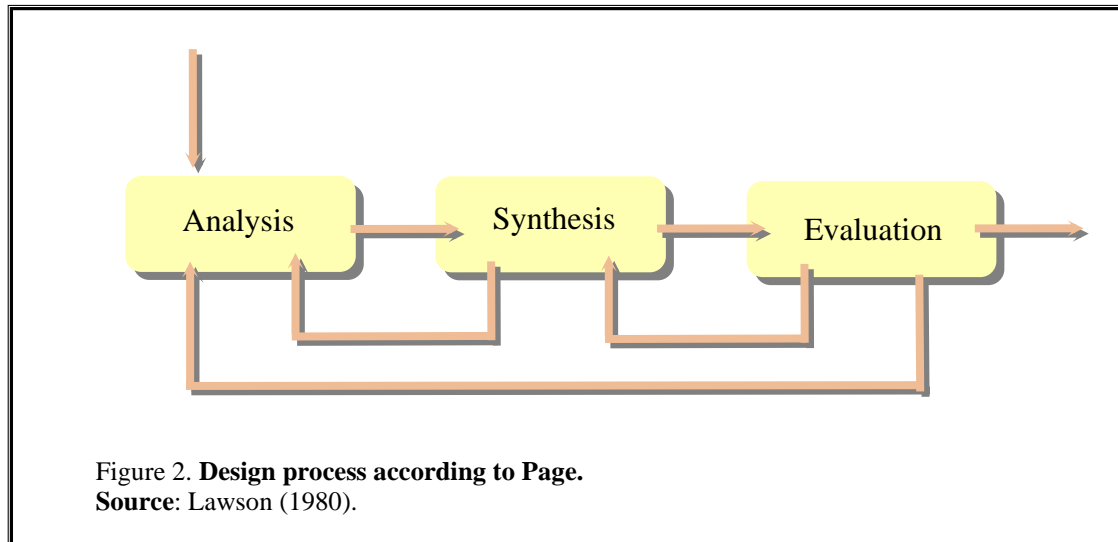
<sup>3</sup> Broadbent, G. (1973), *Design in Architecture*, John Willy & sons, London, P 254-255.

<sup>4</sup> Asimow, M. (1962), *Introduction to Design*, in Broadbent, G. (1973), op. Cit. P 255.

<sup>5</sup> *Conference on Design Methods* (1962), London, in Broadbent, G. (1973), op. Cit. P 256.

While **Page** used:

- (a) Analysis
- (b) Synthesis
- (c) Evaluation



And according to Page, in the practical world of design, there is always a return loop from each function to all preceding functions (fig.2). We can quote his exact words in the Conference on Design Methods 1962:

*In the majority of practical design situations, by the time you have produced this and found out that and made a synthesis, you realize you have forgotten to analyze something else here, and you have to go round the cycle and produce a modified synthesis, and so on. In practice you go round several times.<sup>6</sup>*

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<sup>6</sup>Lawson, B. (1980), *How Designers Think*, The Architectural Press Ltd, London, p 28.

### **1-2-3 Design process According to Archer (1963):<sup>7</sup>**

Archer described the whole sequence of the design process in a flow chart with six stages and several feedback loops. (Fig.3)

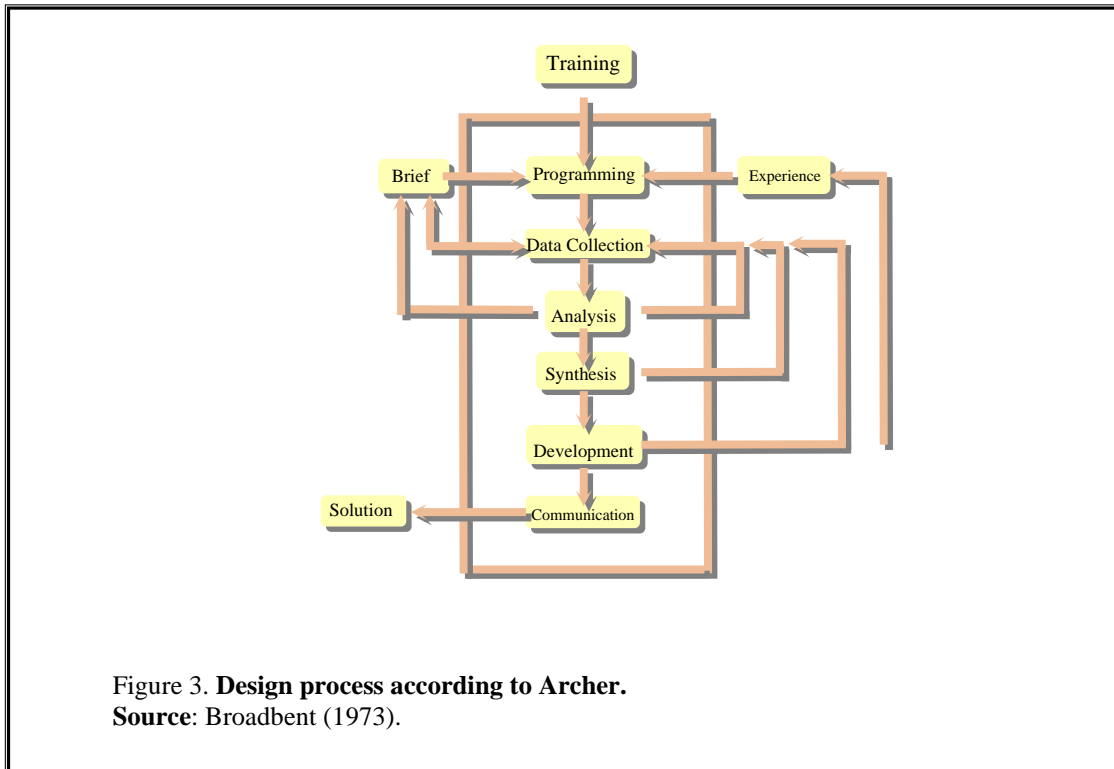


Figure 3. **Design process according to Archer.**  
Source: Broadbent (1973).

The stages are the following:

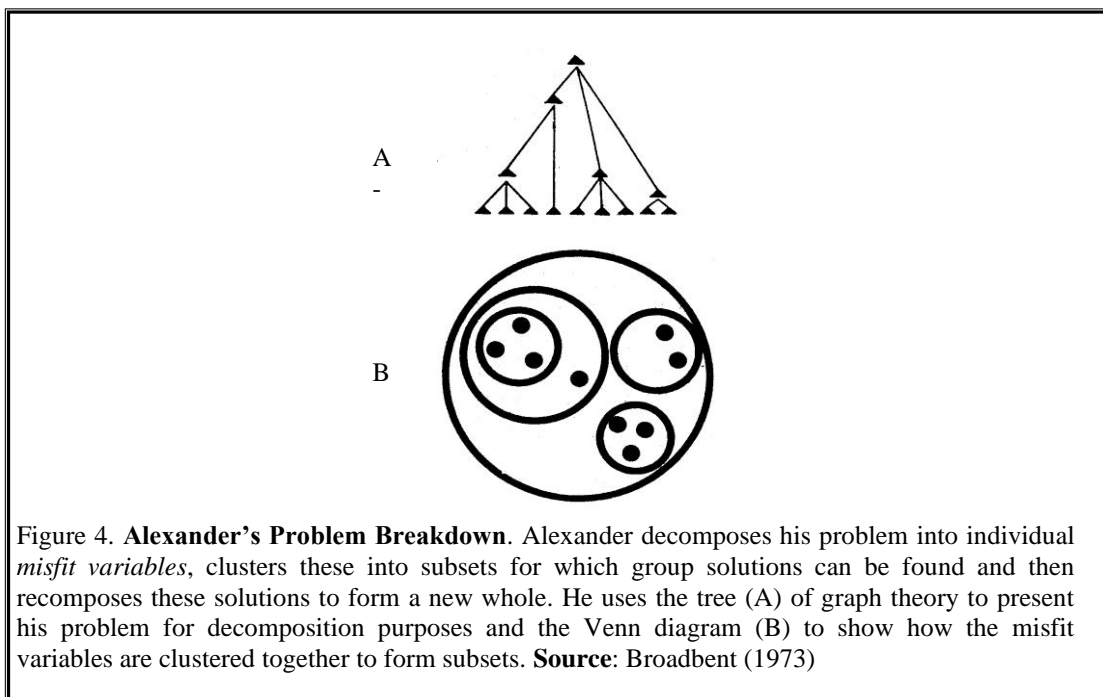
- (a) Programming
- (b) Data collection
- (c) Analysis
- (d) Synthesis
- (e) Development
- (f) Communication

<sup>7</sup>Archer, L. B. (1963), *Systematic Method for Designers*, in Broadbent, G. (1973), op. Cit., p 256-257.

### 1-2-4 Design Process According to Alexander (1964):<sup>8</sup>

According to Alexander (1964) the problem of the design is that the designer is seduced by the excellence of his own sketches and builds the forms they suggest. The cure for this, according to him, was to take design back into a further stage of abstraction. If the problem is converted into mathematical symbols, then the designer will feel neutral about them; he will perform various operations on them and end up with a new solution generated, perhaps, without his even being aware of it.

He suggests a breakdown of the problem into its tiniest components, and visualizing the problem using a tree: the root of the tree represented the root of his problem, its division into branches represented the division of his problem into major categories, and each terminal vertex of his graph represented a single misfit variable. A conventional solution might be found by solving each misfit variable, in the Cartesian manner, and building up a complete answer by synthesizing these small ones successively. The whole point of his method was that one should regroup the misfit variables, work out solutions to each of these groups, and then synthesize these group solutions into a new whole. (Fig.4)

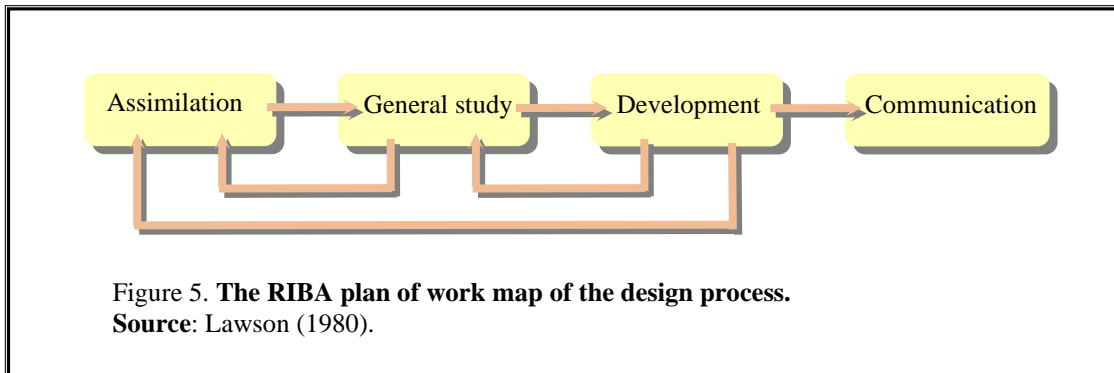


<sup>8</sup>Alexander, C. (1964), *Notes on the Synthesis of Form*, in Broadbent, G. (1973), op. Cit. P 274-279.



### **1-2-5 Design Process According to the RIBA handbook:<sup>9</sup>**

The RIBA practice and management handbook suggests a plan of work to be used by architects in practice. The handbook tells us that the design process may be divided into four phases shown in fig. (5):



#### **Phase 1 assimilation**

The accumulation and ordering of general information and information specifically related to the problem in hand.

#### **Phase 2 general study**

The investigation of the nature of the problem. The investigation of possible solutions or means of solution.

#### **Phase 3 development**

The development and refinement of one or more of the tentative solutions isolated during phase 2.

#### **Phase 4 communication**

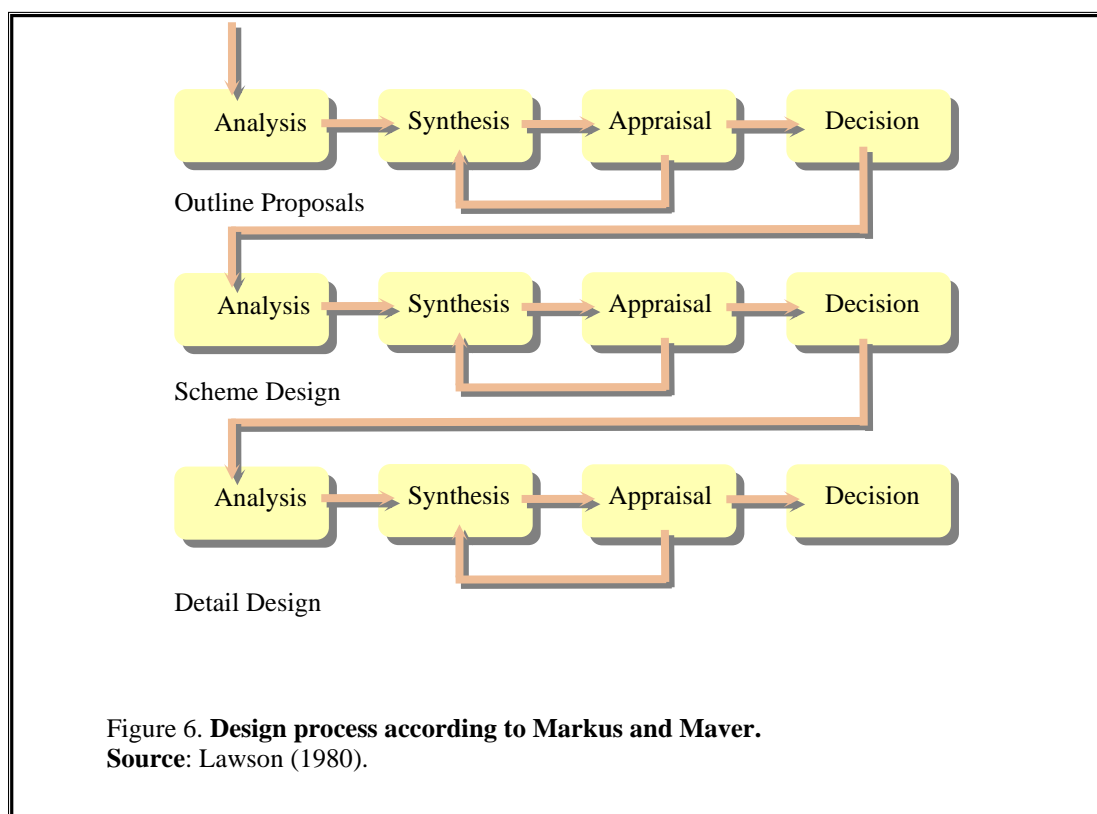
The communication of one or more solutions to people inside or outside the design team.

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<sup>9</sup>RIBA *Architectural Practice and Management Handbook* (1965), in Lawson, B. (1980), op. Cit., p23-25.

### **1-2-6 Design Process According to Markus (1969) and Maver (1970):<sup>10</sup>**

Markus (1969) and subsequently Maver (1970) have developed the RIBA maps of designing. They argue that a complete picture of design method requires both a "decision sequence" and a "design process" or "morphology". Markus and Maver suggest that we need to go through the decision sequence of analysis, synthesis, appraisal, and decision at increasingly detailed levels of the design process (fig.6). **Analysis** involves the exploration of relationships, looking for patterns in the information available, and the classification of objectives. Essentially analysis is the ordering and structuring of the problem. **Synthesis** on the other hand is characterised by an attempt to move forward and create a response to the problem. Essentially, synthesis is the generating of solutions. **Appraisal** involves the critical evaluation of suggested solutions against the objectives identified in the analysis phase.

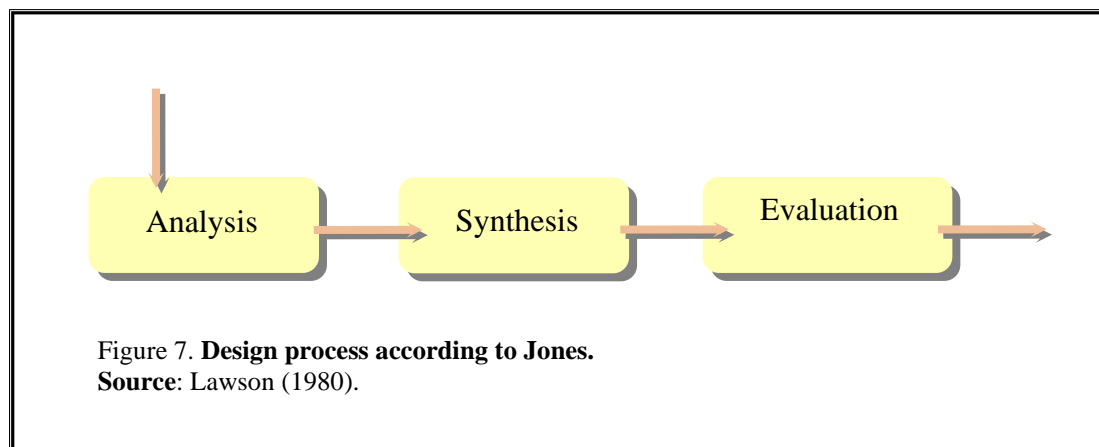


<sup>10</sup>Markus, T. A. (1969), *The Role of Building Performance Measurement and Appraisal in Design Method*, and Maver, T. W. (1970), *Appraisal in the Building Design Process*, in Lawson, B. (1980), op. Cit., p 26-27.

And according to them, the map of the design process must allow for an indefinite number of return loops from evaluation to synthesis, which in simple terms calls for the designer to get another idea.

### **1-2-7 Design Process According to Jones (1970):<sup>11</sup>**

This method consists of three distinct phases: analysis, synthesis, and evaluation (fig.7). Analysis is the phase of listing all design requirements and their reduction to a complete set of logically related performance specifications. Synthesis is the phase of finding possible solutions and building complete designs. Evaluation is the phase of evaluating the accuracy within which alternative designs fulfill performance requirements.



#### **Analysis:**

According to Jones, in the initial analysis stage of systematic design, requirements are identified, listed, categorized, and subsequently reduced and organized into a set of interrelated performance specifications. The analysis phase consists of a set of underlying stages. They are concerned with decomposing the design problem into sub-problems, collecting and classifying information, and generating creative ideas with respect to the problem requirements.

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<sup>11</sup> Jones, C. (1970), *Design Methods*, in Salama, A. (1995), op. Cit., p 81-82.

**Synthesis:**

The second stage of systematic design is synthesis. It is the Stage in which raw information and partial solutions are integrated. It includes a set of underlying processes. They involve creative thinking, generating alternative solutions, and comparing the solutions with their acceptability for shape and requirements.

**Evaluation:**

Evaluation is the final stage of the method. It is the stage where alternative designs are judged according to how well they fulfill performance specifications. In this stage, different methods can be utilized. A mixture of experienced judgment and logical decisions is necessary for evaluation. However, where experience is not applicable, the task is to test solutions against performance specifications. One of the possibilities is to form a design committee to review and identify the consequences of solutions.

**1-3 Contemporary Theory of Design Epistemology****(Conjecture):**

Most of the researches and efforts made by modernist theorists have had many one goal: to find a logical and rational sequence to be followed during the design process especially between the analysis phase and the synthesis phase. Scientific philosophers such as Karl Popper and Thomas Khun were searching for a better and more realistic understanding of the nature of the design epistemology. *Hypothetico-deductive* logic, which is based on conjectures, was their most important contribution.<sup>12</sup>

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<sup>12</sup> Helmi, S. (1991), op. Cit.

The first who mentioned the term *conjecture* was the philosopher Karl Popper in 1959<sup>13</sup>. Like science, according to him, design relies on conjectures. He suggests that conjectures must necessarily come early in the design process to enable the designer to structure an understanding of the problem, and to digest it<sup>14</sup>. His exact words are:

*We do not know; we can only guess. And our guesses are guided by the unscientific, the metaphysical faith in laws, in regularities which we can uncover - discover . . . but these marvellously imaginative and bold conjectures or anticipations of our are carefully and soberly controlled by systematic tests. Once put forward, none of our anticipations are dogmatically uphold. Our method of research is not to defend them. in order to prove how right we were. On the contrary, we try to overthrow them. Using all the weapons of our logical, mathematical and technical armoury, in order to put forward new rash and premature prejudice.*<sup>15</sup>

This logic does not deny the presence of the researcher's or the designer's preconceptions, and, on the contrary to the inductive logic, it is a method of reasoning by inference from premises which is defined as inference from a general rule to a particular solution. In this method, the designer sets up a system consisting of a general rule: *conjecture*, and deduces a particular solution from it<sup>16</sup>.

Studies by Hillier et al (1972), Darke (1979), and Cross (1984) - based on the studies by Popper and Khun- are based on observing what designers do when they are designing. These studies are summarized in the following section.

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<sup>13</sup> Helmi, S. (1991), op. Cit.

<sup>14</sup>Salama, A. (1995), op. Cit., p 85.

<sup>15</sup>Popper, K. R. (1959), *The Logic of Scientific Discovery*, in Helmi, S. (1991), op. Cit.

<sup>16</sup>Salama, A. (1995), op. Cit., p 85.

### **1-3-1 Design Process According to Hillier et al. (1972), and Cross (1984):**

According to Hillier et al, as the designer collects and organizes the problem data, and data about constraints, his conjectures acquire sharper definition, since previously he/she has not been able to test them out in a very specific way. After the acquisition of data, he can test the conjecture. Conjecture and problem specification proceed side by side. Therefore, conjectures do not arise from data analysis, but from the designer's pre-existing cognitive capability<sup>17</sup>.

*Conjectures come from anywhere, and because they are not derived from the data by induction, it does not mean that the process of thought of which they form part is any the less rational. What is irrational is to exclude conjecture. So we will include it in design.*<sup>18</sup>

And **According to Cross (1984)**, conjectures become more sharply defined as relevant data is used to test the conjecture<sup>19</sup>.

### **1-3-2 Design Process According to Darke (1978):**<sup>20</sup>

Jane Darke has studied and observed a number of architects while they are designing. She has concluded that a use of a few simple objectives to reach an initial concept is characteristic of the way an architect approaches design. In some cases, a visual image comes very early in the process. In other cases, a certain amount of preliminary analysis takes place before the visual concept arises.

According to Darke (1979), the objective that generates a solution is called a *primary generator* or *conjecture*. Thus a very simple idea is used to form a starting

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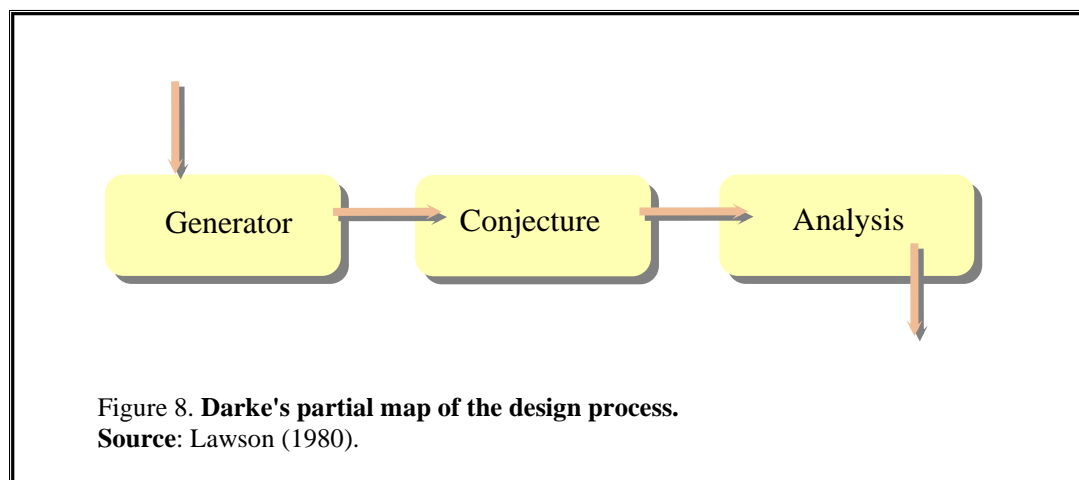
<sup>17</sup>Salama, A. (1995), op. Cit., p 85.

<sup>18</sup>Hillier, B. Et al (1972), *Knowledge and Design*, in Helmi, S. (1991), op. Cit.

<sup>19</sup>Cross, N. (1984), *Developments in Design Methodology*, in Salama, A. (1995), op. Cit., p 85.

<sup>20</sup>Lawson, B., 1980, op. Cit., p 33-34.

point for the designer and to narrow down the range of possible solutions. And instead of the " analysis - synthesis - evaluation " map, she has developed another map: "**generator - conjecture - analysis** " (fig.8) which consists of three phases: first deciding what one thinks might be an important aspect of the problem, then developing a crude design on this basis, and examine it to see what else one can discover about the problem, meaning that the predicted design is tested<sup>21</sup>. Sometimes the tests will lead to a refinement of the idea and sometimes to its rejection, but in either case the designer learns more about the problem<sup>22</sup>.



## 1-4 Conclusion:

Fig. 9 illustrates the main differences between the design process according to the Modernist Systematic Theory and the Contemporary Theory of Design Epistemology. It is obvious from the Contemporary Theory of Design Epistemology that it admits the architect's intuition and prestructure during the design process, and that his personality plays a principal role in determining the form of his final product. In the next chapter, a closer observation of the influence of the designer's personality and his intuition on the design process as a whole shall be presented.

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<sup>21</sup>Darke, J. (1978), *The Primary Generator and the Design Process*, in Lawson, B., 1980, op. Cit., p 33-34.

<sup>22</sup>Lawson, B. (1994), *Design in Mind*, Butterworth-Heinemann Ltd., Oxford, Great Britain, p 5.

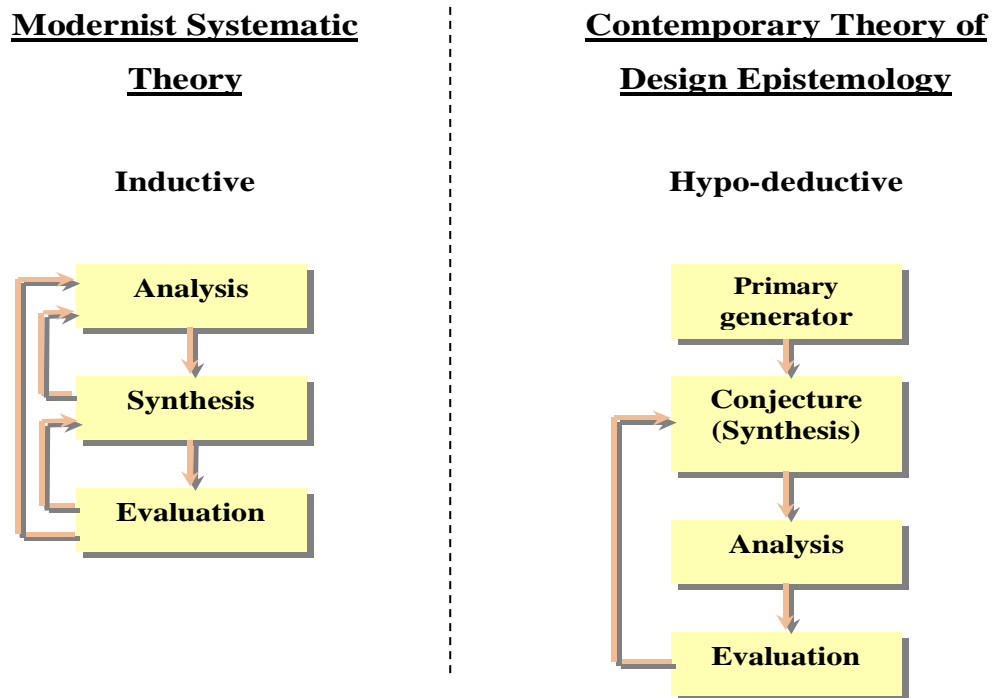


Figure 9. Comparison between the Modernist Systematic Theory and the Contemporary Theory of Design Epistemology. Source: the Author.



**PART ONE: SUBJECTIVITY IN DESIGN in the Light of the  
Contemporary Theory of Design Epistemology**

**Chapter One: REVIEW OF DESIGN PROCESS THEORIES**

**Chapter Two: SUBJECTIVITY IN THE DESIGN PROCESS  
STAGES**

## **2-1 Introduction:**

In the previous chapter, we reviewed the major theories in the design epistemology: *the Modernist Systematic Theories* and *the Contemporary Theory of Design Epistemology*. According to the latter, the main stages of the design process, are: *primary generator, conjecture (synthesis), analysis, and evaluation*.

In this chapter we shall study the subjective decision of the architect and its accumulation during the design process according to these stages. This study shall illustrate how at the end -because of this accumulation of decisions- the final product may represent the designer's personality; it will clarify how the relationship between the architect's personality profile and the nature of his architectural product came from.

## **2-2 Decision Types:<sup>1</sup>**

There are two kinds of decisions in the design process: on the one hand a rational weighing of the different qualities and performances of a design, on the other an action based on the designer's subjectivity, and a selection of a solution is made on the basis of its relative quality to him.

The designer learns very soon that the totality is not a simple sum of qualities and performances. A building scheme that satisfies every stated requirement and that is functionally well organized, and reasonably economical, could fail to receive a high evaluation. Another scheme having fewer good qualities could receive a higher evaluation because, although worse analytically, its total impact is better. The designer thus learns two parts of decision making: a *holistic decision* on which choice is based and which has a qualitative nature, and a confirming analytic and *rational*

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<sup>1</sup>Wade, J. W. (1977), *Architecture, Problems, and Purposes*, John Wiley & Sons, Inc., Canada, p227-229.

*decision* that examines qualities and performances and which has a quantitative nature. He learns that the two should not contradict, but he also learns they are not the same.

### **2-2-1 Holistic or Subjective Decision:**

This kind of decision is not based on a rational choice; it is a recognition choice. Either that thing fits with the designer and with the way he sees himself, or it does not. Such evaluation depends on a well-formed view of what *himself* is.

That, in turn, might depend on rational analyses of needs and requirements. But rational and analytic processes are not decision processes; they only contribute to an ability to make decisions. Holistic evaluation is not rational. If measurable criteria are available, then they can be used to confirm or deny the holistic decision, but they are not a substitute for it.

### **2-2-2 Rational or Objective Decision:**

Nothing that has been said about the importance of a holistic response should be thought to deny the importance of systematic rational methods. The point is that they are not the same. Findeli (1994) called this type of decision *technological decision*. According to him, it rests always on scientific reasoning and on the postulate of a radical separation between the subject and the object<sup>2</sup>.

One of the most useful practices in design is the development and maintenance of checklists of design questions (table 1). What must a building of this kind have? What past difficulties have occurred? What has worked well in the past? How big should this kind of room be? What furnishings should be used? A record of such matters can not be an invaluable aid for the designer. Such a record can be organized in an orderly fashion to be useful to the designer in the different stages of his design and according to the different parts of the building with which he is concerned.

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<sup>2</sup> Findeli, A. (1994), *Ethics, Aesthetics, and Design*, Design Issues, Vol.10, No.2.

	NEED						CONTEXT						FORM						
	Communal space	Privacy	Orientation	Circulation	Energy conservation	Accommodation of functions	Views	Access to site	Building privacy	Orientation					Hierarchy	Unity/Symlicity	Scale	Memorable image	Expression of functions
Alternative 1	☉	☉	☉	●	●	●	☉		☉	☉					●	●	☉	●	●
Alternative 2	●	●	●	●	●	☉	☉		☉	●						●	●	●	●
Alternative 3	☉		☉	☉	●		☉		☉	●					☉	☉	☉	☉	●

Table 1. Checklists.  
Source: Laseau, P. (1980)

Explicit evaluative criteria can be confirmed or denied because they are objective. Because the designer is able to articulate the criteria, he can evaluate explicitly by whether or not those criteria are satisfied. By contrast a holistic response is a subjective, non-articulated evaluation. In the subjectivity rests a major difficulty. A subjective evaluation can also be a biased evaluation, biased in ways the designer does not recognize and cannot explain.<sup>3</sup> It could be simply said that objective decision is supposed to be concerned exclusively with means, leaving the definition of ends to the other<sup>4</sup>.

### **2-3 Subjective decision in the Design Process Stages:**

From the conclusion of chapter one, we arrived at four main levels consisting the design process. They are *primary generator*, *conjecture*, *analysis*, and *evaluation*. During each of them the architect is confronted with decisions to make; and according to the modern scientific thinking, architect's subjectivity is unavoidable.

<sup>3</sup>Wade, J. W. (1977), op. Cit. P 229.

<sup>4</sup>Findeli, A. (1994), op. Cit.

### **2-3-1 Primary Generator / Conjecture:**

The primary generator of solution is, as it has been declared, a very simple idea used to narrow down the range of possible solutions. It comes from focusing on general issues of the design problem instead of its details<sup>5</sup>. The designer searches for an important aspect or an objective and this become the starting point of design. The initial concept or the crude design based on the generator is the conjecture. As the designer collects and organizes the problem data, and data about constraints, the conjecture acquires sharper definition and is transformed to a clear design.

Darke (1978) interviewed some well-known British architects about their intentions when designing local authority housing. The architects first discussed their views on housing in general and how they saw the problems of designing such housing and then discussed the history of a particular housing scheme in London. In fact the design of housing under these conditions presents an extremely complex problem. The range of legislative and economic controls, the subtle social requirements and the demands of London sites all interact to generate a highly constrained situation. Faced with all this complexity Darke shows how the architects tended to latch onto a relatively simple idea very early in the design process. This idea or primary generator may be to create a mews-like street or leave as much open space as possible and so on. For example one architect described how "... we assumed a terrace would be the best way of doing it ... and the whole exercise, formally speaking, was to find a way of making a terrace continuous so that you can use space in the most efficient way...". Thus a very simple idea is used to narrow down the range of possible solutions, and the designer is then able rapidly to construct and analyze a scheme<sup>6</sup>.

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<sup>5</sup>Laseau, P. (1980), *Graphic Thinking for Architects and Designers*, Litton Educational Publishing, Inc., Van Nostrand Reinhold Co., New York.

<sup>6</sup>Darke, J. (1978), *The Primary Generator and the Design Process*, in Lawson, B. (1980), op. Cit., p 33.

Alvar Alto in his essay entitled *The Trout and the Mountain Stream* on 1947 wrote what happens to him when confronting an architectural problem as follows:

*When I personally have to solve an architectural problem I am confronted, almost always, with an obstacle that is difficult to surmount. The cause, I believe, is the complicated and intense pressure of the fact that architectural design operates with innumerable elements that internally stand in opposition to each other. They are social, human, economic, and technical demands that unite to become psychological problems with an effect on both the individual and the group, on group and individual movement and internal frictions. All this becomes a maze that cannot be sorted out in a rational or mechanical manner. For a moment I forget all the maze of problems. After I have developed a feel for the programme and its innumerable demands have been engraved on my subconscious, I begin to draw in a manner rather like that of abstract art. Led only by my instincts I draw, not architectural syntheses, but sometimes even childish compositions and via this route I eventually arrive at an abstract basis to the main concept, a kind of universal substance with whose help the numerous quarrelling subproblems can be brought into harmony.<sup>7</sup>*

According to Wade (1977) a very strong influence on discovering this conjecture is the designer's image of the problem in relation to his total image structure. His prior experience and the manner in which his view of the world has developed both have an emphatic and powerful influence on his solutions. Each person develops a view of the world that is value structured in ways unique to him. Whenever a problem occurs, the designer imposes his already-established values on it<sup>8</sup>.

Also Lawson (1980) observed the influence of wider thoughts and attitudes of the designer on the design process itself. According to him, although they are often ill formed and not easily articulated, all of us tend to have attitudes towards issues which are wider than any one design problem and therefore influence our approach to these more specific problems. In particular, designers usually design not just because they enjoy doing it but also because they tend to be fascinated by the sort of things they

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<sup>7</sup>Alto, Alvar (1947), *The Trout and the Mountain Stream*, in Wilson C. (1992), *Architectural Reflections*, Butterworth Architecture, Oxford, p 33-34.

<sup>8</sup>Wade, J. W. (1977), op. Cit. P 153.

create. This fascination cannot help but lead to a study which itself generates a collection of attitudes, which he called them philosophies<sup>9</sup>.

### **2-3-2 Analysis Level:**

According to Lawson (1980) design process involves finding as well as solving problems. The designer must inevitably expend considerable energy in identifying the problems confronting him. It is central to modern thinking about design that problems and solutions are seen as emerging together rather than one following logically upon the other. The process is thus less linear than implied by many of the systematic design maps but rather more argumentative. That is, both problem and solution become clearer as the process goes on<sup>10</sup>.

However, we do not deny that the analysis level, according to systematic design, includes processes of problem definition (perception), gathering information about the problem, and classification of objectives. And the involvement of the designer in all these processes is unavoidable.

#### **2-3-2-1 Problem Definition:**

We should not expect a comprehensive and static formulation of design problems but rather they should be seen as in dynamic tension with design solutions. And perceiving these problems varies from a designer to another.

According to Lawson, there are many difficulties with measurement in design and problems are inevitably value-laden. In this sense design problems, like their solutions, remain a matter of subjective perception. What may seem important to one client or user or designer may not seem so to others. We should therefore not expect entirely objective formulations of design problems. Design problems require

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<sup>9</sup> Lawson, B. (1980), op. Cit., p 119.

Lawson, B. (1980), op. Cit., p 89.<sup>10</sup>

subjective interpretation. Not only are designers likely to devise different solutions but they also perceive problems differently. Their understanding of design problems and the information needed to solve them depends to a certain extent upon our ideas for solving them<sup>11</sup>.

Problem perception differs from a designer to another depending on the problem range, its complexity and its severity relatively to each designer. We shall illustrate these factors in the following sections.

#### **a- Problem Range:**

Design problems do not have natural or obvious boundaries but rather seem to be organized roughly hierarchically. It is rarely possible to discern precisely how far above the stated problem one should begin and how far below one should call a halt. Uncovering the range of his problem is one of the designer's most important skills.<sup>12</sup>

Part of the definition of a design problem is the level of detail which requires attention. In fact what usually seems details to a designer may be central to other designers and so on. How then do we find the end of a design problem? Is it not possible to go on getting involved in more and more detail? Indeed this is so; there is no natural end to the design process. There is no way of deciding beyond doubt when a design problem has been solved. Designers simply stop designing either when they run out of time or when, in their judgement, it is not worth pursuing the matter further. In design then, rather like art, one of the skills is in knowing when to stop<sup>13</sup>.

#### **b- Problem Complexity:**

Design problems have different amounts of detail. The designer soon discovers that the problem with the greater amount of detail is often easier to solve

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<sup>11</sup> Lawson, B. (1980), op. Cit., p 86.

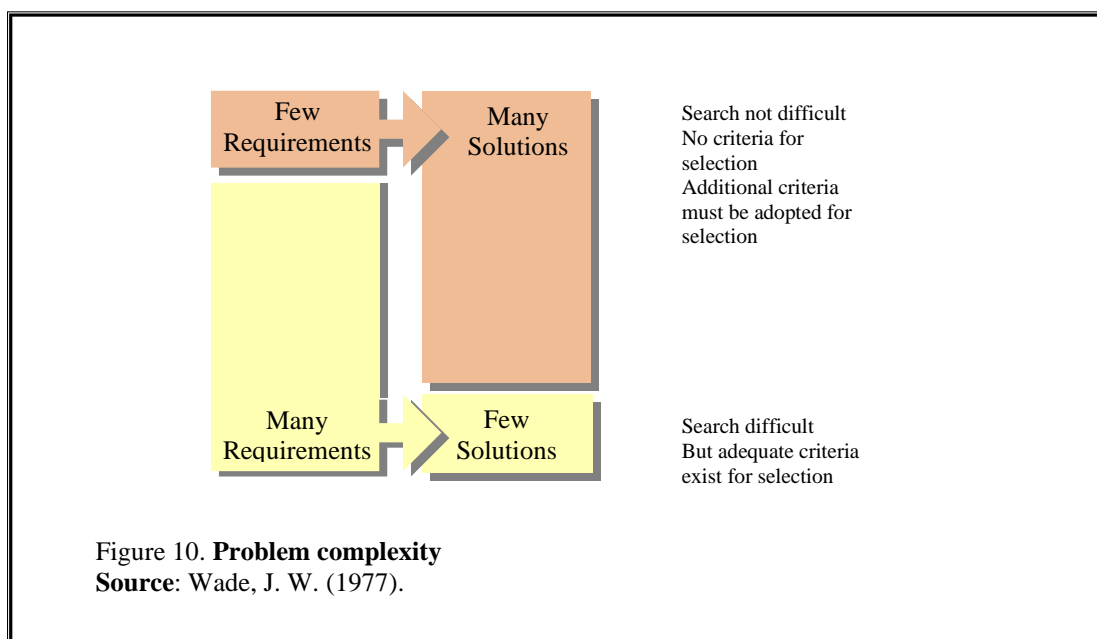
<sup>12</sup> Lawson, B. (1980), op. Cit., p 43.

<sup>13</sup> Lawson, B. (1980), op. Cit., p 40.



than the more "open" problem with less detail. The two kinds of problems at either end of a range from much to little detail are very different (Fig.10). Although the problem with more detail is usually more complex, requiring considerable study for its solution, the decision criteria are firm; the number of solutions is limited, and the work can proceed until one is achieved.

By contrast the problem with little detail has very weak decision criteria and consequently a great many solutions; to select one, the designer must set additional criteria of his own<sup>14</sup>.



### **c- Problem Severity:**<sup>15</sup>

Problems can be described by talking about an existing problem condition or about a desired goal condition. Whichever is emphasized, the one implies the existence of the other. Whatever kind of problem the design student is asked to think about, there is always some present condition that is unsatisfactory and some future

<sup>14</sup>Wade, J. W. (1977), op. Cit., p 105.

<sup>15</sup> Wade, J. W. (1977), op. Cit., p 156.

condition that is preferred. The difference between these conditions can be small or great. A person may want only a new carpet in one room, or may want a different house in a different location that will provide a number of very different functions for him. The distance between the two conditions depends on the quality of the existing condition and on the aspirations of the person describing his preferences. Both conditions are dynamic. The present condition might be improving or deteriorating; the individual's aspirations can be increasing or decreasing.

If problem severity is defined as the difference or the distance between these conditions, it must also take into account their dynamic nature and the way in which their movement affects the severity of a problem. When the designer understands this relationship, he can also understand how the placement of his problem within the diagram can indicate what his solution strategy should be. A problem placed in the lower right part of the diagram requires action as soon as possible: one placed in the upper left might not require action at all.

According to Wade there are two kinds of individuals: *action seeking* and *action avoiding*. Undoubtedly individuals could be ranged along a scale according to their willingness to deal with, and their preference for, different levels of stress. Some individuals are very conservative and prefer to experience as little change as possible. Others are bored by a lack of change and seek the stimulation change provides. Individuals differ remarkably in their ability to handle stress, ambiguity, and problems<sup>16</sup>.

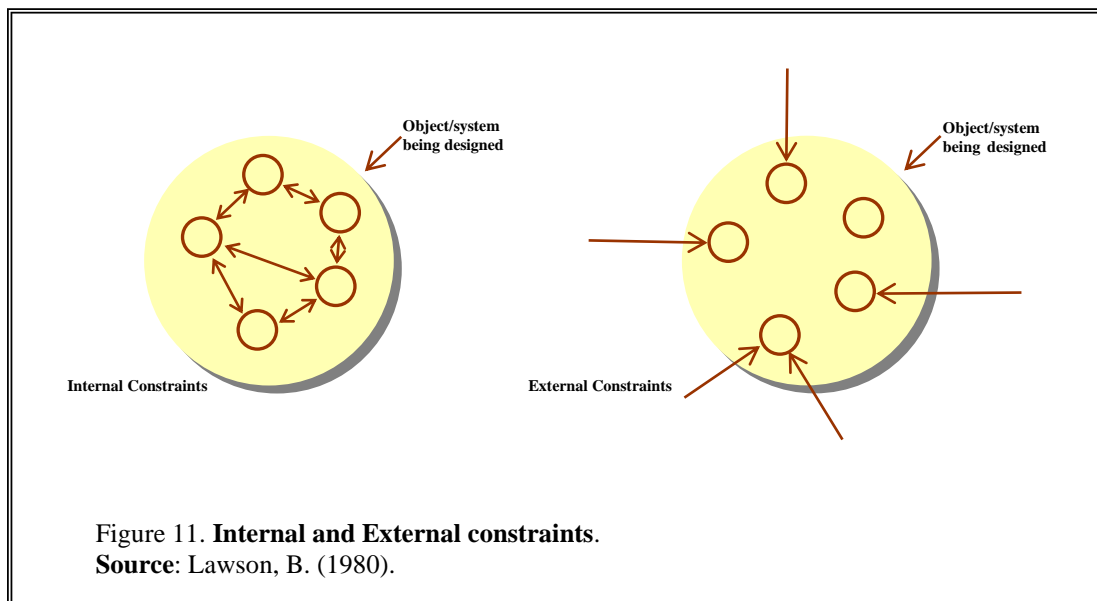
### **2-3-2-2 Information Gathering:**

It is obvious that information about the design problem is not specific and no one could collect exactly the same information about a problem. Questions like where to start? What kind of information to bring to the solution process? How much information to seek? What are the criteria for determining which information is

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<sup>16</sup>Wade, J. W. (1977), op. Cit., p 156.

acceptable and useful in problem solution and which is not? All these questions have no specific answer and it depends on the designer himself. Gathering information about the problem is usually gathering information about design constraints. According to Lawson (1980) there are two kinds of constraints: *internal* and *external* shown in fig. (11)



*Internal constraints* are imposed by the relationships desired between parts of the object or system being designed. *External constraints* are imposed when a relationship is desired with something which exists outside the object or system designed. Whatever their kinds are, the designer collects information about them according to the primary generator of the solution<sup>17</sup>.

### **2-3-2-3 Classification of Objectives:**

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<sup>17</sup>Lawson, B. (1980), op. Cit., p 70.

When we consider the number of objectives and the many competing requirements in design, it must be accepted that no work of architecture is going to be perfect. Compromise is inevitable and it follows therefore that the establishment and ordering of priorities has a very considerable influence. Even when we have determined our objectives and assessed their relative importance they will be subject to repeated re-evaluation during the design process. The way in which we work and the manner of preparing information for building purposes can introduce further influences which have the effect of changing the priorities<sup>18</sup>.

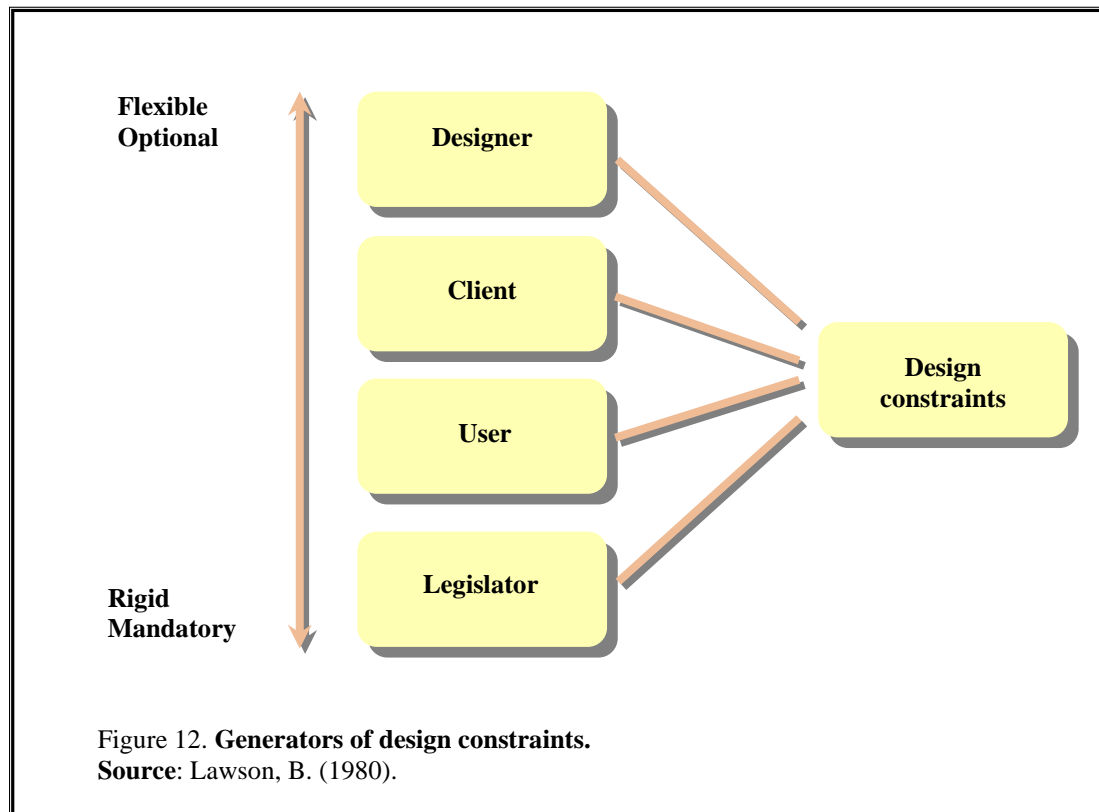
The architectural designer, according to Lawson<sup>19</sup>, is faced with requirements from four main sources: *the client, the user, the legislator, and the designer* himself (fig.12). He is expected to organize his objectives according to these factors. Lawson calls them generators of design constraints and, according to him, the requirements' rigidity increases beginning from those of the designer and ending to those of the legislator. Objectives or requirements arising from the latter are generally value-free, they must be satisfied without question, and cannot be weighed against the other factors. The client too generates many constraints connected with the primary objectives of attracting custom and selling goods. Unlike the legislator's constraints the designer is able to discuss the client's constraints and establish priorities. When he discovers apparent conflicts between the design implications of the client's objectives the designer is able to go back to his client and jointly they may re-appraise the client constraints. More flexible are the user's constraints. The communication between the designers and the users of environments often remains uncomfortably remote and the formers could not actually know the objectives of the latter<sup>20</sup>.

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<sup>18</sup>Smithies, K. W. (1981), *Principles of Design in Architecture*, Van Nostrand Reinhold, New York Ltd., p. 51.

<sup>19</sup> Lawson, B. (1980), op. Cit., P 66-69.

<sup>20</sup> More recently attempts have been made to involve users more in the design process represented in the participatory design.



The designer's objectives are comparatively flexible. If they cause too many difficulties, or just simply do not work out the designer is free to modify or scrap them altogether. One of the most important skills a designer must acquire is the ability critically to evaluate his own self-imposed constraints. Depending on his interests and values, he is supposed to come up with an integrative idea, an overall concept which organizes and unifies the whole design, and satisfies the *client's*, *user's*, *legislator's*, and *the designer's* objectives.

### **2-3-3 Evaluation Level:**

Questions about which are the most important problems, and which solutions most successfully resolve those problems are often value-laden. Answers to such questions, which designers must give, are therefore frequently subjective. Complete objectivity demands dispassionate detachment. Designers being human beings find it hard to remain either dispassionate or detached about their work. Indeed designers are often aggressively defensive and possessive about their solutions. Perhaps it was this issue above all else that gave rise to the systematic design methods; designers were

seen to be heavily involved in issues about which they were making subjective value judgements. However this concern cannot be resolved simply by denying the subjective nature of much judgement in design. And we have explained in the section of decision types the holistic or subjective decision during the design process.

## **2-4 Conclusion:**

In this chapter we have closely reviewed the nature of the architect's decisions throughout the various stages of the design process based on the Contemporary Theory of Design Epistemology. It is clear that most of these decisions are highly subjective and value-laden. They mainly reflect the designer's outlook rather than any objective data. It is the accumulation of his personal decision throughout the stages of the design process which plays a principal role in determining the nature of the final product rather than any objective truth about the problem.

In this respect, we should expect to find a positive relationship between the architect's personality and the nature of his architectural product.

**PART ONE: SUBJECTIVITY IN DESIGN in the Light  
of the Contemporary Theory of Design Epistemology**

**PART TWO: ASSESSMENT OF PERSONALITY**

**PART THREE: ASSESSMENT OF ARCHITECTURAL  
PRODUCT**

**PART FOUR: EMPIRICAL APPLICATION**

In the following part the term *personality* will be analyzed into its components in order to determine the most influential one upon the decision –making process. After reviewing the measures and scales for assessing personality, an appropriate scale will be proposed. Since all these terms have emerged in the field of psychology, equivalent architectural terms will be postulated. This part is composed of two chapters: *Personality* and *Values as a Personality Component*.

**Reminding of Hypothesis:**

*Within the design process there always remain a margin of freedom and a range of choices for the architect sufficient to make subjective decision, and where his personality plays a principal role in determining the form of the final product, to the extent that we could find a relationship between the profile of the architect's personality and the nature of his architectural product.*



## **PART TWO: ASSESSMENT OF PERSONALITY**

**Chapter Three: PERSONALITY**

**Chapter Four: VALUES AS A PERSONALITY COMPONENT**

### **3-1 Introduction:**

In the following chapter, the different approaches of defining personality will be reviewed to find which one best serves our main goal of measuring personality then we will analyze personality into its components in order to determine the component which emphasizes the architect's role in the decision making process. This chapter consists of two sections: *Personality definition attitudes* and *Personality components*.

### **3-2 Personality Definition Attitudes:**

Everyone, it seems, knows what personality is, but no one can precisely describe it: hundreds of definitions are available. According to Allport (1961), they fall into three classes which he calls *external effect*, *internal structure*, and *positivist view* definitions<sup>1</sup>.

#### **3-2-1 External Effect:**

We say of one acquaintance, " *he lacks personality*," and of another, " *she has a great deal of personality*." We mean that our acquaintance makes, or fails to make, an impact on other people. Often a form for recommendation will ask us to rate an applicant on *personality*. Usually what is wanted is an estimate of the applicant's social effectiveness or appeal. Thus the popular conception of personality refers to a certain cluster of traits that is socially pleasing and effective.

Definitions offered by certain psychologists who likewise take a social or outer view of personality are like the followings:

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<sup>1</sup>Allport, G. W. (1951), *Pattern and Growth in Personality*, Holt, Rinehart, and Winston, 2<sup>nd</sup> ed., New York, p 22-27.

Personality is:<sup>2</sup>

"The sum-total of the effect made by an individual upon society."

"Habits or action which successfully influence other people."

"Responses made by others to the individual as a stimulus."

"What others think of you."

There is one point in favor of these *external effect* definitions. It is only through the judgments of us made by other people that our personalities are known at all. Unless we affect people how can we be known? This is true, but what if we affect different people in different ways? Do we then have many personalities? May it not rather be that one judgement may have a correct impression of us, and others a wrong impression? If so, we must have something inside our skins that constitutes our "true" nature. Definitions in terms of external effects confuse personality with reputation; and one may have many reputations. Of course the impression we make on others, and their response to us are important factors in the development of our personalities. But we should not confuse the external effects of personality with the internal structure itself.

### **3-2-2 Internal Structure:**

Most philosophers and psychologists prefer to define personality as an objective entity; as something that is *really there*. They grant that the person is open to the world around him is affected by it and affects it at every step. Yet a personality has its own life history and its own existence; it is not to be confused with society nor with the perceptions that other people have of it. Thus William Stern, who was both a philosopher and a psychologist, speaks of personality as a *multiform dynamic unity*. He adds that no one ever fully achieves a perfect unity but always has this as his aim<sup>3</sup>. Some writers add a note of *value* to this type of definition. Personality is something to

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<sup>2</sup> Allport, G. W. (1951), op. Cit., p 23.

<sup>3</sup> Stern, W. (1923), *Die menschliche Personalichkeit*, in Allport, G. W. (1951), op. Cit., p 25.

be prized. Thus Goethe speaks of personality as the one thing in the world that has *supreme value*. And Kant's moral philosophy is based on the same conviction.

According to Allport, western psychologists give a simple descriptive and not well structured statement of personality according to the inner structure. A typical example is the definition of Prince (1924):

*"Personality is the sum-total of all the biological innate disposition, impulses, tendencies, appetites, and instincts of the individual, and the acquired dispositions and tendencies - acquired by experience."*<sup>4</sup>

More *structural* is the definition of Warren and Carmichael (1930):

*Personality is the entire mental organization of a human being at any stage of his development. It embraces every phase of human character: intellect, temperament, skill, morality, and every attitude that has been built up in the course of one's life.*<sup>5</sup>

Also the definition of Linton (1945):

*"Personality is the organized aggregate of psychological processes and states pertaining to the individuals."*<sup>6</sup>

And the definition of Zedan (1965):

*"Personality is the integrated organization of all its components: biological and intellectual, inherited and acquired, conscious and unconscious, interacting continuously with the environment."*<sup>7</sup>

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<sup>4</sup> Prince, M. (1924), *The Unconscious*, in Allport, G. W. (1951), op. Cit., p

<sup>5</sup> Warren, H. C. and Carmichael, L. (1930), *Elements of Human Psychology*, in Allport, G. W. (1951), op. Cit., p 26.

<sup>6</sup> Linton, R. (1945), *The Cultural Background of Personality*, in Allport, G. W. (1951), op. Cit., p 26.

<sup>7</sup> Zidan, M. M. (1965), *Human Social Behavior*, Library of El Nahda EL Masria, Cairo, p 198.

Also the definition of Barakat:

*"Personality is the character of the person's behavior, that arises from the continuous interaction with the environment."*<sup>8</sup>

### **3-2-3 The Positivist View:**

Some contemporary psychologists object strenuously to essentialist definitions. They argue that internal structure is inaccessible to science. We cannot know the *multiform dynamic unity* that is *really there*. Inner structure, if it exists at all, simply cannot be studied directly. What we know about personality is merely our operations. If we administer a personality test and obtain such and such a score - these are our operations, i.e., our method.

From the positivist point of view, therefore, inner personality is a myth, "*a mere construct tied together by a proper name.*"<sup>9</sup> The best we can do is to make guesses about it, *conceptualize* it. The conceptualization must not go beyond the scientific methods we use.

An example of such an operational definition is the McClelland's(1951):

*"Personality is the most adequate conceptualization of a person's behavior in all its detail that the scientist can give at a moment of time."*<sup>10</sup>

Here we note a resemblance to external effect definitions. Personality is not what one has, but is someone else's perception, in this case, the scientist's. In other words, personality is a *construct*, something thought about but not actually existing *out there*.

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<sup>8</sup>Barakat, M. KH., *Intellectual Tests and Measures*, Egypt Library, p 158. Year not stated.

<sup>9</sup>Allport, G. W. (1951), op. Cit., p 27.

<sup>10</sup>McClelland, D. (1951), *Personality*, in Allport, G. W. (1951), op. Cit., p 27.

As a conclusion from the different attitudes in defining personality, we must say that definitions in terms of *external effects* will not serve the goal of our research in finding a way for measuring personality objectively. Asking people about one's personality confuses the latter with reputation and we will not obtain accurate or stable results. We tend to believe that personality has an *internal structure* consisting of many sides and dimensions operating together dynamically. However, this type of definition is also very general and intangible. How could we measure all the personality components? The *positivist point* of view defines personality as a single element that could be measured as a whole. It denies the internal structure and the multi-dimensional character of personality. We could combine the two concepts of internal structure and the positivist view to solve our problem. First, we will review the personality components according to the former, then determining the main component influencing the architect's decision, and finally measuring this specific component according to the latter. This will be our problem in the next sections.

### **3-3 Personality Components:**

Personality, as it has been stated, is the integrated organization of the person's psychophysical components. But what are these psychophysical components? Many lists have been set by psychologists to define personality components, and all of them almost agree on their principal dimensions. They analyze personality into four main components: *physical or biological, intellectual or epistemic, emotional or sentimental*, and *social or environmental* components. In this section we shall study them in detail.

#### **3-3-1 Biological (Physical) Components:**

It is related to the general shape of the body and its physical health, meaning his length, weight, muscles, glands...etc.<sup>11</sup>

These components depend on the genetic inheritance and it has an important role in affecting one's personality. For instance, the height, the muscular strength, or the general harmony of the body could be a reason of success in certain jobs or circumstances. Personality' behavior is also greatly affected by physiological factors like hormones to the extent that some scientists build their theories on the basis of the hormonal system effect on behavior. In addition, personality is influenced by the different biological operations such as digestive operations, blood cycle, chemical operations...etc.<sup>12</sup>

### **3-3-2 Intellectual ( Epistemic ) Components:**

It is related to the highest mental activities like intelligence, perception, thinking, remembrance, attention...etc.<sup>13</sup> According to Pavlov<sup>14</sup>, the *cerebral hemispheres* are the highest components of the human being, and they contain millions of nervous cells composing the nervous system. This system is responsible for all the communication means that man has invented, such as language, art, scientific epistemology, ...etc. According to him, the highest nervous abilities depend on the integration of the cerebral hemispheres functions, and any harm in this system leads to a disability.<sup>15</sup>

### **3-3-3 Emotional (Sentimental) Components:**

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<sup>11</sup>Zidan, M. M. (1965), op. Cit., p 207.

<sup>12</sup>Youness, E. (1966), *Human Behavior*, Modern Egyptian Center, p 162-163.

<sup>13</sup>Zidan, M. M. (1965), op. Cit., p 207.

<sup>14</sup>Youness, E. (1966), op. Cit., p164. The source of this information was not stated.

<sup>15</sup>Youness, E. (1966), op. Cit., p164.

Emotional system is represented by strain, emotion, and temperament. Man's behavior is not usually a systematic reaction to the environmental effects, it is rather directed by his motivation system which influences his perception to the external factors. According to Youness (1966), personality could be understood by understanding its motives. But what do we mean by Motives?<sup>16</sup>

Sarnoff<sup>17</sup> defines motive as follows: "*It is an inner impulsion that causes strain and drives the person to behave in a certain manner to decrease this strain.*" And the person does not behave as a reaction to separate motivation, but according to their sum. Sarnoff calls it *motivating condition*. It could be explained on the basis of three phases: first, the existence of an inner motivation or need causing strain; second, the functional behavior responsible for eliminating the strain and realizing his need; third, the goal or objective attained after this behavior<sup>18</sup>.

### **3-3-4 Social (Environmental) Components:**

The three previous components are affected by each other and react dynamically with the person's social field, meaning that personality is formulated gradually from the continuous interaction between these three components and the social environment. The human being, as a result of this interaction, absorbs the social criteria and takes his place among the social system. He acquires his own interests, principles, attitudes, and values from his private environment (family, school, work...) and the public environment (community)<sup>19</sup>.

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<sup>16</sup>Youness, E. (1966), op. Cit., p165.

<sup>17</sup> Youness, E. (1966), op. Cit., p165. The source of this information was not stated.

<sup>18</sup>Youness, E. (1966), op. Cit., p165.

<sup>19</sup> Zidan, M. M. (1965), op. Cit., p 207.



Generally, the four components do not exist separately or function alone, on the contrary, they are usually strongly connected and operate coherently and dynamically to guaranty the cohesion of personality. Weakness and immaturity of personality can result if these components do not function in a cooperative way. However, the purpose of this chapter is to determine the component influencing the architect's personality. Of course all the above elements have a role in his decision making, but there is certainly a specific one affecting greatly his choices and evaluations.

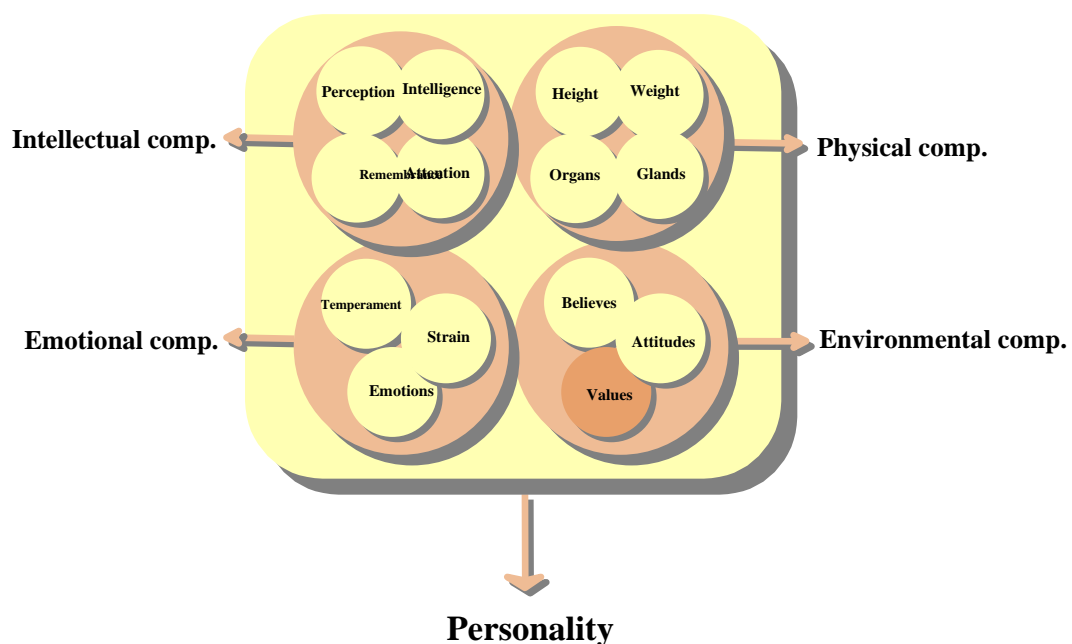
### **3-4 Determination of Personality Component Affecting the Decision Making Process:**

Let us begin by omitting the components that has little or no influence on the architect's decision making when confronting a problem with several solutions or by other words evaluation of alternatives. We do not mean complete design alternatives, but simply any alternatives of choices. Then determining the relevant component for our research purpose.

- 1- ***Biological components*** have almost no influence on the decision making.
- 2- ***Emotional components*** like strain, emotions, and temperament have influences on decision making but in a narrow range and not with every architect. Mature and experienced architects do not make decisions according to their emotions. However, decisions under strain can be made because of time or money constraint.
- 3- ***Intellectual components*** are very important in decision making, but they are determinants of creativity and not the main component reflecting the profile of personality. The difference between a creative architect and an ordinary architect is the difference between their intellectual systems. In other words, the difference between the character

or attitudes of two personalities is not determined by their intelligence and rememberness.

- 4- ***Environmental or social components*** could be the factor that influences the decision-making. They consist of *believes, attitudes, and values*. According to Findeli, there is an ethical deliberation in the decision making process in architecture. Contrary to the technological decision based on scientific reason and applied in scientific fields, the ethical decision always requires total moral engagement on the actor's part<sup>20</sup>. Ethics are part of values, as we shall see in the next chapter. And according to Wade, each architect develops a view of the world that is value structured in ways unique to him; and whenever a problem occurs, the designer imposes his already-established values on it. When he is confronted with a choice problem, he asks himself whether it fits with him and with the way he sees himself or not<sup>21</sup>.



<sup>20</sup> Findeli, A. (1994), op. Cit., p 60.

<sup>21</sup> Wade, J. W. (1977), op. Cit., p 153-228.

Figure 13. **Personality components.** *Values* are the main factor affecting the decision making process. Source: the author.

We tend to believe that the social components of personality -especially values- are what we are searching for. Figure 13 illustrates the main four components of personality and values' position among them. In the next section, we will see that beliefs and attitudes are parts of values, they formulate values. As a conclusion, *values* are the most influential factor in the decision making process.

### **3-5 Conclusion:**

In this chapter we reviewed the different approaches of defining personality to find the one serving our main goal of assessing the personality profile, then we analyzed personality into its components, and finally we determined the most influential factor in the decision making process which is *values*.

In order to assess the personality profile we have combined the two approaches of: *internal structure* definitions and *positivist view* definitions. First, we analyzed personality into components according to the former, and we determined the main one influencing the architect's decision, which is *values*. It remains now to assess this specific component according to the second approach. This will be the aim of the next chapter.

## **PART TWO: ASSESSMENT OF PERSONALITY**

**Chapter Three: Chapter one: PERSONALITY**

**Chapter Four: VALUES AS A PERSONALITY COMPONENT**

## **4-1 Introduction**

The term *value* is one of the most important terms used in many fields such as philosophy, education, economy, sociology, psychology, and others. As a consequence, there has been some ambiguity and confusion in defining this term from one field to another to the extent that there is no specific definition for it. Furthermore, there are many orders of values and we must take into consideration this matter of hierarchy in order to determine which order will be studied and assessed. In this chapter we begin by reviewing the various value definitions. A review of the different scales and measures for assessing values will be then discussed. Finally, a reformulation of the chosen scale into architectural terms is introduced. This chapter is composed of: *value definition attitudes*, *hierarchy of values*, and *assessment of values*.

## **4-2 Value Definition Attitudes:**

Usually there is some confusion between *value* and other terms like *need*, *motive*, *interest*, *belief*, *attitude*, and *behavior* because of their interrelatedness. They are aspects or indices of values but they are not values, and this is the reason behind the confusion of many researchers. Some of them believe that needs are the indices of values, others believe that behaviors are the indices of values, and so on. On the next section we shall see the relation between value and need, motive, interest, belief, attitude, and behavior.

### **4-2-1 Value / Need:**

According to Maslow (1954), values begin as needs or as biological values, then transformed during human's life to social values. Therefore, in his point of view, needs are values<sup>1</sup>. But Rokeach (1976) is against this point of view, he argues that

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<sup>1</sup>Maslow, A. H. (1954), *Motivation and Personality*, in Khalifa, A. M. (1987), *Phylisis of Values Pattern in the human being*, PhD thesis, Cairo University, p 28.

values are rather the cognitive representations of man's needs not the needs themselves. According to him, only human being is able to do these representations and he distinguishes between the two terms on this basis saying that needs are found in humans and animals but we could not find values except in the former<sup>2</sup>.

#### **4-2-2 Value / Motive:**

According to English&English (1958) motive is " *an inner strain that directs the behavior to a certain goal*", while value is *the conception behind this motive*<sup>3</sup>. When a motive is generated inside a person, he is directed to follow a certain behavior according to it, and values are the determinants of this behavior. If the relation between his values and his motives is negative, he will not follow this behavior and vice versa.

Scott (1965) differentiates between the two terms by the type of goals in each of them. On the one hand, values are characterized by their absolute goals (I must do this); on the other hand, motives are not absolute (I want to do this)<sup>4</sup>.

#### **4-2-3 Value / Interest:**

According to Rokeach (1973) interest is one of the various aspects of value, and it directs the person's actions but the range of this direction is very narrow. It is not a very strong criterion, it is only a tendency towards things that have a special attraction<sup>5</sup>. Child (1977) argues that interests are only professional preferences, while values are connected to social, political, religious, and moral fields<sup>6</sup>.

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<sup>2</sup>Rokeach, M. (1976), *The Nature of Human Values and Value system*, in Hollander, E. P. & Hunt, R. G. Eds. (1976), *Current Perspectives in Social Psychology*, University Press, New York, p 344.

<sup>3</sup> English, H. B. & English, A. C. (1958), *A Comprehensive Dictionary of Psychological and Psychoanalytical Terms*, in Khalifa, A. M. (1987), op. Cit., p 30.

<sup>4</sup>Scott, W. A. (1965), *Values and Organizations*, in Khalifa, A. M. (1987), op. Cit., p 30.

<sup>5</sup>Rokeach, M. (1973), *The Nature of Human Values*, The Free Press, New York, p21.

#### **4-2-4 Value / Belief:**

According to Rokeach (1976), there are three types of beliefs: *descriptive* (true and false), *evaluative* (beautiful, ugly), *prescriptive-proscriptive* (right and wrong), and he thinks that value is of the third kind<sup>7</sup>.

Also, Krech et al.(1962) agree that values are beliefs: "*Values are a group of beliefs known among members of the same community, especially what concerns beauty and ugliness or desired and undesired*"<sup>8</sup>.

Kluckhohn (1956) differentiates between the two terms on the basis that values represent the good and the bad while beliefs represent the true and the false<sup>9</sup>.

#### **4-2-5 Value / Attitude:**

Both terms are very close that many scientists confuse them. According to Rokeach (1973), the distinction between them in Sociology and Psychology is like the distinction between genes and chromosomes in Biology: if a person possesses thousands of attitudes he has only tens of values<sup>10</sup>. On the descriptive level, the difference between them is like the difference between public and private. Values

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<sup>6</sup>Child, D. (1977), *Psychology and the Teacher*, in Khalifa, A. M. (1987), op. Cit., p 32.

<sup>7</sup>Rokeach, M. (1976), op. Cit., in Hollander, E. P. & Hunt, R. G. Eds. (1976), op. Cit., p 345.

<sup>8</sup>Krech, D., Crutchfield, R. S. & Ballachey, E. L., (1962), *Individual in Society*, in Khalifa, A. M. (1987), op. Cit., p 34.

<sup>9</sup>Kluckhohn, C. (1959), *Values and Value Orientations in the Theory of Action*, in Khalifa, A. M. (1987), op. Cit., p 34.

<sup>10</sup>Rokeach, M. (1973), op. Cit., p 231.

have more important and central position in the structure of personality and its epistemological pattern<sup>11</sup>.

Oppenheim (1970) deals with values and attitudes in view of different levels beginning with the more private and ending with the more public. Beliefs represent the first level, attitudes the second one, values the third one, and personality represents the fourth and last level<sup>12</sup>.

Newcomb et al. (1965), McKinney (1975), and Souef (1975) agree with this classification.<sup>13</sup>

#### **4-2-6 Value / Behavior:**

According to Morris (1956), values are "*the behavior preferred among other available behaviors*"<sup>14</sup>. Also Adler (1956) agrees that values *are* behaviors<sup>15</sup>. On the other hand, Bengtson (1973) believes that values are the behavior's criteria<sup>16</sup>. Behavior is not the faithful translation of values. We saw in the relation between value and motive that the former is the determinant of the latter, and depending on this relation one behaves. If this relation is negative, meaning that motive and value are not compatible, and one behaves according to his motive (against his values), then this will end by a negative behavior. Here appears the *unfaithful translation* of values.

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<sup>11</sup>Souef, M. (1975), *Introduction to Social Psychology*, Egyptian Anglo, Cairo.

<sup>12</sup>Oppenheim, A. N. (1970), *Questionnaire Design and Attitude Measurement*, in Khalifa, A. M. (1987), op. Cit., p 36.

<sup>13</sup> Khalifa, A. M. (1987), *Phylaxis of Values Pattern in the human being*, PhD thesis, Cairo University, p 35-38.

<sup>14</sup>Morris, C. (1956), *Varieties of Human Values*, in Khalifa, A. M. (1987), op. Cit., p 38.

<sup>15</sup>Adler, F. (1956), *The Value Concept in Sociology*, in Khalifa, A. M. (1987), op. Cit., p 39.

<sup>16</sup>Bengtson, V. L. (1973), *Values, Personality and Social Structure: An Integrational Analysis*, in Khalifa, A. M. (1987), op. Cit., p 39.



The following diagram (fig.14) summarizes the above argument. It clarifies the confusion between the term value and the terms believe, interest, and attitude, and what they represent in personality. Also the diagram illustrates the relationship between values and need, motive, goal, and behavior.

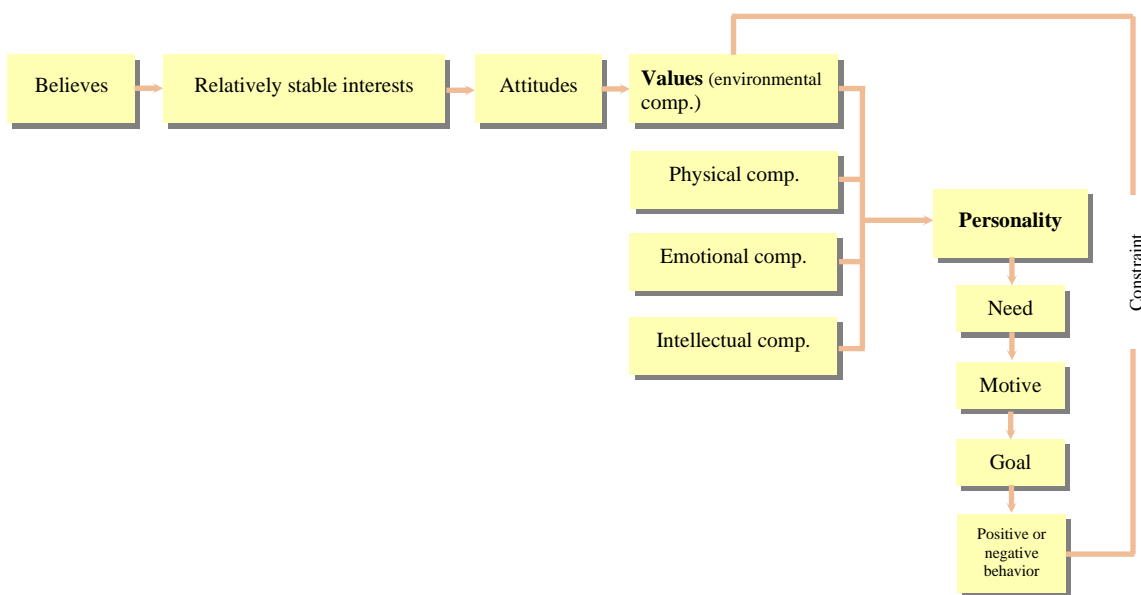


Figure 14. **Values in Personality.** Diagram illustrating the role of believe, interest, attitude, need, motive, goal, and behavior in formulating values then personality. In addition it illustrates what these terms represent in personality.

**Source:** the author.

In the next section we shall take a closer look on the term *value*. From which perspective shall we look at values? What kind of values shall we measure? A hierarchy of values is indispensable for answering this question.

### **4-3 Hierarchy of Values:**

There are two main attempts to order values in a hierarchical way. One of Parker (1957), and the other of Scheler (1954).

#### **4-3-1 Hierarchy According to Parker (1957):<sup>17</sup>**

According to Parker (1957), there are two classes of values: *higher values* and *lower values*. He believes that we distinguish values as higher or lower as we distinguish them as more or less voluminous or intensive. For example, the value of poetry or philosophy is higher than the value of playing cards, and of a melody than of a perfume. Values of eating, playing, drinking, or any other organic values are considered lower values, whereas values like art, science, knowledge, religion, beauty, and love are considered higher values. But lower values, according to him, are not limited on organic values, they can be aspects or indices of higher ones.

Consider, for example, the value of *philosophy* to a professor. This is no simple matter, but covers at least the following: an interest in studying the writings of other philosophers or teachers of philosophy, a habit of conversing with colleagues about philosophy, a desire to expound and communicate one's ideas to students, an impulse to write controversial letters, or books and articles. And the assuagement of each of these impulses provides a different and characteristic satisfaction. On the other hand, these linguistic devices are not purely fictitious. There is a certain truth in talking about an interest or the interest in philosophy, for all the various activities mentioned are held together as contributing to, and are intertwined with, a value of higher order—in this case, the recurring interest in solving certain problems called philosophical.

Moreover, the satisfaction of this interest of *higher order* is also unique and characteristic and cannot be completely identified with the relatively *lower order* interests mentioned. He distinguishes between them by declaring that lower values are characterized by a goal, single activity, and complete assuagement in a single act,

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<sup>17</sup> Parker, D. H. (1957), *The Philosophy of Value*, University of Michigan Press, p 110-117.

while higher values are characterized by a plan, series of activities, and incomplete assuagement in a single act.

### **4-3-2 Hierarchy According to Scheler (1954):<sup>18</sup>**

According to Scheler (1954), an essential characteristic of values is their appearance in hierarchical order though it is not easy to point out the criteria to use to find out such hierarchy. He uses five criteria according to which one can determine the value's order: duration, divisibility, foundation, depth, and relativity.

#### ***Duration: (timeless)***

The first criterion is that of duration. Scheler asserts that "the most inferior values of all are values which are basically *evanescent*; the values superior to all others are eternal values." What is pleasant to the senses appears essentially as a transient value in comparison to the value of health, for example, or the value of knowledge.

#### ***Divisibility: (wholeness and unity)***

The second criterion is that of divisibility. The height which values achieve is in inverse ratio to their capacity of being divided. We have to divide low values in order to enjoy them. Higher values resist division and one can enjoy them without any need for dividing them. A piece of cloth or bread is worth approximately twice that of a half piece. In a work of art, this does not occur; half of a statue or a painting does not correspond to half of its total value.

#### ***Foundation:***

Foundation is the third criterion. If one value is the foundation of another, it is higher than this other. It can be said that a value in class B is basic to a value in class A, when individual value A, in order to exist requires the prior existence of a B value. Value B, in this case, is the value which furnishes the foundation, and is therefore the higher of the two.

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<sup>18</sup>Scheler, M. (1954), *Der Formalismus in der Ethik und die materiale Wertethik*, in Frondizi, R. (1971), *What is Value?*, Open Court Publishing Co., Illinois, p 111-119.

***Satisfaction:***

Satisfaction is the fourth criterion. For Scheler there is an essential relationship between the depth of satisfaction which accompanies the sentimental perception of values and their hierarchy. However, the hierarchy of the value does not consist in the depth of satisfaction which it produces. We could be deeply satisfied with the action of eating, but only when we are satisfied at the deepest levels of our life, do we enjoy the naïve, superficial pleasures; therefore satisfaction resulting from lower values depends on satisfaction resulting from higher values.

***Relativity:***

The last criterion is relativity. The value of what is pleasant is *relative* to a human being endowed with a sensitive feeling; on the other hand, those values are *absolute* which exist for the purpose of pure emotion—preferring, loving—that is, for an emotion independent of the essence of sensibility and of the essence of life. Moral values belong to this last category. The less relative a value, the higher it is: the highest value of all is absolute value.

According to Scheler, values can be ordered according to the following hierarchy:

**4-3-2-1 Values of Sensible Feeling:**

On the lowest level there are the values of sensible feeling, pleasant and unpleasant.

**4-3-2-2 Values of Vital Feeling:**

In the second place are the values of vital feeling which are independent and irreducible to the pleasant and unpleasant, such as health, exhaustion, sickness, old age, death.

**4-3-2-3 Spiritual Values:**

Spiritual values constitute the third group. In the presence of these, vital as well as pleasure values should be sacrificed. Within the spiritual values, the following can be distinguished hierarchically:

- The values of *the beautiful and the ugly*, and the other purely aesthetic values.
- The values of *the just and the unjust*, which are not to be confused with "right" and "wrong," as these refer to an order established by law, and which are independent of the idea of the State and of any positive legislation.
- The values of *pure knowledge of truth*, which philosophy attempts to realize, as opposed to positive science which aspires to knowledge for the purpose of controlling events. It should be noted that Scheler speaks of the value of "knowledge" and not of truth itself; for him "truth does not belong to the universe of values. " Values of science as well as those of culture are "values by reference" to those of knowledge.
- Over and above the spiritual values lies the last group of values, that of *the holy and the unholy*. Religious values cannot be reduced to the spiritual, and possess the peculiarity of being revealed to us in objects which are presented to us as absolutes.

After reviewing the hierarchy according to Parker and Scheler, the following points may be observed:

- 1- Parker orders values on the basis of two categories only: lower and higher. Although it is implied in his words that there are many cases of lower values, he didn't clearly divide them into sub-ordered values. According to him, lower values consist of organic values and intermediary values which represent, if congregated, a higher value.
- 2- Scheler, on the other hand, orders values on the basis of three categories: values of sensible feeling, values of vital feeling, and spiritual values. We could see the jump between the two first categories and the last one.
- 3- Ordering spiritual values beginning from aesthetic values and ending by religious values could be relative from one person to another, especially taking Scheler's criteria in ordering values into consideration.

As a conclusion, we could order values as following:

**1-Values of sensible feeling**: values of eating, drinking, playing...etc.

**2-Values of vital feeling**: health, youth, oldness...etc.

**3-Intermediary values**: values of actions and goals that serve higher values, they are also aspects of higher values.

**4-Higher values**: values of knowledge, beauty, love, justice...etc.

In this study, we are only concerned with *higher values* as the influential factor on the designer during the design process. In the next section, we will review the most prevailing value scales and measures in order to select a suitable one for assessing the architect's values.

#### **4-4 Assessment of Values:**

In order to assess the architect's values and develop a way for assessing the equivalent values in his architectural product<sup>19</sup>, a review of the main value scales must be done. In this section we will review these scales in order to arrive at the most appropriate for the research objective. Then we shall reformulate it in architectural terms.

##### **4-4-1 Measures and Scales for Measuring Values:**

Many scales could be discussed but the most famous ones are *Allport - Vernon - Lindzey* scale<sup>20</sup>, *Work Values Inventory* by Super<sup>21</sup>, *Personal Value*

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<sup>19</sup> In order to make the comparison between the architect's personality profile and nature of his architectural product stated earlier in the methodology.

<sup>20</sup> Anastasi, A. (1970), *Psychological Testing*, The Macmillan Co., London, p 552-554.

<sup>21</sup> Anastasi, A. (1970), op. cit., p 552-554.

*Inventory* by Hawkes<sup>22</sup>, *Value Scale* by Scott<sup>23</sup>, and *Value Survey* by Rokeach<sup>24</sup>. An explanation of each is in the following.

**4-4-1-1 Allport - Vernon - Lindzey scale:**<sup>25</sup>

This scale is prepared by Allport and Vernon and was originally suggested by Spranger in *Types of Men* (1928), this inventory was designed to measure six basic values described as below:

***Theoretical:*** characterized by a dominant interest in the discovery of truth and by an empirical, critical, rational, intellectual approach.

***Economic:*** emphasizing useful and practical values; conforming closely to the prevailing stereotype of the *businessman*.

***Aesthetic:*** placing the highest value on form and harmony; judging and enjoying each unique experience from the standpoint of its grace, symmetry, or fitness.

***Social:*** placing the highest value on unselfishness and love of people; whether of one or many, whether conjugal, filial, friendly, or philanthropic.

***Political:*** primarily interested in personal power, influence, and recognition; not necessarily limited to the field of politics.

***Religious:*** mystical, concerned with the unity of all experience, and seeking to comprehend the cosmos as a whole.

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<sup>22</sup>Hawkes, G. R. (1950), *A Study of the Personal Values of Elementary School Children*, in Khalifa, A. M. (1987), op. Cit., p 16.

<sup>23</sup>Scott, W. A. (1965), op Cit., in Khalifa, A. M. (1987), op. Cit., p 15.

<sup>24</sup>Rokeach, M. (1973), op. Cit., p 357-361.

<sup>25</sup> Anastasi, A. (1970), op. cit., p 552-554.

The scale consists of two parts: the first includes a group of items where the respondent is expected to choose between two alternatives in each item. The second includes a group of items where the respondent is expected to order four alternatives in each item<sup>26</sup>.

#### **4-4-1-2 Work Values Inventory by Super:**<sup>27</sup>

This inventory explores the sources of satisfaction the individual seeks in his work. The respondent rates each of 45 work values on a five-point scale to indicate how important it is for him (e.g. help others, can get a raise, make your own decision).

The Work Value Inventory yields 15 scores (after rating three items for each), such as creativity, intellectual stimulation, association, economic return, security, prestige, and altruism.

#### **4-4-1-3 Personal Value Inventory by Hawkes (1950):**<sup>28</sup>

Consists of 90 items for measuring ten values: aesthetic values, comfort or repose, friendship, familial life, physical freedom, dominance or control, personal improvement, acknowledgment. The 90 items are devised into 30 groups, each of them includes three items to measure three of the ten values. The respondent is demanded to order them according to their importance to him.

#### **4-4-1-4 Value Scale by Scott (1965):**<sup>29</sup>

Consists of 240 items for measuring 12 values, such as interest in intellectual activities, social abilities, academic execution, honesty, religion, independence. The

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<sup>26</sup> Allport, G. W. & Vernon, P. E. (1931), *A Study of Values*, Houghton Mifflin Co., Boston, p 12-24.

<sup>27</sup>Anastasi, A. (1970), op. Cit., p 554.

<sup>28</sup>Hawkes, G. R. (1950), op. cit., in Khalifa, A. M. (1987), op. Cit., p 16.

<sup>29</sup>Scott, W. A. (1965), op Cit., in Khalifa, A. M. (1987), op. Cit., p 15.



respondent rates each item on a three-point scale: I usually like it - I like it sometimes - I scarcely like it.

#### **4-4-1-5 Value Survey by Rokeach (1973):<sup>30</sup>**

This scale consists of two parts: the first for measuring 18 terminal values (higher order), such as equality, freedom, and social acknowledgment. The second for measuring 18 instrumental values (intermediary), such as ambition, honesty, independence, and obedience. The respondent orders each part separately from number 1 to number 18, where the first is the most important and the last is the least important.

After this review, we believe that *Allport - Vernon - Lindzey scale* is the suitable scale to use in this research for the following reasons:

- 1- Value scales by Super, Hawkes, Scott, and Rokeach measure values of different order while Allport - Vernon - Lindzey scale measures values of the same order.
- 2- Work Values Inventory by Super measures only values concerning general working life.
- 3- Values measured by the previous scales - except the first - do not measure personal values as much as their social desirability. Allport - Vernon - Lindzey scale measures the individual's attitudes and values.
- 4- Allport - Vernon - Lindzey scale is based on Spranger's book *Types of Men* where he has classified men according to their values and this is an important reason for choosing this scale.
- 5- According to Anastasia (1970)<sup>31</sup>, Khalifa (1987)<sup>32</sup>, Hussein (1981)<sup>33</sup>, Ferguson (1941)<sup>34</sup>, Allport - Vernon - Lindzey scale is the most famous scale used in the researches concerning personal values.

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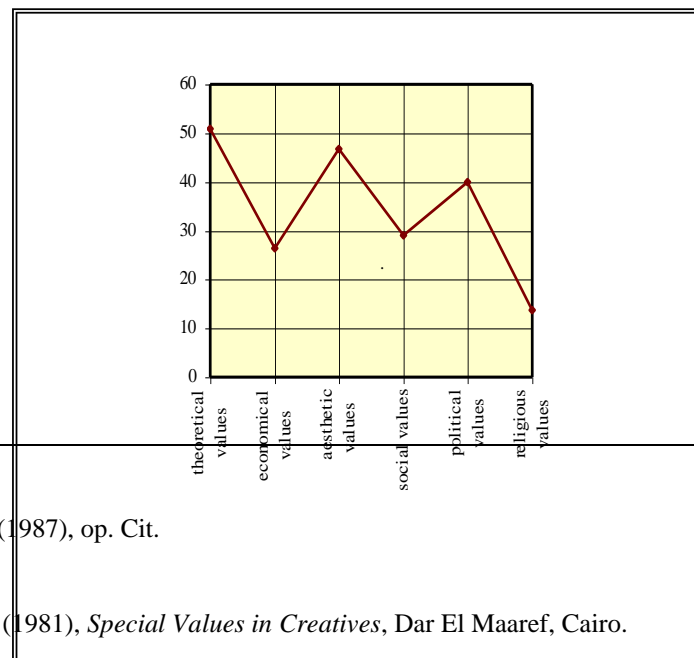
<sup>30</sup> Rokeach, M. (1973), op. Cit., p 357-361.

<sup>31</sup> Anastasi, A. (1970), op. Cit.

In the next section, the classification of personality according to Spranger will be studied in detail while the scale itself will be studied in the empirical section.

#### **4-4-2 Spranger Classification of Types of Personalities (from Allport - Vernon - Lindzey scale):<sup>35</sup>**

Spranger classify men according to six main value-types. He contends that every actual person can be regarded as approaching one or more of these value-directions. Human life, it seems to Spranger, harbors six main types of value, and these appeal in varying degree to individuals who build the unity of their lives about them. Allport - Vernon – Lindzey, as it was mentioned earlier, have developed a scale measuring the degree of each value in personality. The result of this scale is in the form of a graph representing the personality profile (fig.15).



<sup>32</sup>Khalifa, A. M. (1987), op. Cit.

<sup>33</sup>Hussein, M. A. (1981), *Special Values in Creatives*, Dar El Maaref, Cairo.

<sup>34</sup> Ferguson, L.W., et al. (1941), *A Factorial Analysis of Interests and Values*, The Journal of Educational Psychology, March, p 197-204.

<sup>35</sup>Allport, G. W. & Vernon, P. E. (1931), op. Cit., p 8-11.

Figure 15. **Personality Profile.** The final result of Allport - Vernon - Lindzey scale based on Spranger's classification of personality types according to their values.

It should be clearly understood that Spranger does not argue that there are six main types of personalities. The typology is one of pure value's, not of actual persons. The term "ideal type" is used in this connection. An ideal type is a "schema of comprehensibility"—a measure by which we can tell how far a given person has gone in organizing his life by one, or more, of these basic schemes. A closer look on the characteristics and attitudes of each personality type is on the following sections:

#### **4-4-2-1 The Theoretical:**

The dominant interest of the *ideal* theoretical man is the discovery of truth. In the pursuit of this goal he characteristically takes a *cognitive* attitude, one that looks for identities and differences, one that divests itself of judgments regarding the beauty or utility of objects, and seeks only to observe and to reason. Since the interests of the theoretical man are empirical, critical, and rational, he is necessarily an intellectualist, frequently a scientist or a philosopher. His chief aim in life is to order and to systematize his knowledge.

#### **4-4-2-2      The Economic:**

The *ideal* economic man is characteristically interested in what is useful. Based originally upon the satisfaction of bodily needs (self-preservation), the interest in utilities develops to embrace the practical affairs of the business world—the production, marketing, and consumption of goods; the elaboration of credit; and the accumulation of tangible wealth. This type is thoroughly *practical* and conforms well to the prevailing conception of the businessman.

The economic attitude frequently comes into conflict with other values. The economic man wants education to be practical, and regards unapplied knowledge as waste. The value of utility likewise conflicts with the aesthetic value, except when art

serves commercial ends. The economic man is likely to confuse luxury with beauty. In his relations with people he is more likely to be interested in surpassing them in wealth than in dominating them (political value) or in serving them (social value).

#### **4-4-2-3 The Aesthetic:**

The aesthetic man sees his highest value in form and harmony. Each single experience is judged from the standpoint of grace, symmetry, or fitness. He regards life as a manifold of events; each single impression is enjoyed for its own sake. He need not be a creative artist; he is aesthetic if he but finds his chief interest in the artistic episodes of life.

The aesthetic value is in a sense diametrically opposed to the theoretical; the former is concerned with the diversity, and the latter with the identities of experience. The aesthetic man chooses to consider truth as equivalent to beauty, or that to make a thing charming is a million times more important than to make it true. In the economic sphere the aesthete sees in the process of manufacturing, advertising, and trades a wholesale destruction of the values most important to him. In social affairs he may be said to be interested in persons but not in the welfare of persons; he tends toward individualism and self-sufficiency. Aesthetic people often like the beautiful insignia of pomp and power, but oppose political activity when it makes for a repression of individuality. In the field of religion they are likely to confuse beauty with purer religious experience.

#### **4-4-2-4 The Social:**

The highest value for this ideal type is love of people, whether of one or many, whether conjugal, filial, friendly, or philanthropic. The social man prizes other persons as ends, and is therefore himself kind, sympathetic, and unselfish. He is likely to find the theoretical, economic, and aesthetic attitudes cold and inhuman. In contrast to the political type, the social man regards love as itself the only suitable form of power, or else repudiates the entire conception of power as endangering the integrity

of personality. In its purest form the social interest is selfless and tends to approach very closely to the religious attitude.

#### **4-4-2-5 The Political:**

The political man is interested primarily in power. His activities are not necessarily within the narrow field of politics; leaders in any field generally have high power value. Since competition and struggle play a large part in all life, many philosophers have seen power as the most universal and most fundamental of motives. There are, however, certain personalities in whom the desire for a direct expression of this motive is uppermost, who wish above all else for personal power, influence, and renown.

#### **4-4-2-6 The Religious:**

The highest value for the religious man may be called unity. He is mystical, and seeks to comprehend the cosmos as a whole, to relate himself to its embracing totality. Spranger defines the religious man as one "whose mental structure is permanently directed to the creation of the highest and absolutely satisfying value experience." Some men of this type are "immanent mystics," that is, they find their religious experience in the affirmation of life and in active participation therein. The *transcendental mystic* seeks to unite himself with a higher reality by withdrawing from life; and he finds the experience of unity through self-denial and meditation.

Although Spranger's classification covers a wide range of human types and he has analyzed in detail the values of each type, a re-classification of these types in architectural terms is necessary to use it in assessing the architect's personality profile from the perspective of values. In order to attain this goal, we must review the various classifications of the architects' personalities and attitudes and then re-explain each of Spranger's values according to them. This will be the goal of the next section.

### **4-5 Re-classification of Spranger's Values**

In order to classify the architect's personality types according to Spranger's values we must first review the various classifications of the architect's personality types, then insert them under the six mentioned values, and finally re-classify them.

#### **4-5-1 Review of Architects types Classifications:**

The main goal of this section is to review the various classifications of the architect's personality types in order to re-classify Spranger's types of men in architectural terms. The most famous classifications are of Ackerman (1969), Burgess et al. (1981), Ledewitz (1983), Broadbent (1973), Jenks (1973), Roger (1985), Campbell (1973).

##### **4-5-1-1 Ackerman (1969):<sup>36</sup>**

Ackerman in his article *Listening to Architecture* described the architect as egoist and pragmatist.

##### **a- The Egoist:**

He is attitudinally described as the *I-give-them-what-I-want* approach to the practice. His tendency is to deny, or superficially respond to social values, without any involvement in identifying the problem. The architect is paternalistic. His role is to create abstract forms based on subjective feelings.

##### **b- The Pragmatist:**

He is attitudinally described as the *I-give-them-what-they-want* approach to the practice. His tendency is to totally accept the social values as they are, without any involvement in identifying the problem. He is entrepreneurial and his role is to create and manipulate forms based on accepting the values of others.

##### **4-5-1-2 Burgess et al. (1981):<sup>37</sup>**

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<sup>36</sup>Ackerman, J. (1969), *Listening to Architecture*, in Salama, A. (1994), op Cit., p 25-27.

Burgess et al. added a third architect model which they referred to as facilitator. This type is attitudinally described as the *I-give-them-what-we-can* and also *I-help-them-decide-what-they-want* approach to the practice. His tendency is to conduct the forsearch and then personally respond to the social values through the understanding of socio-behavioral contexts. He is involved in the process of problem definition and he has an interpreter role. His role is to manipulate spaces to accommodate related human activities. It aims at creating a process that enables people to solve their own problems.

#### **4-5-1-3 Ledewitz (1983):<sup>38</sup>**

To the three previous basic approaches, Ledewitz added two types or models which are the architect as a technical assistant giver and the architect as advocate.

##### **a- The Technical Assistant Giver:**

His tendency is to be responsive to the powerless and the poor by providing all the accessible and affordable, but without any involvement in identifying the community needs. The architect is rationally dealing with physical and technical elements. Other factors that could not be dealt with are ignored.

##### **b- The Advocate:**

This type has a potentially large role within a community group and his tendency is to serve the community within their political interests. He is involved in the process of problem definition and his role is to develop an alternative to a public plan that averts local interests over the broader public purposes following conventional planning process.

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<sup>37</sup> Burgess, P. (1981), Architectural Education and Values, in Salama, A. (1994), op Cit., p 25-26.

<sup>38</sup> Ledwitz, S. (1983), Community Design: Creating Public Architecture, in Salama, A. (1994), op Cit., p 25-27.

**4-5-1-4 Broadbent (1973):<sup>39</sup>**

Broadbent wrote about the differences between the philosophical attitudes *empiricism* and *rationalism*:

*Certain later philosophers have attached overriding importance to evidence as received by the senses—we call them empiricists—whilst others were concerned with what they knew to be true as a result of reasoned thinking—we call them rationalists.<sup>40</sup>*

Broadbent (1973) in his book *Design in Architecture* has explained the differences between the rationalist and empiricist architect. According to him, rationalists are interested in things and in philosophical abstraction for its own sake, while empiricists are interested in people, and anxious to satisfy human needs. We shall explain each approach in the following section.

**a- The Rationalist:**

Rationalist attitudes were brought directly into architecture by theorists such as Laugier (1753), who believed that buildings could and should be designed by rational method—breaking the problem down into its smallest components, solving each of these separately and then synthesizing a grand solution. Laugier also derived from the Cartesian, or equivalent, method what he took to be the fundamentals of architecture: columns, beams and pedimented roofs. This led him to believe that architecture consisted essentially of these three components, and all other elements of building—walls, windows, doors and so on—have to be avoided. The supreme exponent, of course, was Mies van der Rohe, who succeeded in building a Laugier-like architecture of columns and beams, eliminating even the pedimented roof. He avoided the problem of walls, windows and the other elements of building, by filling the spaces between his columns and beams with glass.

The rationalist is interested in philosophical abstraction, thus he designs architecture which is complete and self-consistent as a system, usually in canonic

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<sup>39</sup> Broadbent, G. (1973), op Cit., p 58.

<sup>40</sup> Broadbent, G. (1973), op Cit., p 58-63, 73.



(mathematical, concerned with numbers) terms, and contributes little to user-comfort in terms of environmental control. He is concerned with the abstract, self-consistent geometry of his building and, by definition, he will have little interest in the ways in which it impinges on the senses of those who use it.

### **b- The Empiricist:**

Empiricism maintains that all human knowledge derives from sense-experience, that no other knowledge is possible. According to Locke, human knowledge is built up by associations. We build up ideas such as yellow, white, heat, cold, soft, and so on and then attach words to them. Once ideas have been formed, we can operate on them in various ways by such pressures as thinking, doubting, believing or knowing, thus building up our understanding. Ideas become associated in the mind by rational connection, chance, or custom.

Other empiricists such as Hume developed Locke's idea of associations further: they could arise, according to Hume, from three causes:

- 1- Resemblance, in which the imagination runs easily from one idea to another rather like it.
- 2- Contiguity, in which ideas occur together, in time or place, and are thus recalled together.
- 3- Cause and effect, where the existence of one is a necessary prelude to the existence of the other.

Empiricist architect designs for the stimulation, and even delight, of the senses (seeing, hearing, heat and cold, together with several others) of those who will use, or otherwise experience his buildings. He is concerned with human needs, sensory experience, the exclusion of a rational structure, and with technical innovation in architecture.

**4-5-1-5 Jenks (1973):<sup>41</sup>**

In his book *Modern Movements in Architecture*, Charles Jenks has described six attitudes or traditions in terms of which architects could be classified: the idealist, the self-conscious, the supersensualists, the intuitive, the logical, and the unselfconscious tradition.

**a- The Idealist Tradition:**

According to Jenks, the center of what is known *modern architecture* is the idealist tradition. He describes Le Corbusier as a humanitarian liberalist, Mies van der Rohe as a reformist pluralist and Walter Gropius as a social utopianist; he describes them according to their idealism. If any particular goal may differ among them, the commitment to a general idealism remains. Thus these architects see it as an obligation to propose alternative visions to the existing social order, but they do not concentrate on historical agencies for change, and like the Platonic idealists they tend to carry through their buildings to perfection as if they represented some underlying cosmic order.

The idealists tend to write and publish their ideas and views, such as Le Corbusier who wrote in the magazine *L'Esprit Nouveau* a series of articles which were disseminated throughout Europe. He set the general background atmosphere for all further discussions of the *New Architecture* and its *Heroic Period*: "A great epoch has begun...There is a new spirit: it is a spirit of construction and of synthesis guided by a clear conception..."<sup>42</sup>

This epoch was influenced by the idealistic view of the machine, not only because its labour-saving aspect, but also its universalizing, abstract quality. Because

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<sup>41</sup> Jencks, C. (1973), *Modern Movements in Architecture*, Penguin Books Ltd., Harmondsworth, England, p 29-94.

<sup>42</sup> Jencks, C. (1973), *op.cit.*

it is impersonal, it forces a certain equality between men and it leads the evolution of art "towards the abstract and universal . . . the realization, by a common effort and a common conception, of a collective style".<sup>43</sup>

Other idealistic and hopeful qualities is *the heroism of everyday life*, the celebration of the familiar objects of daily use (object type) such as the briar pipe, door knob or typewriter - which the Purist painters Ozenfant, I.eger and Le Corbusier incorporated into their paintings. For the Purists, these objects had a strong, anonymous, heroic quality because they had been perfected by countless years of reworking.

Another quality is the idea that certain ordering principles found throughout nature should be reflected. This placing of architecture on a cosmic scale was the underlying shared assumption of what could be called, according to Jencks, the Metaphysical School of Architecture. This manifesto called *Order Is* was written in 1960, and it reflects a belief held by most idealist architects at this time that a form can grow almost naturally out of primary structural elements and that this archetypal form provides the ordering device for a whole building.

### **b- The Self-conscious Tradition:**

The self-conscious architect places so much emphasis on will-power as to become hyperconscious, and he often shows an attention to his own actions which is so self-reflective as to be paralyzing. There are in general two directions which the self-conscious tradition has taken: the submission to past models of architecture in the belief that these contain some universal ordering principles, or the obsession with past ages and previous buildings with the idea that these may confer some kind of earthly immortality on the builders. Auguste Perret's belief in the universal properties of classical architecture with its principle of column and entablature exemplifies the former, whereas Hitler's idea of a classical, thousand-year Third Reich is typical of

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<sup>43</sup>Jencks, C. (1973), op.cit.

the latter. The politics of the self-conscious tradition are conservative, elitist, centralist and pragmatic.

During the 30s and 40s, the monumental classicism which his goal was to make equations between the old and new architecture, became the signature of this regime. The greatest examples of this were the Mussolini Forum in Rome (1937) and the Universal Exposition in Rome (1942).

### **c- Dolce Vita or the Supersensualists:**

This movement was based on the double aspect of attacking the dull industrial environment for its monotony and, at the same time, living off the most advanced fruits of its technologies willing to pay for experiments with the latest ones. The supersensualists architects are interested in formalism and fashion; they unleashed an orgy of colour, exploiting the latest processes - eye-ease green against dayglo orange, nickel-plated purple set off against frosted, etc. Their major goal is to achieve a full color layout in one of the more fashionable 'glossies' such as *Damns*, *Vogue* or *Studio International*.

According to Jenks, one of the most convincing of the architectural Supersensualists was Hans Hollein who has summarized their intentions:

*A sensual beauty . . . architecture is without purpose. What we build will find its usefulness. Form does not follow function . . . Today for the first time in the history of mankind, at the moment when immensely developed science and perfected technology offer the means, we are building what we want, making an architecture that is not determined by technique, but that uses technique-pure absolute architecture.*

They have an insistence on artistic autonomy approaching unlimited creative freedom and a creative play or amusement which exploits each new technique for its sensuality.

### **d- The Intuitive Tradition**

Perhaps the greatest reason for the critical independence of the expressionist architects is their ideology of individual creativity which is often mixed with a form of anarchism. The Art Nouveau movement and such architects as Gaudi and Van de Velde all preached the autonomy of the artist's imagination and they combined this with a romantic socialism based on cooperation and fellowship.

Frank Lloyd Wright in his Utopian designs for Broadacres projected a system which was individualist and based on self-help, home economies, social credit and communal control of big machinery.

In the sixties, as a result of the Expressionism, was reborn the *Fantastic Architecture*. This movement was started by exhibitions and books: Conrads and Sperlich's *Fantastic Architecture* (1960), an issue of *L'Architecture d'Aujourd'hui* also called *Fantastic Architecture* (1962), and an exhibition at the Museum of Modern Art In New York on 'Visionary Architecture' (1960). It concerned the freedom of the architect's imagination as against the conventional building of society and a sterile rationalism in architecture. The architects of this movement attacked the rationalist convention of the straight line as the symbol of efficiency and rectitude.

#### **e- The Logical Tradition:**

The architectural movement in Japan led by Kenzo Tange fits between many of the traditions and categories adopted here.

The Japanese 'Metabolism' could be placed in this category because they make many of their ideas and images from other sources and systematically perfect them so that they are often superior to their origins.

A case in point is Kenzo Tange's Theme Pavilion at Expo 70 which is a realization of the English group: Archigram's - Plug-in-City, 1964, and Yona Friedman's Spatial City, 1961. The gigantic pavilion of Tange was actually the result of a systematic design process (a team under Tange). Montreal Tower Project of 1964 is another essay in rationalized design and efficient logistics. Its structure is made up from ball joints and steel tubes all prefabricated at a factory and quickly bolted

together on site. Also Kisho Kurokawa's Takara Beutilion 1970 is consisted of a single unit repeated 200 times, which is made up of twelve steel tubes bent to a common radius. These have end joints which can accept new units in any direction of desired growth. The whole metabolic building was assembled in a week - presumably also the time of disassembly.

One of the concerns of the logical tradition was the nature of universal truths and the doctrine of Functionalism (roughly that form should follow it without deviation). Pier Luigi Nervi brought out the Platonic assumptions of this approach in an article entitled *is Architecture Moving Towards Unchanging Forms?* which had the following injunction:

*To approach the mysterious laws of nature with modest aspirations and try to interpret and command them by obeying them is the only method to bring their majestic eternity to the service of our limited and contingent goals.*

A last set of attitudes and values in the logical tradition concerns the question of solving complex problems with systematic design methods and the writing of 'performance requirements' as opposed to concentrating on the finished object. They emphasis on the analysis, measurement and reconciliation of all the elements which could be called parameters in a building.

### **e- The Unselfconscious Tradition**

The goal of this approach is an architecture which is a simple and unselfconscious expression of present-day requirements and which would naturally grow out of group design. The product of this approach is mass-producing large-scale housing units that could be factory -assembled, driven to the site, and put in place by a travelling crane.

This approach was the reason for realizing housing problems in Moscow in the 70s. All Moscow families had a room for each member of the family plus one common room. An average about twenty square meters of useful area per each

inhabitant. This ratio, as against six square meters per inhabitant in the twenties. Although it was an efficient method, this approach was accused by its inflexibility and inhumanity.

Other unselfconscious architects tried to resolve these disadvantages such as the Dutch architect Nikolaas Habraken. He developed a very influential theory of housing in the early sixties. He continuously insisted on the major distinction between what he called 'structural supports and detachable units' or those things which are public, relatively inflexible, long term and those which are private, responsive and short term. By placing responsibility for the supports in municipal and architects' hands and leaving detachable units to the individual, Habraken proposed at least one way out of the housing impasse.

The role of the architect in this tradition is transformed from a designer to a 'coordinating cataloguer'.

#### **f- The Activist Tradition:**

Although certain of the other traditions - the intuitive and idealist - recognize that a large part of the environmental problem comes from the nature of society, and seek to transform that society, it is only the activists who concentrate on the social means and agencies of change. They took every opportunity to create new forms of social experience which would actively transform life. Prime among these were the Palace of Labour project, 1923 and its new film and theatrical experiments, communal housing, dis-urbanized city and the workers' club. The latter was a 'social power plant' into which the major activities were drawn in order to create the multifaceted and fully developed man of Communist life.

Another new form of life created was the communal house which also contained a spectrum of different functions. The Constructivist group described in their 1028 manifesto the intentions of social transformation behind this type of housing: "*we propose new types of communal houses, new types of clubs, new factories, palaces of labour, etc. which should be the conductors of socialist culture.*" This approach has rejecting functionalism for being inhumane and too materialistic.

It could be noticed that the idea of artistic freedom and autonomy is shared by the self-conscious, idealist and intuitive traditions, while the idea of social equality is common to the activist, unselfconscious, logical and idealist tradition.

#### **4-5-1-6 Roger (1985):<sup>44</sup>**

Roger classifies the architects according to their dominant and observable patterns of behavior, personal style, and aptitude. He believes that most architects are a combination of types but one type may predominate. The architects' types are the philosopher, the intellectual, the down-to-earth, the social worker, and the fantasizer.

#### **a- The Philosopher:**

Philosopher architect is seen as transmitter of messages transcending the literal, objective content of architectural form. Philosophers are found in both practical and academic field, often implementing in the former what they preach in the latter.

Philosophers usually subscribe to theories and rationales that offer more than "commodity, firmness, and delight." They are not content with just designing and constructing beautiful buildings that are useful and attractive. Architecture must have a larger purpose. The philosopher usually embraces some kind of very personal theory of design, finding linkages to sources in traditional philosophy, religion, literature, history, or arts.

Some philosophers' architects maintain a consistent approach, one that the observer can perceive in their work and that clearly infuses the work throughout its creation and realization over time. This type of architect usually approaches buildings

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<sup>44</sup>Roger, K. L. (1985), *Architect?: a candid guide to the profession*, The MIT Press, London, p 229-246.



as metaphors—of nature, machines, freedom, the human form, abstract geometry, music, etc.

**b- The Intellectual:**

He is primarily interested in the cultivation and analysis of ideas, concepts, history, and theory, all properly footnoted. The intellectual designer is concerned with more than making things look and perform well; he is concerned with the cultural, literary, and poetic content of architecture, arrived at through rigorous thought, research, and analysis.

**c- The Down-to-Earther:**

Many architects are of the "down-to-earth" type. Down-to-earthers, as the phrase implies, are practical, *get-the-job-done* people. They focus on reality, on facts, on tangible and pragmatic results that can be understood and utilized. They may seem to be anti-intellectual. In architecture the down-to-earthier is interested in intellectualized concepts only to the extent that they withstand the tests of common sense and practicality. They like building for its own sake and they worry about cost, schedules, and making things workable. Fantasizing, aesthetic speculation, verbal theorizing, and radical experimentation are normally avoided by down-to-earthers. They are less concerned about the meaning of beauty than in finding the means to achieve beauty. This type of architects may have substantial technical aptitude. They are extremely knowledgeable about detailed design, construction materials and systems, and construction procedures. They refine and resolve more than they invent and they often repeat what was done before.

**d- The Social Worker:**

This type is concerned with helping people. Social worker architects see architecture as a means, rather than as an end, a means, to improve public welfare through environmental design intervention. They are very user-oriented, admonishing those architects who would sacrifice user satisfaction and social responsibility to the demands of personal, aesthetic indulgence. It's not that social workers are unconcerned with aesthetics, but their priorities are different from those of architects

who are interested primarily in stylistic and intellectual issues. Social worker architects want the user and the client to become surrogate architects, to design from the bottom up instead of from the top down.

**e- The Fantasizer:**

Fantasizers are architects who continually dream up and propose buildings that seem impossible or unrealizable. The opposite of the down-to-earth, the fantasizer is not hamstrung or deterred by matters of practicality, convention, or acceptability. He is a speculator and a risk taker in the territory of ideas. Architectural fantasizers may have a keen sense of history, since much of today's reality was yesterday's fantasy. Most fantasizers are very creative, whatever their motivations.

**4-5-1-7 Campbell (1973):<sup>45</sup>**

In her paper on architecture and social sciences: *Architectural Values as a Measure of Design Decision Making*, and as a result of empirical studies on a group of architects, Campbell describes two types of architects: the Pragmatic and the Ideologue.

**a- The Typical Pragmatic:**

The typical highly pragmatic architect is, as one would expect, the man in private practice. Central to his belief system is the idea that architecture is primarily a business, a management job where administration and organization are important. In general social values, he will tend to be mystical and religious, stressing ideas of unity, morality and harmony. He is cynical about the value of systematic design methods in architecture, being more involved with end products and producing the goods. His education as an architect will have taken place mainly in an office, and most of his knowledge about architecture will be drawn from his contacts with people and experience rather than from books.

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<sup>45</sup>Campbell, S. (1973) *Architectural values as a Measure of Design Decision Making*, in Raman, P. G., ed., *Architecture and Social Sciences*, selected papers, University of Edinburg.

In choosing the best finishes for a client's housing scheme he will be cautious and realistic, opting for brick cladding, wooden windows and doors, rather than expensive flashy materials like copper and aluminium. He will be able to generate a good range of information categories to choose from in solving problems and this reflects his depth of experience in design and the variety of types of clients he is likely to have dealt with.

However, when asked to generate a range of solutions to solve the problem of privacy in a number of different housing types he will tend to use the same solution to fit different situations of density and form and will not consider a range of imaginative alternatives. In psychological terms, this may indicate a convergent approach to problem solving. The structure of the pragmatic dimension can be seen in figure.

#### **b- The Typical Ideologue:**

The second dimension is much more tightly structured and cohesive than the pragmatic one which, while containing a large number of elements, is fluid and loosely structured. This dimension is described as rationalistic or ideological, both words being interchangeable. Figure shows the strength of the inter-correlations and the details of the dimension components.

The ideologue is likely to work in research and is more academic and idealistic than the pragmatic type. He will be well able to articulate his ideas about design, having worked, out for himself, some kind of cohesive philosophy. Design for him is a complex process; and a rational, rather than intuitive approach, is needed. To him, the profession is controlled by committeemen and prestige seekers; he will not want to get involved in such nasty business and will tend to be anti-political and isolated. When it comes to the details of design he seems to be imaginative in proposing alternatives but his actual preferences for design will be fairly massive, rigid in concept and often expensive.

### **4-5-2 Dimensions of the Architects Types:**

We can observe from the previous review of the architects' classifications that some architects' types are mono-dimensional and some others are multi-dimensional. For instance, the pragmatist type of Ackerman has one dimension, which is practical, while the facilitator type of Burgess has two dimensions, scientific and social. On the following points we will determine the dimensions of each type:

#### **A - Ackerman:**

-*The Egoist* is mono-dimensional: *aesthetic* based on abstract forms.

-*The Pragmatist* is mono-dimensional: *practical* based on accepting the client's requirements.

#### **B -Burgess:**

-*The Facilitator* is be-dimensional: *scientific* based on providing spaces for human activities as a rational response to socio-behavioral contexts, and *social* based on creating a process that enables people to participate in solving their one problems.

#### **C -Ledewitz:**

-*The Technical Assistant Giver* is mono-dimensional: *practical* based on providing affordable and accessible technical systems (not its scientific rationality).

-*The Advocate* is mono-dimensional: *social* based on his participation with a community group he serves.

#### **D - Broadbent:**

-*The Rationalist* is mono-dimensional: *scientific* based on systematic design processes and the generation of solutions according to canonic and geometrical systems.

-*The Empiricist* is mono-dimensional: *scientific* based on the environmental control of the building, technical innovations, and providing spaces for human activities.

**E - Jenks:**

-**The Idealist** is multi-dimensional: he is committed to an ideal whether it is *social* based on proposing new visions to the existing social order, or *philosophical* based on deducting solutions from literate ideas related to the problem (influenced by his own philosophy of life), *scientific* based on following an ordering system for the whole building.

-**The Self-conscious** is bi-dimensional: *traditional* based on the obsession with past ages and traditional buildings as they were, and *post-modern* based on the belief in both the past models of architecture ordering principles and the modern technology.

-**The Supersensualist** is mono-dimensional: *aesthetic* based on formalism "form does not follow function" and on technological innovations. His interest in the latest technology has two reasons: first, making his abstract forms constructed; second, using it for its aesthetic value.

-**The Intuitive** is bi-dimensional: *aesthetic* based on the freedom of the architect's imagination, and *social* based on cooperation and awareness of human needs (artistic freedom with unselfishness).

-**The Logical** is mono-dimensional: *scientific* based on systematic design, intensive analysis, performance specifications, and logical structure.

-**The Unselfconscious** is bi-dimensional: *social* based on solving the community present-day requirements (especially housing problems), and *practical* based on affordable and accessible technical systems.

-**The activist** is mono-dimensional: *social* based on creating new forms of social experience which would actively transform life.

**F - Roger:**

-**The Philosopher** is mono-dimensional: *philosophical* based on finding linkages or metaphors from sources in traditional philosophy, religion, literature, history, or arts.

-*The Intellectual* is bi-dimensional: *scientific* based on rigorous research and analysis of the design problem, and *philosophical* based on the cultural, literary, and poetic content of architecture (arrived at through this research).

-*The Down-to-earthier* is mono-dimensional: *practical* based on repeating conventional solutions, construction systems, and materials.

-*The Social Worker* is mono-dimensional: *social* based on the belief of user participation in the problem definition and solution.

-*The Fantacizier* is bi-dimensional: *aesthetic* based on abstract forms, and *unrealizable* based on impossible or strange and unconventional buildings.

### **G - Campbell:**

-*The Pragmatic* is bi-dimensional: *practical* based on repeated problem solutions, conventional construction methods, and cheap materials; and *traditional* based on the belief in the traditional models of the past.

-*The Ideologue* is bi-dimensional: *scientific* based on rational or systematic design processes, and *philosophical* based on a cohesive philosophy in design usually deducted from literature, arts, music, etc.

By inserting these dimensions into the six values of Spranger as shown in table 2, we could reclassify them as follows.

CLASSIFICATIONS / SPRANGER VALUES			THEORETICAL	ECONOMIC	AESTHETIC	SOCIAL	POLITICAL	RELIGIOUS
TYPES		DIMENSIONS						
ACKERMAN 1969	EGOIST	Aesthetic			●		●	
	PRAGMATIST	Practical		●				
BURGESS 1981	FACILITATOR	Scientific	●					
		Social				●		
LEDEWITZ 1983	TECHNICAL ASSISTANT GIVER	Practical		●				
	ADVOCATE	Social						
BROADBENT 1973	RATIONALIST	Scientific	●					
	EMPIRICIST	Scientific	●					
JENKINS 1973	IDEALIST	Social				●		
		Philosophical	●					
		Scientific	●					
	SELF-CONSCIOUS	Traditional						●
		Post-modern						●
	SUPER SENSUALIST	Aesthetic			●		●	
	INTUITIVE	Aesthetic			●			
		Social				●		
	LOGICAL	Scientific	●					
	UNSELF CONSCIOUS	Social				●		
		Practical		●				
	ACTIVIST	Social				●		
ROGER 1985	PHILOSOPHER	Philosophical	●					
	INTELLECTUAL	Scientific	●					
		Philosophical	●					
	DOWN-TO-EARTHER	Practical		●				
	SOCIAL WORKER	Social				●		
	FANTACIZER	Aesthetic			●			
		Unrealizable					●	
CAMPBELL 1973	PRAGMATIC	Practical		●				
		Traditional						●
	IDEOLOGUE	Scientific	●					
		Philosophical	●					

Table 2. **Dimensions of each type of personality**, based on the various classifications stated Above and their intersections and resemblance with Spranger’s classification.

Source: the Author.

### **4-5-3 Re-classification of Architects' Personality Types According to Spranger's Values:**

According to Spranger's classification of the six value types, the previous architects' classifications review, and their dimensional analysis, we could conclude the following architects' types of personalities.

#### **4-5-3-1 The Theoretical:**

This type takes a "cognitive" attitude and his interests are empirical, critical, and rational. His chief aim in life is to discover the truth and to order and systematize his knowledge. His architectural attitudes have two dimensions: *scientific* and *philosophical*. They will be the following:

##### ***Scientific:***

- Following rational or systematic design processes, rigorous research and intensive analysis of the design problem, and defining performance specifications.
- Providing spaces for human activities as a rational response to socio-behavioral contexts.
- Concerned with the environmental control of the building (orientation, temperature, lighting, acoustics...etc).
- Following an ordering system for the whole building and the generation of solutions according to canonic and geometrical systems.
- The interest in technological innovations and following logical structures.

##### ***Philosophical:***

Following a cohesive philosophy in design and generating solutions by finding linkages or metaphors from sources in traditional philosophy, religion, literature, history, or arts arrived at through intensive research.

#### **4-5-3-2 The Economic:**



This type is thoroughly practical and conforms well to the prevailing conception of the businessman. He is interested in what is useful and regards unapplied knowledge as waste. He confuses luxury with beauty and he is interested in surpassing people in wealth than in dominating them (political value) or in serving them (social value).

His architectural attitudes will be the following:

- Providing accessible, affordable, and cheap technical systems and materials.
- Following and obeying the client's requirements without any personal involvement.
- Using the same solution to fit different situations of density and form without considering a range of imaginative alternatives.
- Interested in intellectualized concepts only to the extent that they withstand the tests of common sense and practicality.
- Worrying about cost, schedules, and making things workable.
- Being more involved with end products.
- Avoiding aesthetic speculation, verbal theorizing, and radical experimentation.

#### **4-5-3-3 The Aesthetic:**

This type sees his highest value in form and harmony and finds his chief interest in the artistic episodes of life. The aesthetic is diametrically opposed to the theoretical because he considers beauty the only truth, and to him making a thing charming is much more important than making it true. Economic value is according to him a destruction of his most important values. He tends toward individualism and self-sufficiency.

His architectural attitudes will be the following:

- Creating abstract forms based on subjective feeling and freedom of imagination. His emblem is "*form does not follow function*".
- Some aesthetics have an intensive interest in colors and their compositions.
- Interest in technological innovations for two reasons: first, making his abstract forms constructed; second, using them for their aesthetic values.
- Denying, or superficially responding to social values.

**4-5-3-4 The Social:**

The highest value for this type is love of people who ever they are, and he prizes them as ends. He is therefore kind, sympathetic, and unselfish. He is likely to find the theoretical, economic, and aesthetic attitudes cold and inhuman.

His architectural attitudes will be:

- Seeing architecture as a means, rather than as an end, a means, to improve public welfare through environmental design intervention.
- Creating a process that enables people to identify their own requirements and participating to the problem definition and the generation of solutions.
- The understanding of socio-behavioral contexts then the personal response to the social values.
- Proposing alternative visions to the existing social order and solving the community present-day problems in order to improve it (e.g. housing problems).
- Creating new forms of social experience which would actively transform life.
- Rejecting functionalism for being inhumane and too materialistic.

**4-5-3-5 The Political:**

The political man is interested primarily in power. Competition and struggle play a large part in his life and he sees power as the most universal and most fundamental of motives. Certain personalities, in whom the desire for a direct expression of this motive is uppermost, wish above all else for personal power, influence, and renown.

His architectural attitudes will be the following:

- Creating abstract forms based on subjective feeling and self-imagination.
- Designing buildings that seem powerful, strange, or unrealizable.
- Not interested in matters like practicality, convention, acceptability, or social values.
- Interest in technological innovations as a means of realizing his strange designs.

**4-5-3-6 The Religious:**

The religious man is considered as one whose mental structure is permanently directed to the creation of the highest and absolutely satisfying value experience. He finds his religious experience in the affirmation of life. He seeks to unite himself with a higher reality by withdrawing from life; and he finds the experience of unity through self-denial and meditation.

His architectural attitudes will be the following:

- The submission to past models of architecture without copying them in the belief that these contain universal principles. Here we find his designs integration between traditional and modern architecture.
- The obsession with past ages and traditional buildings as they were. Here we find his designs conservative and exactly copied from the past.

**4-6 Conclusion**

A summary and conclusion of the previous classification is shown in table 3.

<b>THEORETICAL</b>	<b>Personality</b>	This type takes a cognitive attitude and his interests are empirical, critical, and rational. His chief aim in life is to discover the truth and to order and systematize his knowledge.
	<b>Architectural personality</b>	<p>Scientific: - Following rational or systematic design processes, rigorous research and intensive analysis of the design problem, and defining performance specifications.</p> <ul style="list-style-type: none"> <li>- Providing spaces for human activities as a rational response to socio-behavioral contexts.</li> <li>- Concerned with the environmental control of the building (orientation, temperature, lighting...).</li> <li>- Following an ordering system for the whole building and the generation of solutions according to canonic and geometrical systems.</li> <li>- The interest in technological innovations and following logical structures.</li> </ul> <p>Philosophical: Following a cohesive philosophy in design and generating solutions by finding linkages or metaphors from sources in traditional philosophy, religion, literature, history, or arts arrived at through intensive research.</p>
<b>ECONOMIC</b>	<b>Personality</b>	This type is thoroughly practical and conforms well to the prevailing conception of the businessman. He is interested in what is useful and regards unapplied knowledge as waste. He confuses luxury with beauty and he is interested in surpassing people in wealth than in dominating them (political value) or in serving them (social value).
	<b>Architectural personality</b>	<ul style="list-style-type: none"> <li>- Providing accessible, affordable, and cheap technical systems and materials.</li> <li>- Following and obeying the client's requirements without any personal involvement.</li> <li>- Using the same solution to fit different situations without considering a range of imaginative alternatives.</li> <li>- Interested in intellectualized concepts only to the extent that they withstand the tests of common sense and practicality.</li> <li>- Worrying about cost, schedules, and making things workable.</li> <li>- Being more involved with end products.</li> <li>- Avoiding aesthetic speculation, verbal theorizing, and radical experimentation.</li> </ul>
<b>AESTHETIC</b>	<b>Personality</b>	This type sees his highest value in form and harmony and finds his chief interest in the artistic episodes of life. The aesthetic is diametrically opposed to the theoretical because he considers beauty the only truth, and to him making a thing charming is much more important than making it true. Economic value is according to him a destruction of his most important values. He tends toward individualism and self-sufficiency.
	<b>Architectural personality</b>	<ul style="list-style-type: none"> <li>- Creating abstract forms based on subjective feeling and freedom of imagination. His emblem is "form does not follow function".</li> <li>- Some aesthetics have an intensive interest in colors and their compositions.</li> <li>- Interest in technological innovations for two reasons: first, making his abstract forms constructed; second, using them for their aesthetic values.</li> <li>- Denying, or superficially responding to social values.</li> </ul>
<b>SOCIAL</b>	<b>Personality</b>	The highest value for this type is love of people who ever they are, and he prizes them as ends. He is therefore kind, sympathetic, and unselfish. He is likely to find the theoretical, economic, and aesthetic attitudes cold and inhuman.
	<b>Architectural personality</b>	<ul style="list-style-type: none"> <li>- Seeing architecture as a means, rather than as an end, a means, to improve public welfare through environmental design intervention.</li> <li>- Creating a process that enables people to identify their own requirements and participating to the problem definition and the generation of solutions.</li> <li>- The understanding of socio-behavioral contexts then the personal response to the social values.</li> <li>- Proposing alternative visions to the existing social order and solving the community present-day problems in order to improve it (e.g. housing problems).</li> <li>- Creating new forms of social experience which would actively transform life.</li> <li>- Rejecting functionalism for being inhumane and too materialistic.</li> </ul>
<b>POLITICAL</b>	<b>Personality</b>	The political man is interested primarily in power. Competition and struggle play a large part in his life and he sees power as the most universal and most fundamental of motives. Certain personalities, in whom the desire for a direct expression of this motive is uppermost, wish above all else for personal power, influence, and renown.
	<b>Architectural personality</b>	<ul style="list-style-type: none"> <li>- Creating abstract forms based on subjective feeling and self-imagination.</li> <li>- Designing buildings that seem strange, impossible or unrealizable.</li> <li>- Not interested in matters like practicality, convention, acceptability, or social values.</li> <li>- Interest in technological innovations as a means of realizing his strange designs.</li> </ul>
<b>RELIGIOUS</b>	<b>Personality</b>	The religious man is considered as one whose mental structure is permanently directed to the creation of the highest and absolutely satisfying value experience. He finds his religious experience in the affirmation of life. He seeks to unite himself with a higher reality by withdrawing from life; and he finds the experience of unity through self-denial and meditation.
	<b>Architectural personality</b>	<ul style="list-style-type: none"> <li>- The submission to past models of architecture without copying it in the belief that these contain some universal ordering principles. Here we find his designs an integration between old and modern architecture.</li> <li>- The obsession with past ages and traditional buildings as they were. Here we find his designs conservative and exactly copied from the past.</li> </ul>

Table 3. Re-classification of Spranger's types of personalities according to their dominant values.

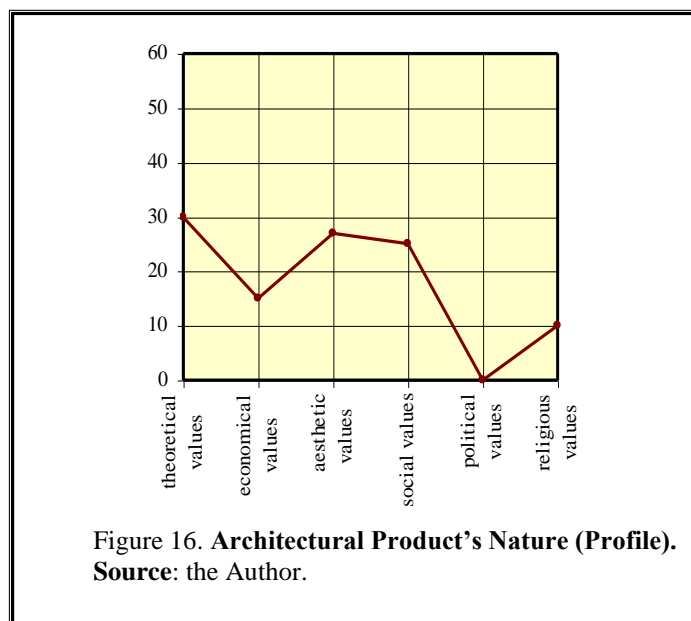
**PART ONE: SUBJECTIVITY IN DESIGN in the Light of the  
Contemporary Theory of Design Epistemology**

**PART TWO: ASSESSMENT OF PERSONALITY**

**PART THREE: ASSESSMENT OF ARCHITECTURAL  
PRODUCT**

**PART FOUR: EMPIRICAL APPLICATION**

This part deals with the problem of assessing the architectural product's profile. As we saw in the previous part, assessment of personality profile according to its values was relatively different in nature because there was a set of ready scales and measures from which a suitable one was chosen. The objective of this part is to assess the architectural product in terms of Spranger's six values. To achieve that, the architectural product is analyzed into six components of formulation, namely concept, form, function, structure, space, and expression. Each one is thus evaluated numerically in terms of the existence of the indices of Spranger's values. The score of the whole product in terms of each value, for instance theoretical value, is the sum total of the score of this index in relation to all the components of the product. The end result can then be expressed graphically by a profile like the one shown in fig.16.



This part consists of three chapters: *Architectural Product's components*, *Indices of Values in the Product's Components* and *Matrix of the Product's Assessment in Terms of Values*.

## **PART THREE: ASSESSMENT OF ARCHITECTURAL PRODUCT**

**Chapter Five: ARCHITECTURAL PRODUCT COMPONENTS**

**Chapter Six: INDICES OF VALUES IN THE PRODUCT'S  
COMPONENTS**

**Chapter Seven: MATRIX FOR THE PRODUCT'S ASSESSMENT  
in terms of values**

## **5-1 Introduction:**

The main objective of this chapter is to analyze the architectural product into a group of components in order to assess the indices of Spranger 's six values in each component. The chapter is divided into two sections; first, a review of the prevailing approaches of analyzing architecture into its dimensions according to which we shall determine the architectural product's components. It should be clear that this analysis could vary from one researcher to another, but we shall try to maintain objectivity and analyze the product into a group of reasonable items onto which the indices of values may be studied. Second, a closer look on each component and its characteristics in order to investigate the indices of the theoretical, economic, aesthetic, social, political, and religious values in each.

## **5-2 Approaches to Architecture:**

Four of the most influential approaches to analyze *architecture* are of Vitruvius, Schulz (1965), Tschumi (1996)<sup>1</sup>, and Allsopp (1977)<sup>2</sup>.

### **5-2-1 Vitruvius Approach:**

Vitruvius is considered one of the most important and ancient architectural theorists. According to him, architecture has three main dimensions:<sup>3</sup>

- 1- ***Commoditas***: appropriate spatial accommodation.
- 2- ***Firmitas***: structural stability.
- 3- ***Venustas***: attractive appearance.

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<sup>1</sup>Mofid, R. (2000), *Criticism and Theory in Architecture*, unpublished Ph.D. thesis, Cairo University, p60-62.

<sup>2</sup>Allsopp, B. (1977), *A Modern Theory of Architecture*, Routledge & Kegan Paul Ltd., London.

<sup>3</sup>Kruft, H. (1994), in Mofid, R. (2000), op cit., p61.



The first dimension represents the *functional* organization of spaces to suit the required activities. The second represents the *structural* stability and security. The third represents the aesthetic aspects of the *form*.

### **5-2-2 Schulz Approach:**

Schulz analyses architecture into three basic dimensions formulating, according to him, the *architectural totality*:<sup>4</sup>

- 1- ***Building task***: defined as physical control, functional frame, social milieu, and cultural symbolization.
- 2- ***Form***: defined as mass forms, space cells, and bounding surfaces.
- 3- ***Technics***: defined as technical systems and materials.

### **5-2-3 Tschumi Approach:**

Tschumi approach consists of three dimensions all of them are related to one main element: *space*. He classifies space into mental space, physical space, and social space. He clarifies that space provides human movement and subsequently generates events. In his approach, Tschumi stresses on the importance of space and time as a separate dimension of architecture<sup>5</sup>.

### **5-2-4 Allsopp Approach:<sup>6</sup>**

Allsopp, in *A Modern Theory of Architecture* analyzed the word *form* into three categories:

- 1- The ***internal volumes*** of the building, in themselves and in relation to others.

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<sup>4</sup>Norberg-Schulz, C. (1965), *Intentions in Architecture*, The MIT Press Cambridge, p 108-112.

<sup>5</sup>Tschumi, B. (1996), in Mofid, R. (2000), op cit., p62.

<sup>6</sup> Allsopp, B. (1977), op cit., p 61.

- 2- The *outward shapes* of the building - massing.
- 3- The design of the *surfaces* of the masses.

Allsopp distinguishes between *spaces* and their mutual relations, building *masses*; and the skin or the *surfaces* of the masses as a separate element possessing an individual design according to which the building's expression could change.

From the above review, we could distinguish between five main elements which may be called product's components: *Form*, *Function*, *Structure*, *Space*, and *Expression*. In addition, we must not forget the concept of *conjecture* stated earlier in part one. Therefore, A sixth component may be added: *Concept*.

The next section deals with each of these components in detail in order to investigate and score the indices of Spranger's six values upon each.

### **5-3 Architectural Product Components:**

The following sections deal with each component separately. Each component is analysed into a group of sub-components to insure the accuracy of scoring the indices of each value in the product. The characteristics and classifications of each component will be studied in detail.

#### **5-3-1 Concept:**

The primary generator of solution is, as it was pointed out in part one, a very simple idea used to narrow down the range of possible solutions. Design begins first by a conjecture. As the designer collects and organizes the problem data, and data about constraints, the conjecture acquires sharper definition and is transformed to a

clear design. The conjecture leads the designer to develop a basic regulating idea which may have many names: scheme, parti, conceptual model<sup>7</sup>.

Arnheim (1977) calls it *the germinal theme*, and according to him it is crucial to all human inventions. Whether it is a work of art, a piece of machinery, a scientific theory, or a business organization, they all sprout from a central idea and grow around it. In the case of architecture, however, the central theme also serves as the bridge between the program for a building and its design. The relation between these two fundamental components has been something of a puzzle in architectural theory<sup>8</sup>.

Good designs often seem to have only a very few major dominating ideas which structure the scheme and around which other relatively minor considerations are organized. Sometimes they can even be reduced to one idea known to designers by many names but most often called the *concept* or the *parti*. Such *central ideas* inevitably emerge from early explorations through *primary generators*. However, it is interesting to note how little some of these ideas may be understood until later in the process<sup>9</sup>.

According to Laseau (1980) the basic concept or the *parti* is "*an enduring mechanism used by architectural designers to establish the fundamental organization of a building and to guide the entire process of design development.*"<sup>10</sup> The *parti*, at its best, provides:

- 1- The first synthesis of the designer's response to the determinants of form (program, objectives, context, site, economy, etc.).
- 2- A boundary around the set of decisions which will be the focus of the designer's responsibility.

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<sup>7</sup>Wilson, F. Et al. (1990), *Architectural Fundamental Issues*, Van Nostrand Reinhold, New York, p 227.

<sup>8</sup>Arnheim, R. (1977), *The Dynamics of Architectural Form*, University of California Press, P 170.

<sup>9</sup>Lawson, B. (1994), op cit., p 139.

<sup>10</sup>Laseau, P. (1980), op cit.

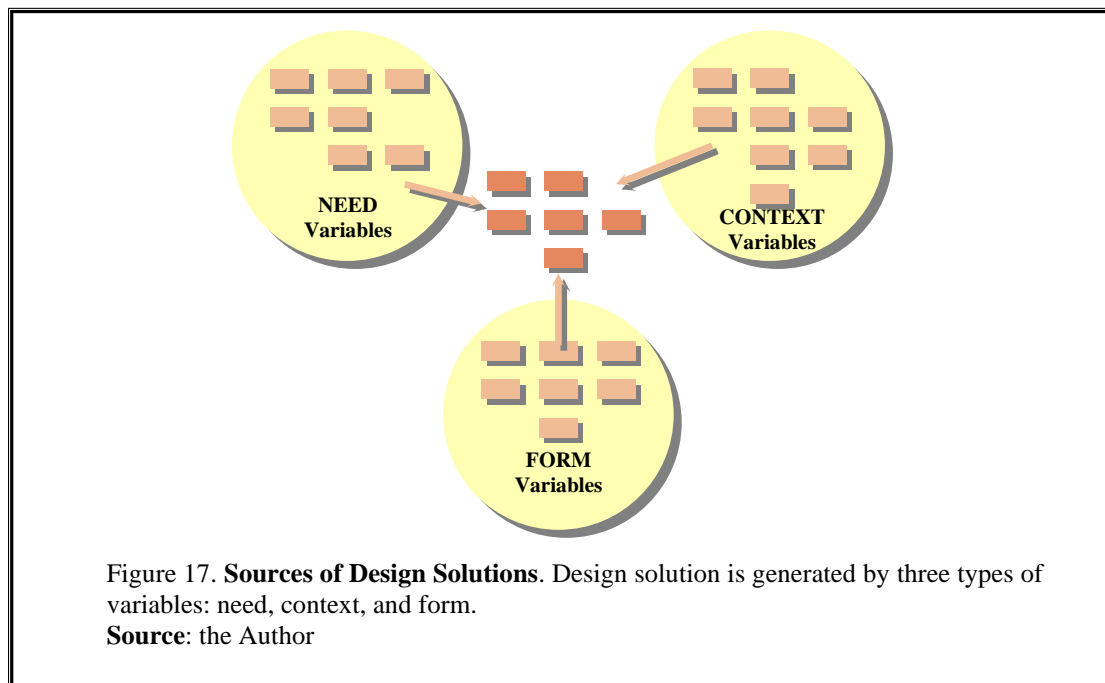
3- A map for future design activities in the form of a hierarchy of values and responding forms.

4- An image which arouses expectations and provides motivation for all persons involved in the design process. This is often done through the use of abstractions: *my building is a spine* or *our building bridges this gap*.

But what are the sources of solutions or the origin of the design concept?

### **5-3-1-1 Sources of Design Concepts:<sup>11</sup>**

According to Laseau, the origin of a design solution may be found in any one of the three types of variables: need, context, or form (fig.17). ***Need variables*** include: space requirements, functional relationships, circulation, physical behavior, maintenance, environmental control, client's objectives, techniques... ***Context variables*** include: site selection, site analysis, climate, adjacent buildings, geological factors, vehicular access... ***Form variables*** include: order, scale, proportion, mass, balance, unity, diversity...



<sup>11</sup>Laseau, P. (1980), op cit., P84.

On the following are four studies based on the design of a recreational house, in each study an abstract diagram of one of the variables is used as the source of a basic organizing idea for the house.

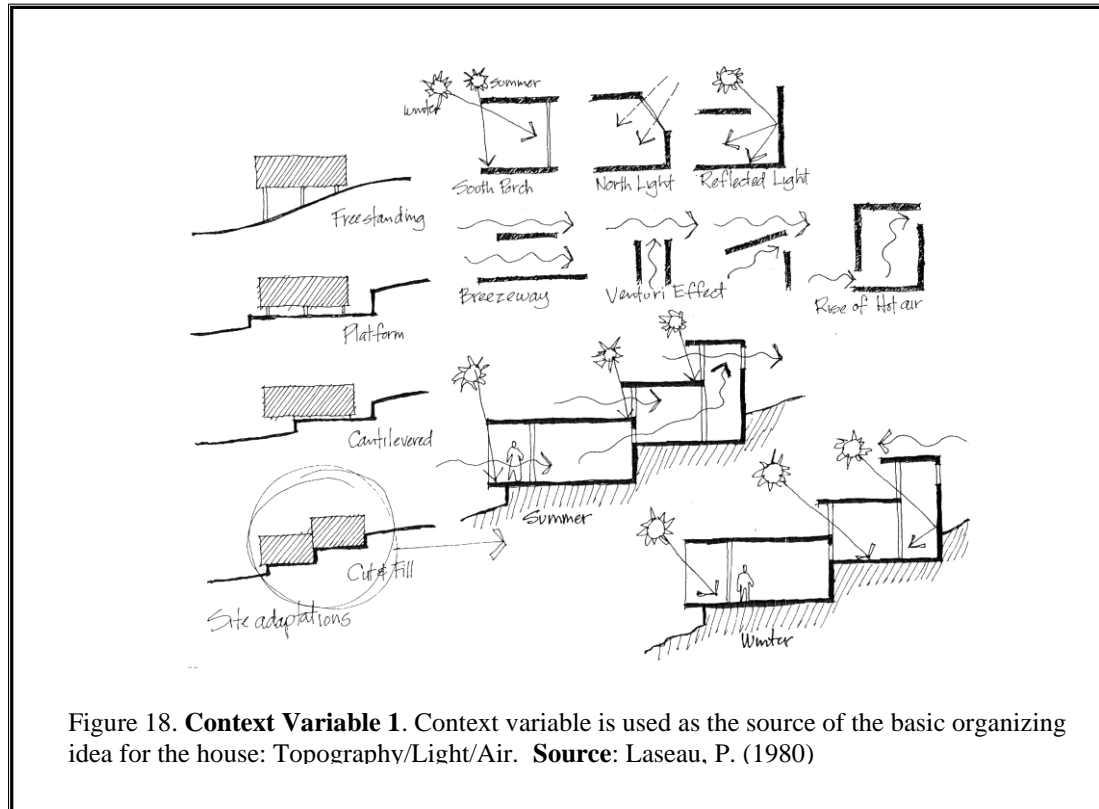


Figure 18. **Context Variable 1.** Context variable is used as the source of the basic organizing idea for the house: Topography/Light/Air. **Source:** Laseau, P. (1980)

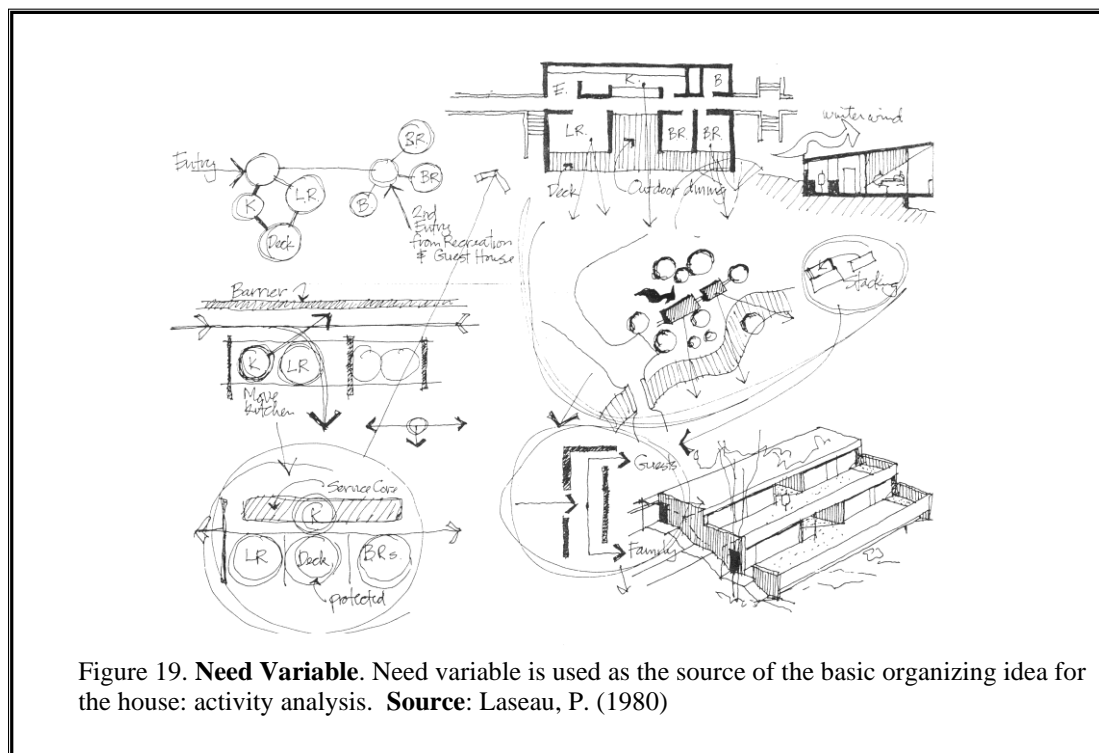
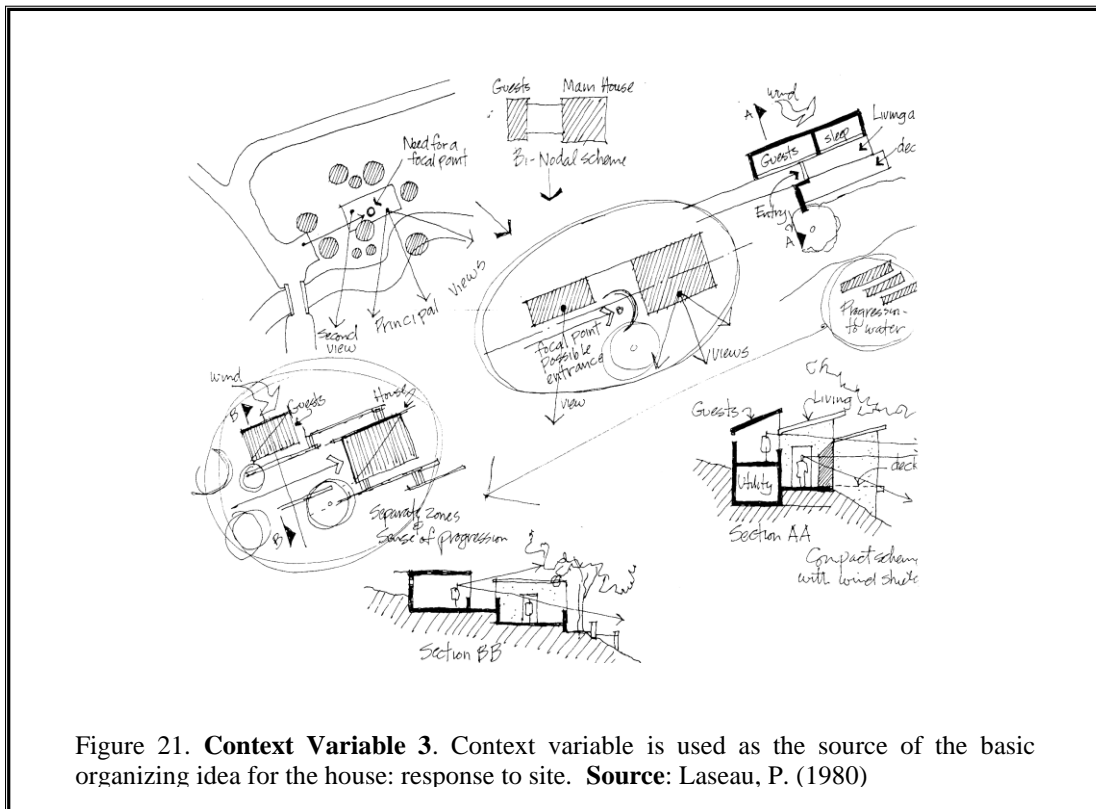
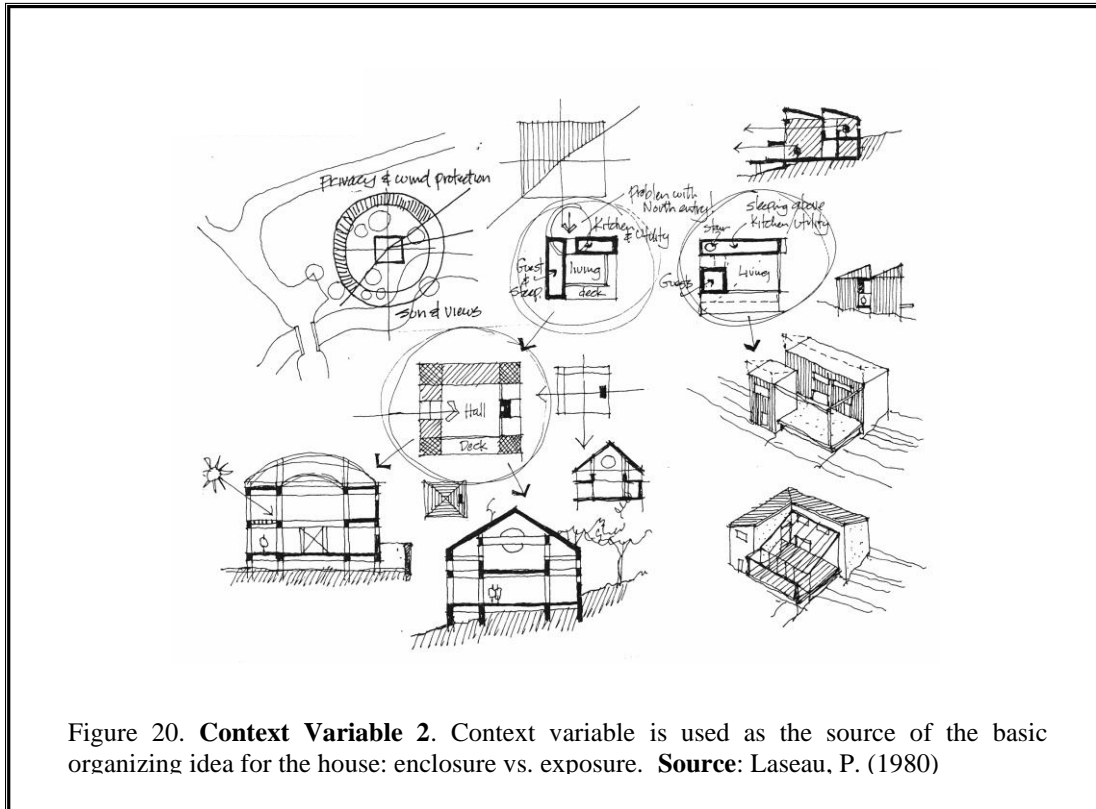


Figure 19. **Need Variable.** Need variable is used as the source of the basic organizing idea for the house: activity analysis. **Source:** Laseau, P. (1980)



### **5-3-2 Form:**

*Venustas* or attractive appearance in Vitruvius' architectural dimensions: *Commoditas*, *Firmitas*, and *Venustas* represents this product's component<sup>12</sup>. Form can be seen in the overall arrangement of a building or in its parts where these have recognizable geometric shapes. While forms may contribute to proportion or direction, they do provide a separate characteristic arising from the way in which we are able to recognize distinctive forms<sup>13</sup>. This implies that we can distinguish between form and the relations between forms, or in Schulz' words *elements* and *relations*. According to him, the form of a building can be analyzed into two main factors: *elements* and *relations*:

*The analysis of the architectural form is based upon the description of elements and relations. Elements may be defined as 'space-cells', 'mass-forms' and 'bounding surfaces'...relations may be topological or Euclidean. When combining elements and relations we arrive at a formal structure, or in short, a form.*<sup>14</sup>

Schulz classifies elements according to three main categories: *mass*, *space*, and *surface*<sup>15</sup>. But it was pointed out earlier in this chapter that it would be better for our research objectives to separate the three categories into three independent components of architectural product. In this section *form* will be analyzed into *masses* and *relations*, then it will be followed later by separate sections on both *space* and *surface* or *expression*.

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<sup>12</sup> Mofid, R. (2000), op cit., p61.

<sup>13</sup> Smithies, K. W., (1981), op cit., p 9.

<sup>14</sup> Norberg-Schulz, C. (1965), op cit., p 105.

<sup>15</sup> Norberg-Schulz, C. (1965), op cit., p 133.

### **5-3-2-1 Masses:**

Ching (1979) defines masses as shapes, and according to him shape is "*the principal identifying characteristic of form; shape results from the specific configuration of a form's surfaces and edges*"<sup>16</sup>.

Schulz has a more profound explanation about mass. He declares that the word *mass* denotes any tri-dimensional body and it is characterized by its topological-geometrical form were the word topology is used to designate the purely topological properties, and geometry to designate the projective or Euclidean aspects<sup>17</sup>.

### **a- Classification of Masses:**

Forms could be classified on the basis of their visual characteristics or their morphological origin. Caudill et al (1981) classify them on the basis of their characteristics. Raafat (1997) classifies forms on the basis of their morphological origin.

### **-Classification According to Caudill:**

According to him, form could be *rectilinear* or *curvilinear*, and *hard* or *soft* (or combination). ***Rectilinear*** means its planes or solids are flat, like a square box, and ***curvilinear*** means its planes or solids are curved, like a round box. ***Hard*** forms have very many sharp edges, and ***soft*** forms simply do not. But he declares that buildings have only three basic forms: ***plastic***, ***skeletal***, and ***planar***, and each of them might be rectilinear or curvilinear, hard or soft, or combination<sup>18</sup>. Here are the established characteristics of and differences among the three basic forms:

### **Plastic:**

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<sup>16</sup> Ching, Francis D. K. (1979), *Architecture: Form, Space, and Order*, Van Nostrand Reinhold Co., p 49.

<sup>17</sup>Norberg-Schulz, C. (1965), op cit., p 134.

<sup>18</sup> Caudill, W. W. Et al (1981), *Architecture and You*, Whitney Library of Design, New York, p21-32.



Plastic is sculptural. Note that plastic, as defined here, is not a material, it is a configuration. Building with plastic form has been sculpted of any material—a mammoth cube of concrete, a huge pile of bricks, or a giant block of wood. Hard, rectilinear plastic forms are cubes, pyramids, and prismatic shapes. Soft, curvilinear plastic forms are domes, spheres, cylinders, and free-form shapes. Most buildings are made up of one or more geometric shapes which give them certain plastic qualities.

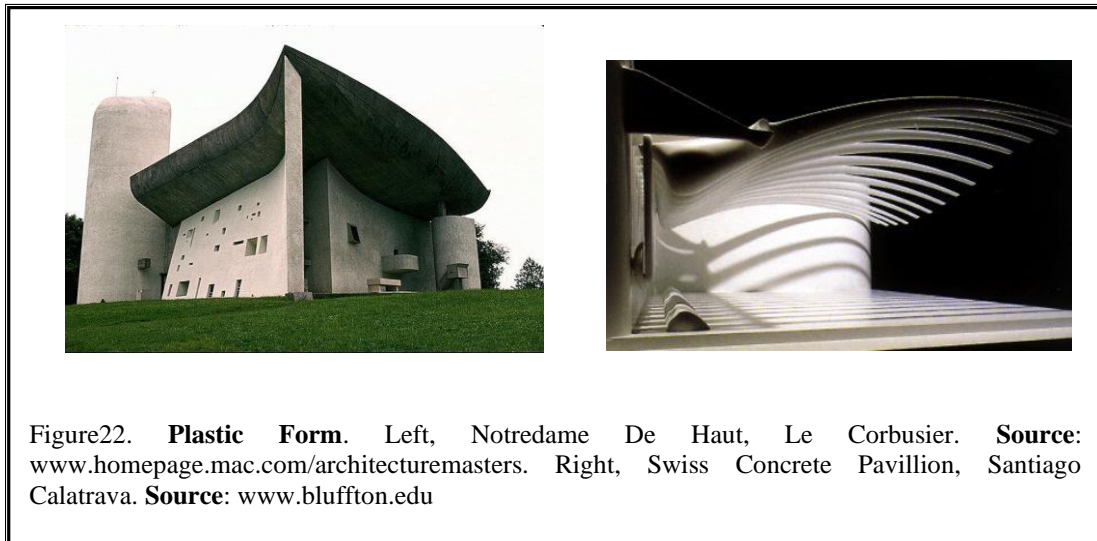


Figure22. **Plastic Form.** Left, Notre-Dame De Haut, Le Corbusier. **Source:** [www.homepage.mac.com/architecturemasters](http://www.homepage.mac.com/architecturemasters). Right, Swiss Concrete Pavillion, Santiago Calatrava. **Source:** [www.bluffton.edu](http://www.bluffton.edu)

### **Skeletal:**

Skeletal form *shows its bones*. If we look at any building under construction, we see its structural frame—its skeletal form. The structure is explicit and we see what holds up the floors and roof. Columns and beams are distinct. The buttresses of Gothic churches are skeletal. Buildings under construction before the brick or steel panels are in place have skeletal effects.

Some buildings are designed to retain the skeletal effect.

The architects purposely expose the structure because they experience much pleasure in seeing structural members actively working—holding up the loads of roofs and floors.

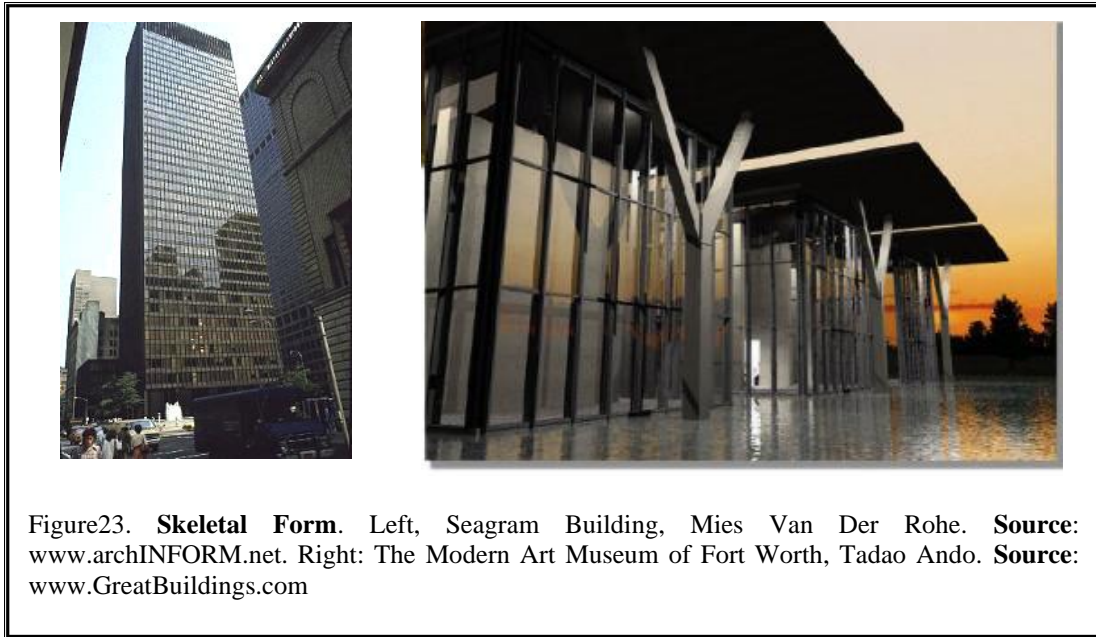


Figure23. **Skeletal Form.** Left, Seagram Building, Mies Van Der Rohe. **Source:** [www.archINFORM.net](http://www.archINFORM.net). Right: The Modern Art Museum of Fort Worth, Tadao Ando. **Source:** [www.GreatBuildings.com](http://www.GreatBuildings.com)

### **Planar:**

During the past four decades of the 20th century, a number of buildings have appeared upon the architectural scene, composed primarily of articulated planes—floors, roof, and walls. Architects who designed them were probably influenced by Mies van der Rohe, a master at composing planar as well as skeletal form, or Frank Lloyd Wright who masterfully used planar form.

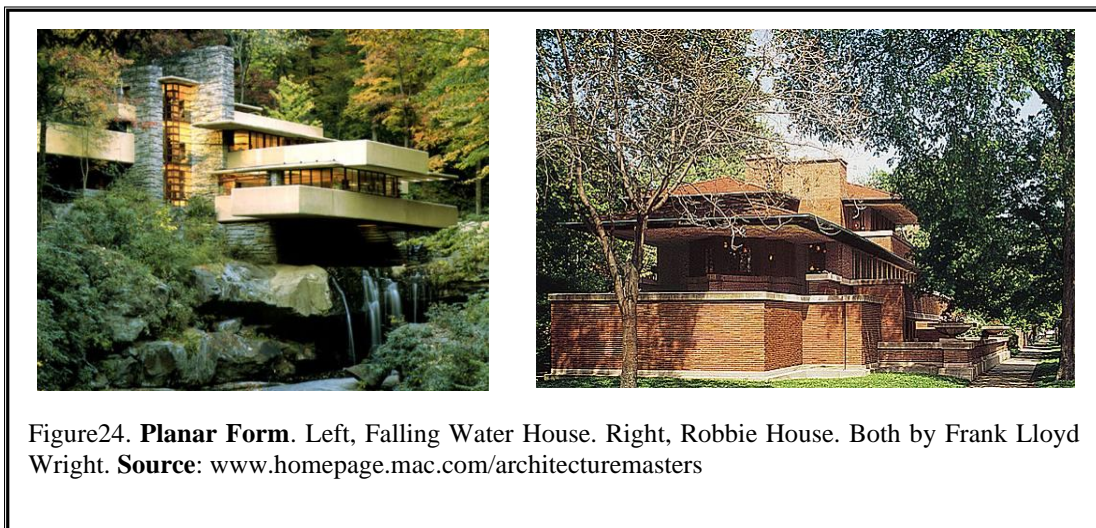


Figure24. **Planar Form.** Left, Falling Water House. Right, Robbie House. Both by Frank Lloyd Wright. **Source:** [www.homepage.mac.com/architecturemasters](http://www.homepage.mac.com/architecturemasters)

Planar form consists of over-lapping, sometimes distinct, sometimes interlocking planes—vertical as well as horizontal. A freestanding partition in a loftlike interior

space transmits a strong rectilinear planar effect. So does a freestanding exterior brick wall used as a landscaping element or as a windscreen. A freestanding serpentine garden brick wall is an example of curvilinear planar form .

### **- Classification According to Raafat:**

Raafat (1997) classifies forms on the basis of their morphological origin into *geometric form*, *organic form*, *sculpturesque form*, and *figurative form*<sup>19</sup>. In the following we shall look at them in a closer view.

### **Geometric Form:**

Geometric morphology has been tightly related to the primary or basic spatial shapes like the pyramid, cube, prism, cylinder, cone, sphere... etc. All these forms are characterized by their symmetry, balance, clearness, purity, and their easy perception. But the architectural designer do not usually leaves them as they are, by articulating them he can produce infinity of new forms belonging to the same geometrical family. Articulation of form involves: addition, accumulation, subtraction, integration, repetition, transformation, development...etc.



Figure25. **Geometric Form.** Left, Villa Savoy, Le Corbusier. **Source:** [www.projects-us.com](http://www.projects-us.com). Right, Wacoal Kojimachi Building, Kisho Kurokawa. **Source:** [www.kisho.co.jp](http://www.kisho.co.jp)

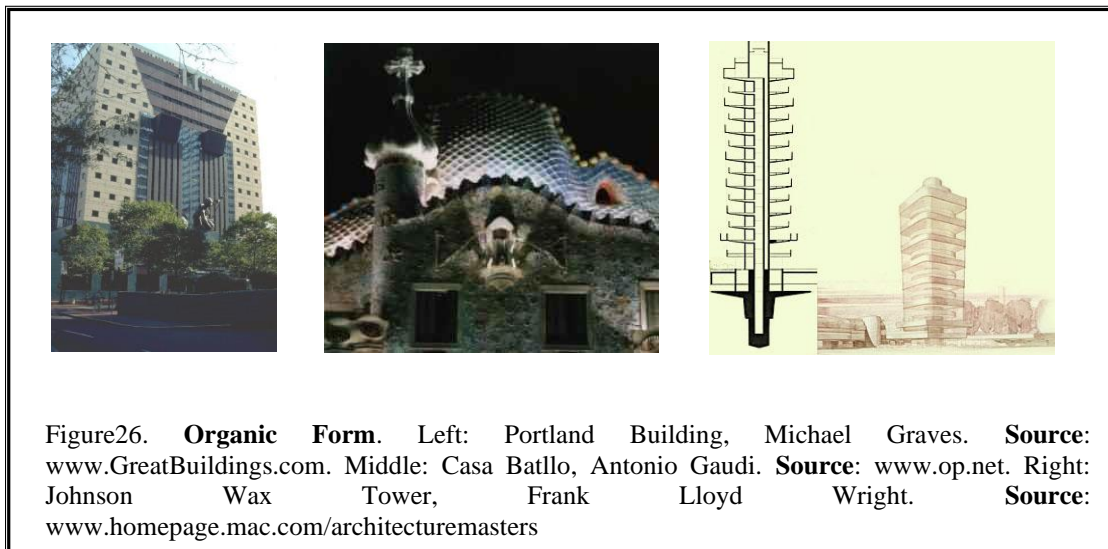
### **Organic Form:**

The main purpose of the organic approach is to attain beauty through natural form. The latter is characterized by its continuity in function, structure, and form.

<sup>19</sup>Raafat, A. (1997), *Artistic Creativity in Architecture*, Shorouk Presses, p 296-308.

Continuity in function means the integration of parts in accomplishing their organic functions such as eating, breathing, digesting...etc. Continuity in structure is obvious in the continuity of the structural osseous or wooden frame of animals and plants. Continuity in form is the result of functional or structural continuity. Raafat divides organic forms into *animal morphology*, *botanic morphology*, *cellular organic morphology*, and *amorphic form*.

A typical example of *animal morphology* in architecture the works of the Spanish architect Anthony Gaudi where the majority resembled the members of naval shelled animals. Also Michael Graves symbolized the human face in Portland Building<sup>20</sup>.



The structural continuity of *Botanic morphology* could be found in the works of Frank Lloyd Wright. Johnson Wax and Price Towers were examples of the structural idea of the tree.

<sup>20</sup> Graves, M. (1982), *A Case for Figurative Architecture*, in Scully, V. (1982), *Michael Graves Buildings and Projects*, Rizzoli International Publications, Inc, New York, p 11.



Figure27. **Cellular Morphology.** Nakagin Capsule Tower, Kisho Kurokawa. **Source:** [www.kisho.co.jp](http://www.kisho.co.jp).

*Cellular Organic morphology* is based on the idea of the cells growth and multiplication. Mega structures, works of Kisho Kurokawa, and M. Safedi are good examples of this type. Sometimes organic forms grow spontaneously and not according to specific rules; these are *amorphic forms*.

### **Sculpturesque Form:**

This type of forms has a plastic characteristic which has its impact on plans, sections, and elevations of the building. Here we find the building form appearing like

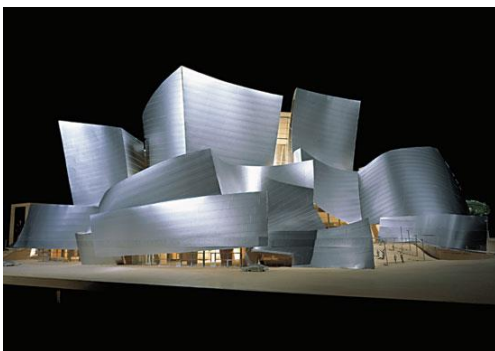


Figure28. **Sculpturesque Form.** Left: Walt Disney Concert Hall, Frank Gehry. Right: Statain, Peter Eisenmen. **Source:** [www.projects-us.com](http://www.projects-us.com).



a sculptural mass. Many examples on this type of forms could be mentioned. Works of Erick-Mendilson, Le Corbusier especially during his brutal period, E. Saarinen, Frank Gehry, etc are examples of the sculptural form.

### **Figurative Form:**

According to Raafat, figurative form is a form that carries symbolic meanings. A leader of figurative architecture is Michael Graves. He believes that any language or art has two forms: a *standard* form and a *poetic* form. In architecture, the standard form of building is its common language determined by pragmatic, constructional, and technical requirements. In contrast, the poetic form is responsive to issues external to the building, and incorporates the three-dimensional expression of the myths and rituals of society. Poetic forms in architecture are sensitive to the figurative, associative, and anthropomorphic attitudes of a culture<sup>21</sup>.

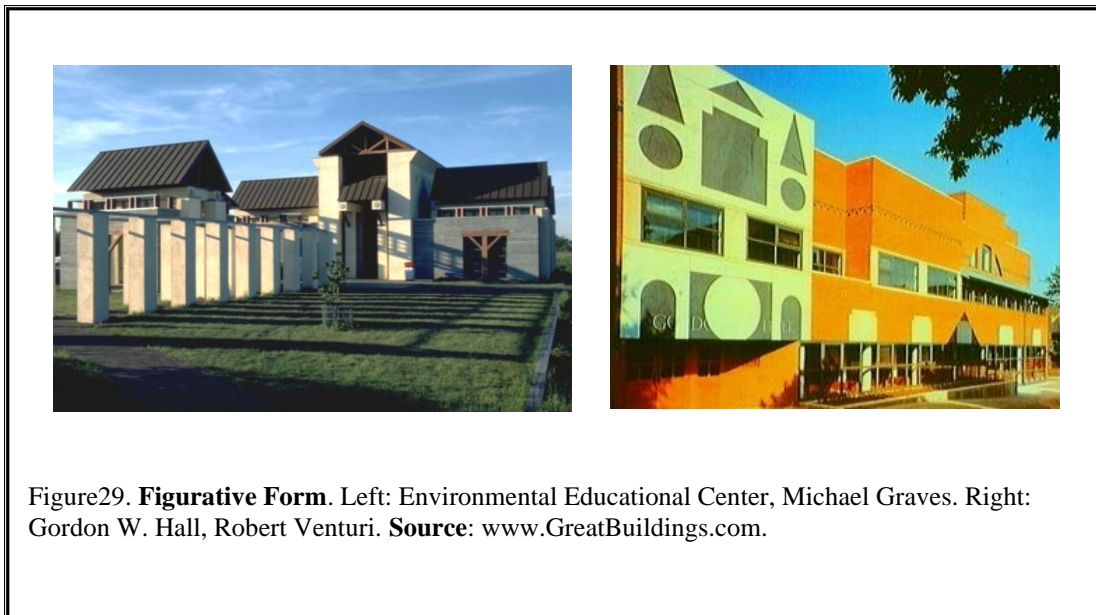


Figure 29. **Figurative Form.** Left: Environmental Educational Center, Michael Graves. Right: Gordon W. Hall, Robert Venturi. **Source:** www.GreatBuildings.com.

We can see in Grave's designs the anthropomorphic (human) symbolism where he compares the building's base, walls, and cornice with human's feet, body, and head. And his use of colors were also symbolic where he uses blue in roofs to indicate sky, blue or green in the floors to indicate water or grass, red in walls following the Etruscans' believes. In addition, all his architectural elements were

<sup>21</sup>Graves, M. (1982), op cit., in Scully, V. (1982), op cit., p11

from historical sources, such as obelisks, pyramids, pediments, keystones, and cornices. Traditional or historical architecture was his memory for the figurative forms without exactly copying them. Graves registered it in the form of sketches which he named *referential sketches* because they were his reference before beginning any design work<sup>22</sup>.

### **5-3-2-2 Relations:**

According to Smithies, building acquires its composition through relations between masses; he defines composition as "*the relationship of part to part and each part to the whole in visual terms*"<sup>23</sup>.

The term relation denotes a lawful way of distributing elements. Formal relations necessarily are tri -dimensional or spatial, as the elements are mainly masses and spaces. In certain cases we encounter bi-dimensional relations, for instance when we analyze the organization of a façade. There are two main relations: *topological* relations and *geometrical* relations. Proximity, closure, interpretation, fusion, division, succession and continuity, repetition, contrast, and dominance are topological relations. While geometrical relations involve using guiding elements, centralization, axuality, parallelism...etc<sup>24</sup>.

Geometrical relations are conveniently classified as the organization of elements relative to a point, relative to a line, and relative to a co-ordinate system. These basic relations may also be combined. And through a systematic use of parallel lines we arrive at the most comprehensive system of relations, the co-ordinate system.

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<sup>22</sup> Scully, V. (1982), op cit., p291.

<sup>23</sup>Smithies, K. W., (1981), op cit., p 5.

<sup>24</sup>Norberg-Schulz, C. (1965), op cit., p 140.

Besides the topological and geometrical relations, we can find *conventional* relations. These consist in prescribed ways of combining conventional motives. The classical orders, for instance, are based upon conventional relations. Any conventional relation, however, may be reduced to its topological and geometrical properties<sup>25</sup>.

According to Caudill, relations involve proportions, scale, and the opposing pairs of symmetry / asymmetry, simplicity / complexity, rhythm / randomness, clarity / ambiguity, unity / disparity, variety / singularity, order / disorder, horizontality / verticality, harmony / contrast...etc<sup>26</sup>.

Proportions and scale are very important issues that are always discussed in architecture. They are also important elements upon which we could find implications of Spranger's values. In the following section we shall emphasize on them.

#### **a- Scale:**

There are three types of scale: *physical scale*, *associative scale*, and *effectual scale*<sup>27</sup>.

#### **- Physical Scale:**

Physical scale is measurable. It is something which can be measured with a yardstick. Stairs, for example. Are the risers 10.2 cm or 17.8 cm? Are they too steep?

Are the treads 30.5 cm? Are they wide enough? Is it easy to walk up and down the steps? Is the door wide enough? Is it large enough for groups to exit through? Is a convention center large enough to take care of 4,000 people? Each question refers to

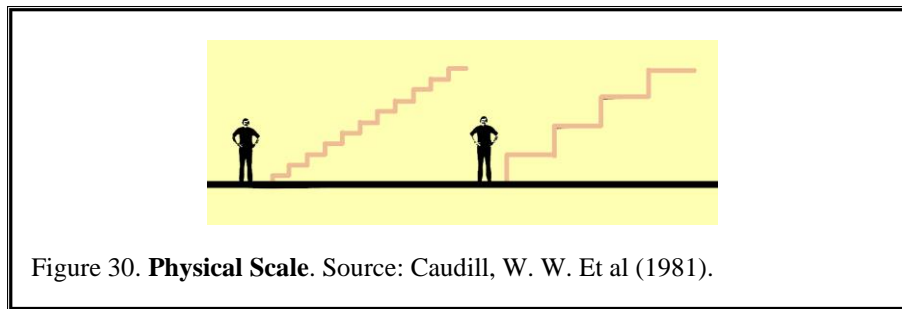
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<sup>25</sup>Norberg-Schulz, C. (1965), op cit., p 145.

<sup>26</sup>Caudill, W. W. Et al (1981), op cit., p 86.

<sup>27</sup> Caudill, W. W. Et al (1981), op cit., p 79.

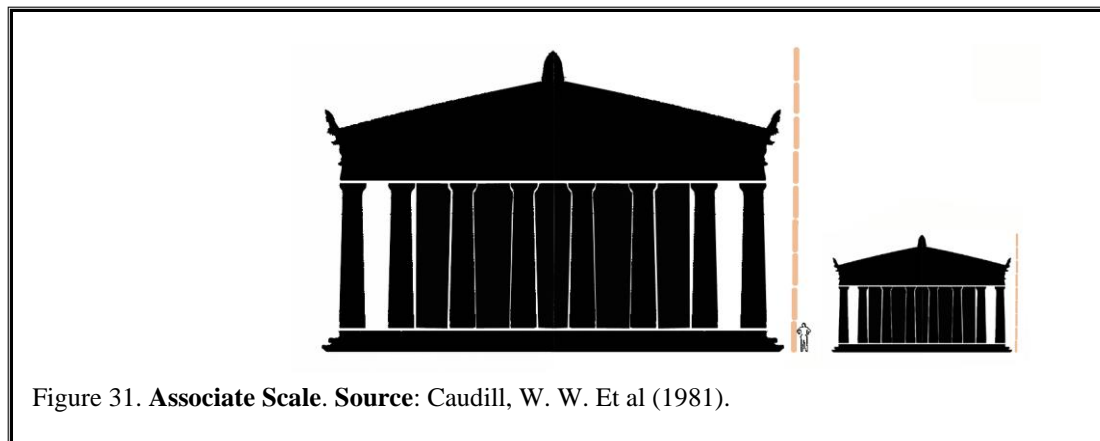




physical scale. The physical scale is write or wrong. It doesn't just *seem* write or wrong. It *is* write or wrong physically.

### **- Associative Scale:**

Associative scale is determined by precedent. It is difficult to measure. A yardstick won't be useful. But to the senses it's real and measurable and eyes and memory do the measuring. For example a person who has seen the Parthenon retains



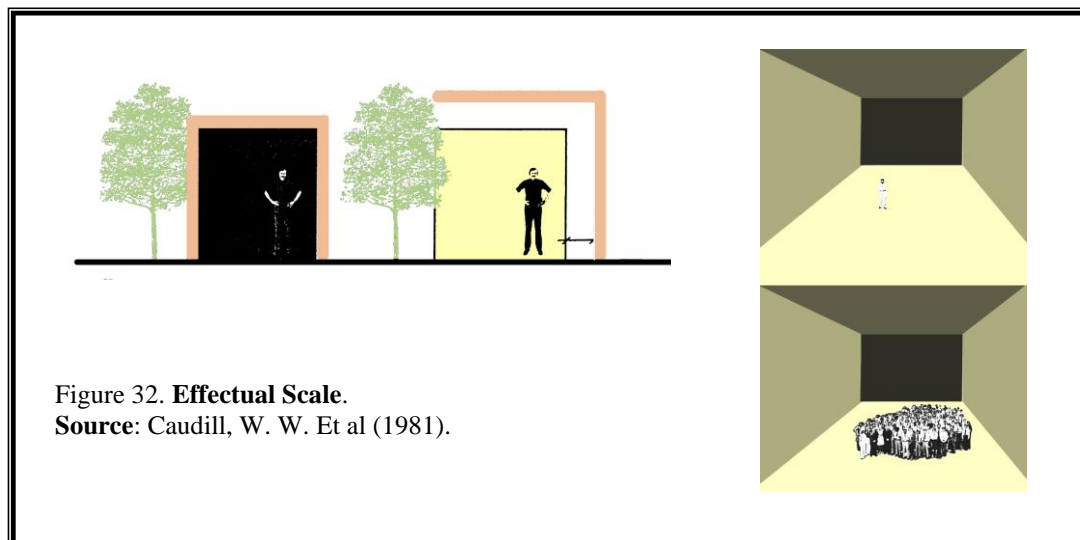
an everlasting image. He notes the beautiful proportions and the superb workmanship, but he's particularly cognizant of the impressive size of this ancient Greek temple. It's the physical scale of the building that sticks in his mind. If the same person sees another Parthenon with exactly the same proportions, the same material, but only half the size of the original -a different physical scale- his experience would be drastically different. He will know that it is an imitation, a copy of the real thing. It's bad to him because he associated it with the real thing where the size is so important. Associative scale comes into play. If the person had never seen the original Parthenon, he might

have liked the half-size version. This is what is meant by *"associative scale is determined by precedent"*.

### **- Effectual Scale:**

Effectual scale is psychological. A building can be big enough to do its job (satisfying the physical scale); its size can be historically correct (satisfying the associative scale); but what about the psychological aspect of size?

Consider the example shown in fig. (32). The diagram on the left shows a windowless space. It feels small. Put glass on one side, as illustrated, and it feels much larger, although physically it isn't. Sometimes kitchens would be only 6 feet (1.8 m) wide, but continuous glass was used the length of the kitchen above the countertop and extended to the ceiling. The kitchen will feel wider. Also a room may feel out of scale for one person and for 100 persons may be about the right size. Effectual scale depends on the person and on the specific time he or she experiences the space. Since architecture is one person's individual experience, effectual scale is as real to that person as physical scale. Effectual scale is psychological.



### **b- Proportion**

Proportion is "*the relation of one part to another or to the whole*"<sup>28</sup>, also "*the ratio or comparison of different parts of the composition*"<sup>29</sup>. In many of the well-developed phases of the history of architecture, attention has been paid to the related notions that systems of proportion will offer helpful guides to artful buildings and that users of architecture will somehow perceive systematically proportioned buildings as being superior<sup>30</sup>.

According to Abercrombie (1984) *Architecture as art*, all types of proportions fall within one or a combination of four categories: those concerned with music, age, nature, and arithmetic<sup>31</sup>. We could call them *musical proportions*, *historical proportions*, *natural proportions*, and *arithmetic proportions*.

### **- Musical Proportions:**

One of the most durable categories of proportioning systems is of those proposed because of their musical analogies. Proponents of such systems have observed the simple mathematical relationships in the lengths of strings and the lengths of vibrating air columns in musical instruments, relationships that combine to produce pitch, and they have concluded that such relationships must look as harmonious as they sound.

As Pythagoras discovered, strings in the ratio of 3 to 2 units of length, bowed or plucked together, do produce the musical interval called a Fifth; strings in the ratio of 2 to 1 produce an octave. The ratios of 3:2 or 2:1 were used thoroughly in architecture.

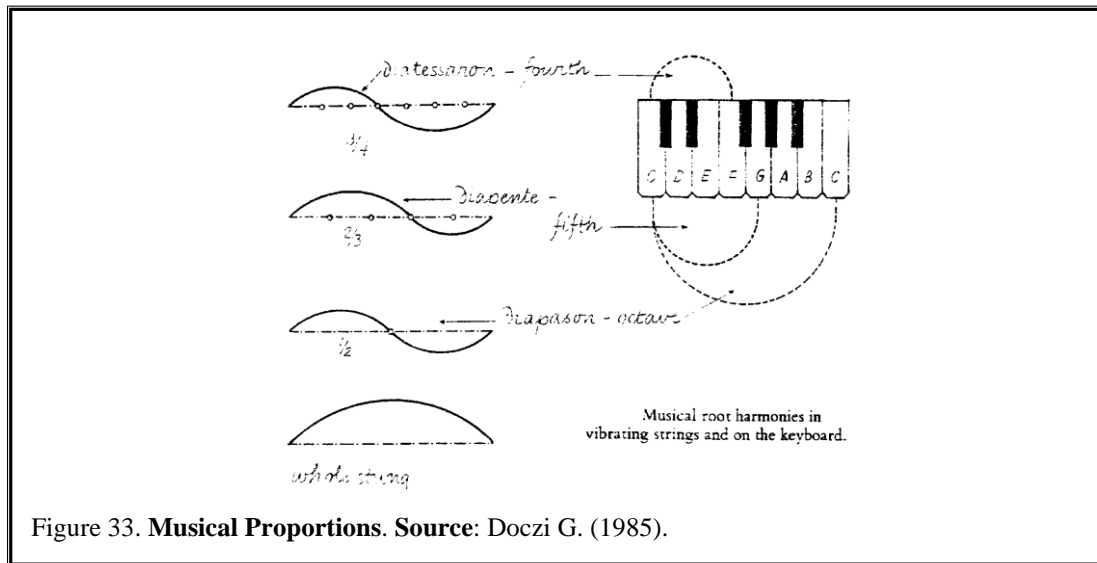
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<sup>28</sup>Wilson, F. Et al. (1990), op cit., p 237.

<sup>29</sup>Smithies, K. W., (1981), op cit., p 7.

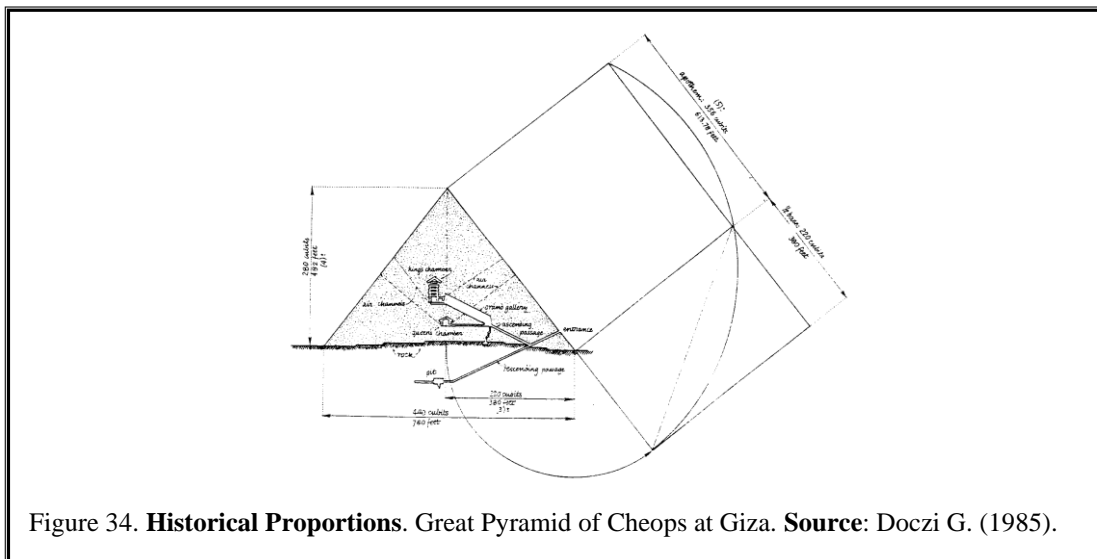
<sup>30</sup>Abercrombie, S. (1984), *Architecture as Art*, Harper & Row, Publishers, New York, p 62.

<sup>31</sup> Abercrombie, S. (1984), op cit., p 67.



### - Historical Proportions:

A second category of proportioning systems purports to disclose the secrets of the ancients. The Egyptian pyramids and the Parthenon have been the most frequent sources of efforts to establish the ancient use of proportion.

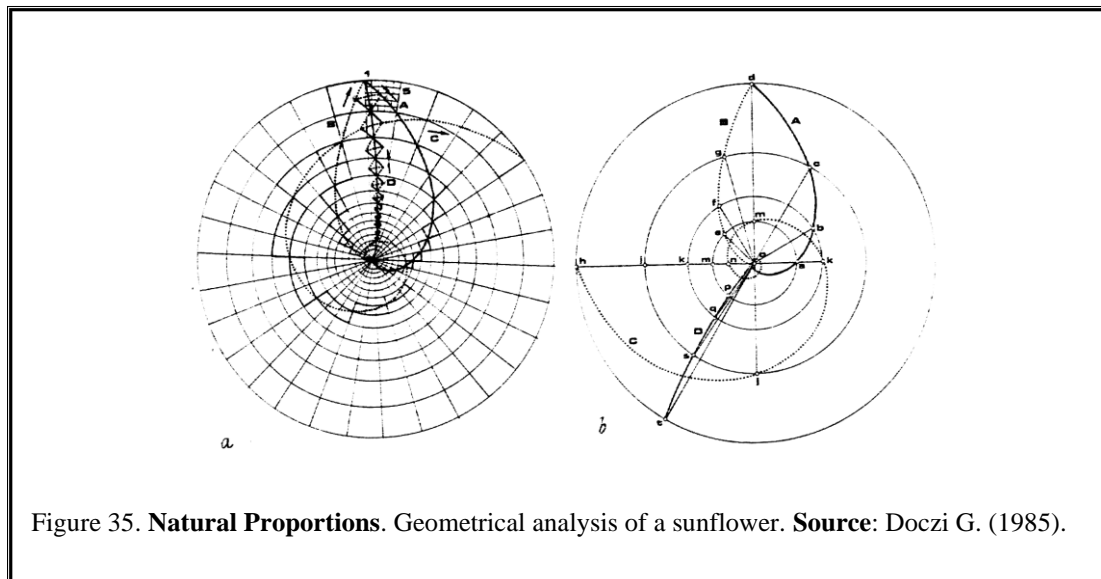


An early example of the disclosure of ancient secrets was the recording, by the Roman author and architect Vitruvius, of an elaborate series of Greek proportioning rules.

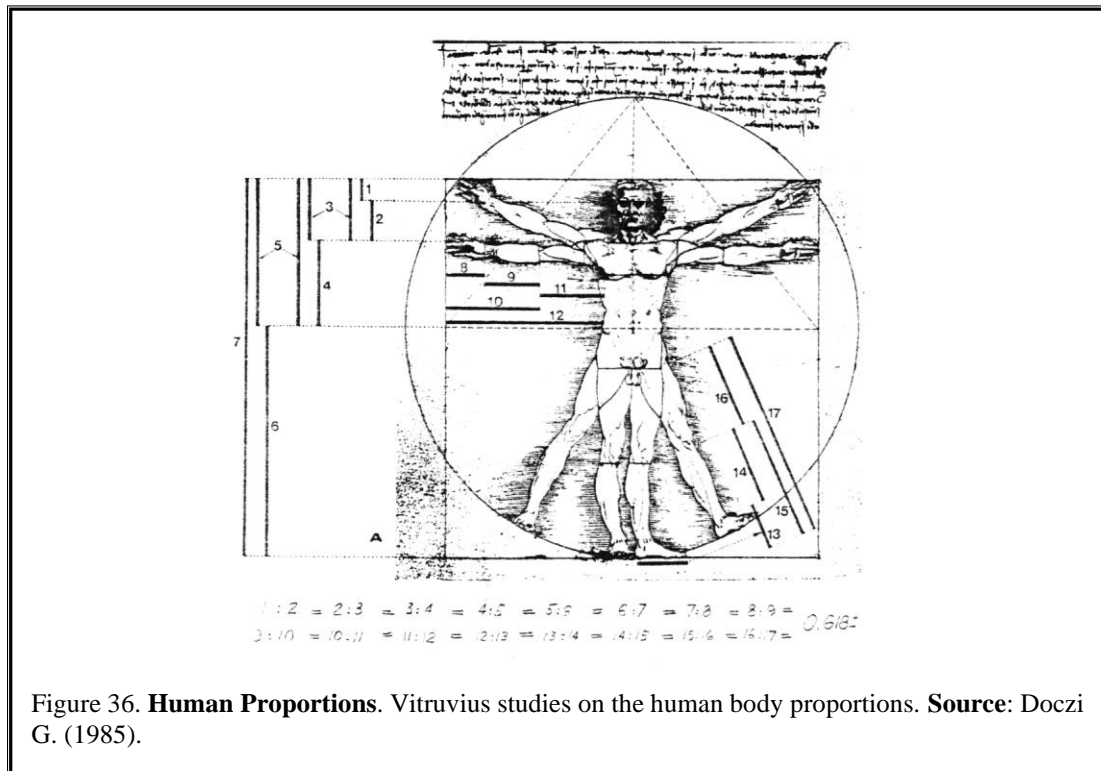
### **- Natural Proportions:**

This type is based on the assumption that the principles structuring nature inevitably produce beautiful results. Systems of proportion can be detected in such natural wonders as the intersecting curves on the head of the sunflower or the geometry of a snow crystal.

One subdirectory of the nature school is the search for a system of proportion in man himself. According to this school, an ideal man is beautiful to mankind, or otherwise the users of architecture. Further, the very use of architecture entails direct contact between buildings and bodies; the width of stair treads, the height of doorknobs, and a thousand other dimensional aspects of a building necessarily relate to the dimensions of man.

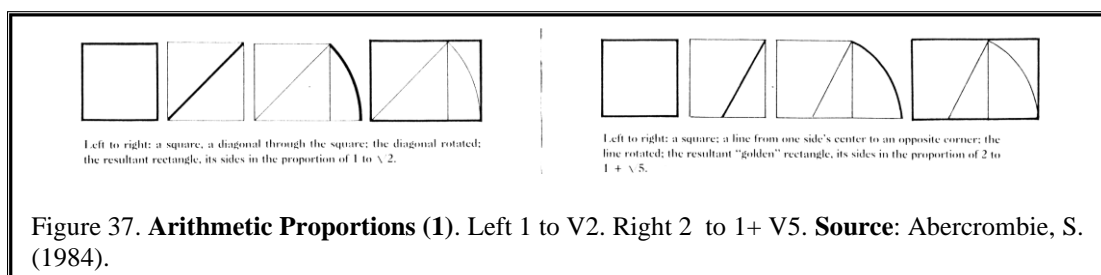


Vitruvius was probably the first who looked seriously at man's body as a source of architectural proportion. He suggested that the Greek orders were designed to correspond to different physical types—the Doric to a male, the ionic to a female. Other studies by Vitruvius could be seen in fig. (36)



### **- Arithmetic Proportions:**

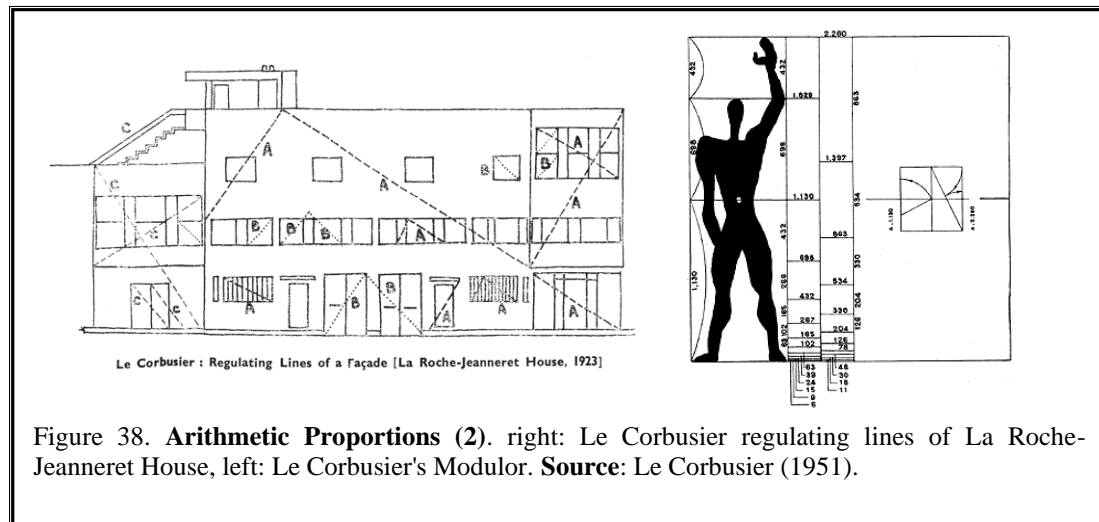
This type is inseparable from the other three categories; it is the group of proportioning systems that find justification in their own arithmetic.



The simplest relationship of one to two can be considered valuable as a proportioning tool, not because it is analogous to the musical octave, but because of the facts that one times two equals two and that one plus one equals two. The geometric application of this arithmetic would give us two shapes: the square and the

double square. Other arithmetical systems are more complex and two of them are of particular importance in the theory of proportions. They are shown in fig. (37).

We must also mention the most famous proportioning system: Le Corbusier's *Modulor*, which is based on the golden rectangles and the golden section.



### 5-3-3 Function:

Schulz calls this component *the building task*. It is divided according to him into four main elements: *physical control*, *functional frame*, *social milieu*, and *cultural symbolization*<sup>32</sup>. It is obvious that we are here concerned with the physical description of the building, all other functions of the product such as social or symbolic will appear simultaneously by investigating the indices of values on each element. For example when studying social values on the activities spaces of a product, one might find spaces providing social experience which is not stated in the functional requirements or the program, but it is according to the architect's point of view. This social dimension could not appear in another product performing functionally in the same practical way. We will divide the function component of the

<sup>32</sup>Norberg-Schulz, C. (1965), op cit., p 112-130.

architectural product into two elements: *providing spaces for activities* and *physical control of the environment*.

In the following section we will explain what is meant by *providing spaces for activities* and the *physical control of the environment*.

### 5-3-3-1 Providing Spaces for Activities:

*Commoditas* in Vitruvius architectural theory represents in fact this element of the functional component. It is defined as "the appropriate spatial accommodation" and it means the building performance of its functions by providing spaces for human functions and activities<sup>33</sup>.

Schulz calls this component *Functional Frame*, and he defines it as "*the physical aspects of the actions*". According to him, a building is determined by the actions which take place within its walls and a certain number of persons or users need a practical architectural frame for their actions<sup>34</sup>.

In his *Functional Frame*, Schulz does not only imply the needed spaces for activities but also their organization or mutual relations. Schulz said about this matter:

*A number of 'action-places' have to be interconnected. When we describe the functional aspect of the building task, these connections are usually treated first. By means of topological diagrams where the action-places are represented by circles or rectangles, and the connections as joining lines, the functional structure may be analyzed...the directions of the connections are also important, as the functions form series and ramifications which determine the functional frame.*<sup>35</sup>

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<sup>33</sup>Mofid, R. (2000), op cit., p61.

<sup>34</sup>Norberg-Schulz, C. (1965), op cit., p 113.

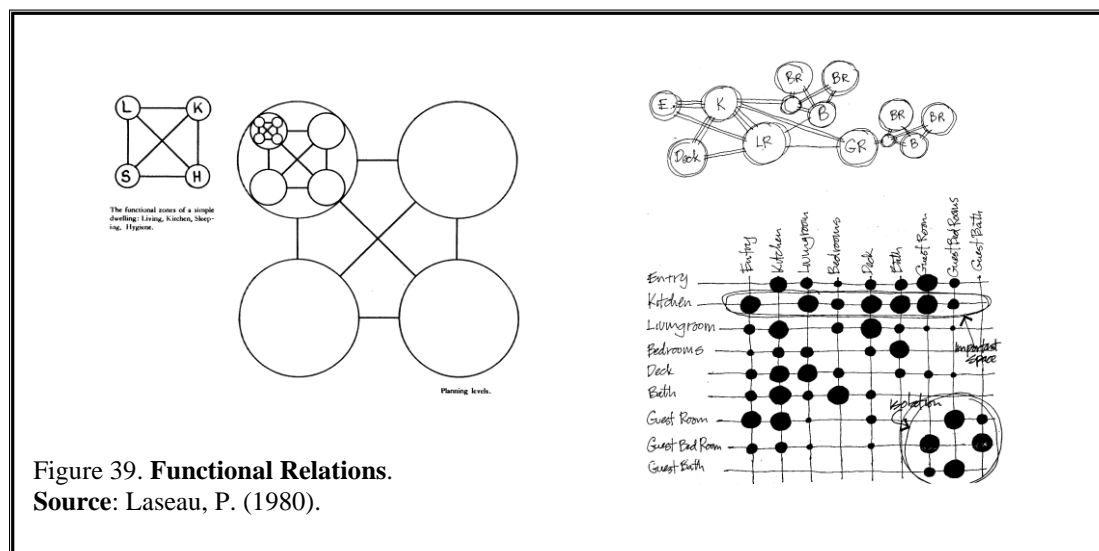
<sup>35</sup>Norberg-Schulz, C. (1965), op cit., p 114.



In addition -as it was pointed out in the previous chapter- Abercrombie divides the building function into:

*The general function of sheltering, the more specific accommodation of particular activities, the accommodation of circulation among those activities, the mechanical function, the acoustic function (for some building types), the structural function, the constructional function, and the function of a building in its environment<sup>36</sup>.*

The first three functions could be grouped into providing spaces for activities and their functional relationships (fig. 39).



It can be concluded that the element of *providing spaces for activities* in the functional component may be divided into the *existence of the needed spaces* and *their functional relationships*.

### **5-3-3-2 Physical Control of the Environment:**

Acoustics, illumination, heating, and air-conditioning represent some of the environmental factors of the product. Schulz distinguishes between the control of:<sup>37</sup>

Abercrombie, S. (1984), op cit., p 105.<sup>36</sup>

<sup>37</sup> Norberg-Schulz, C. (1965), op cit., p 113.

Climate (air, humidity, temperature, wind, rainfall etc.)

Light

Sound

Smell

Things (dust, smoke, insects, animals, persons)

(Radio-activity).

The building could control the environment through the abilities of the used materials to insulate against cold, noise, humidity, etc. We also develop mechanical aids for the creation of artificial climates (ventilation, heating, illumination, etc.). In addition, Schulz suggests studying the environmental control (or *physical control* as he names it) as an *exchange of energies*. To permit this, he introduced the concepts *filter*, *connector*, *barrier* and *switch*. An opaque wall thus serves as a filter to heat and cold, and as a barrier to light. Doors and windows have the character of switches, because they can stop or connect at will. His exact words are:

*We define a 'connector' as a means to establish a direct physical connection, a 'filter' as a means to make the connection indirect (controlled), a 'switch' as a regulating connector, and a 'barrier' as a separating element...these filters transform the existing energies into the desired ones.*<sup>38</sup>

According to Caudill et al there is an interaction between *Site*, *Light*, and *Building* and these three elements go together to make up the physical environment. The building must be shaped in a way to control the two other elements. Site depends on its location, size, topography, and climate whilst light depends on natural and artificial illumination. Sun behavior and how buildings should behave under the sun should be considered, also the need of direct or indirect lighting should be considered<sup>39</sup>.

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Schulz, C. (1965), op cit., 113.-Norberg<sup>38</sup>

<sup>39</sup> Caudill, W. W. Et al (1981), op cit., p 89.

Broadbent (1973) defines the environmental control of the building as "*the modification of the indigenous climate at a particular place so that certain human activities can be carried out conveniently and in comfort.*"<sup>40</sup>

And according to him this will require an external envelope which separates adequately the internal ambience from the external environment in terms of: ***heat control, light control, sound control, smell control***<sup>41</sup>.

***Heat control*** will involve the thermal capacity of the building fabric itself. Mass (or heavy planar) construction will absorb heat from the environment and from the heating system. It will thus act as a 'thermal flywheel'; temperature swings will be slow and relatively small. Light and dry construction will have a low thermal capacity; heat absorbed from the environment will be absorbed by the mass of air within the building; there will be no 'thermal flywheel' effect, thus temperature swings will be rapid and large. Such construction will require extensive, quickly adjustable and rapidly responding heating and cooling plants. Heat control will also require: **(a) control of heat loss** by the use of insulating materials in the external envelope and small, or double glazed, windows; **(b) control of solar heat gain** by suggesting that unshaded windows in south facing elevations should not exceed fifteen per cent of the total wall area. Where larger windows are used, various expedients may be used, such as screens, louvers, projecting fins, and canopies.

***Light control*** will involve a carefully selected balance between natural and artificial lighting. It will also involve control of sky glare, solar glare, solar heat gain, and external noise. Where windows are used for illumination, their undesirable effects can be controlled by louvers, canopies, etc., by deep splayed reveals reflecting daylight into the room, by use of windows on adjacent walls, views of ground and buildings outside (rather than open sky) and by light coloured surfaces within the room

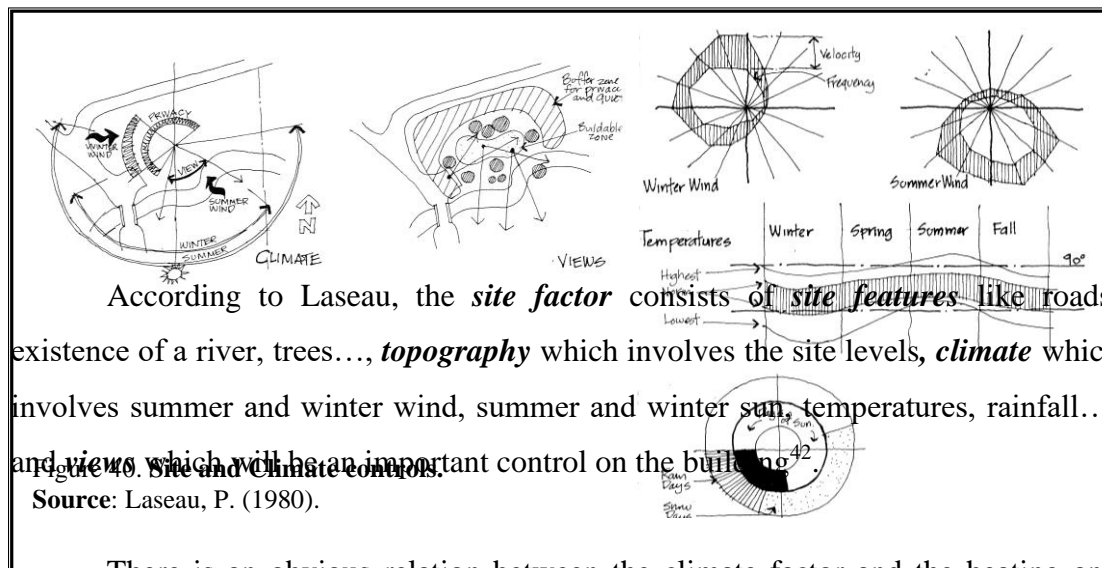
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<sup>40</sup>Broadbent, G. (1973), op cit., p155.

<sup>41</sup> Broadbent, G. (1973), op cit., p 153-155.

**Sound control** will involve siting the building as far as possible from external noise sources; use of screen walls and, to some extent, planting; use of heavy external envelope (mass or planar) which encloses the building completely, including the roof; complete sealing of all air paths between sound source and activity to be protected

**Smell control** will involve complete sealing of all air paths between smell source and activity to be protected. If the provision for sound control is adequate then adequate smell control will be achieved. If this is not possible then some form of air extraction may be used.



There is an obvious relation between the climate factor and the heating and lighting controls, but they are not the same. The temperature and the natural light in the climate factor are taken into consideration when studying the other two, but climate includes humidity, wind, rainfall, air, etc. therefore we must consider it as a separate environmental control.

<sup>42</sup>Laseau, P. (1980), op cit.

We could conclude from Schulz, Caudill et al, Broadbent, and Laseau that the *physical control of the environment* of the building includes seven controls:

- 1- **Site control:** site features, topography, and views.
- 2- **Climate control:** sun, wind, humidity, ventilation, temperature, and rainfall.
- 3- **Heat control:** heat loss, solar gain, and thermal comfort.
- 4- **Light control:** natural light, artificial light, and glare.
- 5- **Sound control:** controlling external noise sources, the organization of zones according to their need for calm or noise.
- 6- **Smell control:** sealing between smell source and activity to be protected, air extraction.
- 7- **Things control:** dust, smoke, insects, animals, and persons.

#### **5-3-4 Structure:**

*Firmitas* or structural stability in Vitruvius theory represents this component of the architectural product.<sup>43</sup>

It is represented by Schulz in his *architectural totality* by the *technical dimension* and it consists of **technical systems** and **materials**.

*The technical dimension is analyzed by describing how technical elements are made from materials and organized into technical systems. The capacity of such systems has to be investigated, that is, their ability to realize building tasks.*<sup>44</sup>

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<sup>43</sup>Mofid, R. (2000), op cit., p61.

<sup>44</sup>Norberg-Schulz, C. (1965), op cit., 106.

On the other hand, Smithes calls this component *stability*. According to him, stability is concerned with *structural system*, *constructional system*, and *materials*<sup>45</sup>.

According to Abercrombie, two of the most fundamental functions of the building are the *structural function* and the *constructional function*; the latter includes *materials* and their properties<sup>46</sup>.

We tend to divide the structural component on the basis of Smithes' analysis because it includes Schulz's and Abercrombie's analysis. Therefore, structure will be divided into *structural system*, *constructional system*, and *materials*.

#### **5-3-4-1 Structural System:**

Structural system is "*the building's basic act of supporting itself and its content*"<sup>47</sup>. The building structure is the building skeleton. It explains the building form and demonstrates why the building stands. It gives comfort. Structural elements take the loads. Their size, geometry, and connections make forces visible and understandable. The structural systems may be primary, secondary and tertiary structures, each adding levels of assurance<sup>48</sup>.

A summary of the historical development of structural systems could be mentioned on the following (fig. 41).<sup>49</sup>

Ancient Egyptians used large stones (A). *The beam* came into being. Spans were limited to the sizes of the stones which could be found and lifted into place.

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<sup>45</sup>Smithies, K. W. (1981), op cit., p 162.

<sup>46</sup>Abercrombie, S. (1984), op cit., p 105.

<sup>47</sup> Abercrombie, S. (1984), op cit., p 107.

<sup>48</sup> Wilson, F. Et al. (1990), op cit., p 102.

<sup>49</sup> Caudill, W. W. Et al (1981), op cit., p 53.

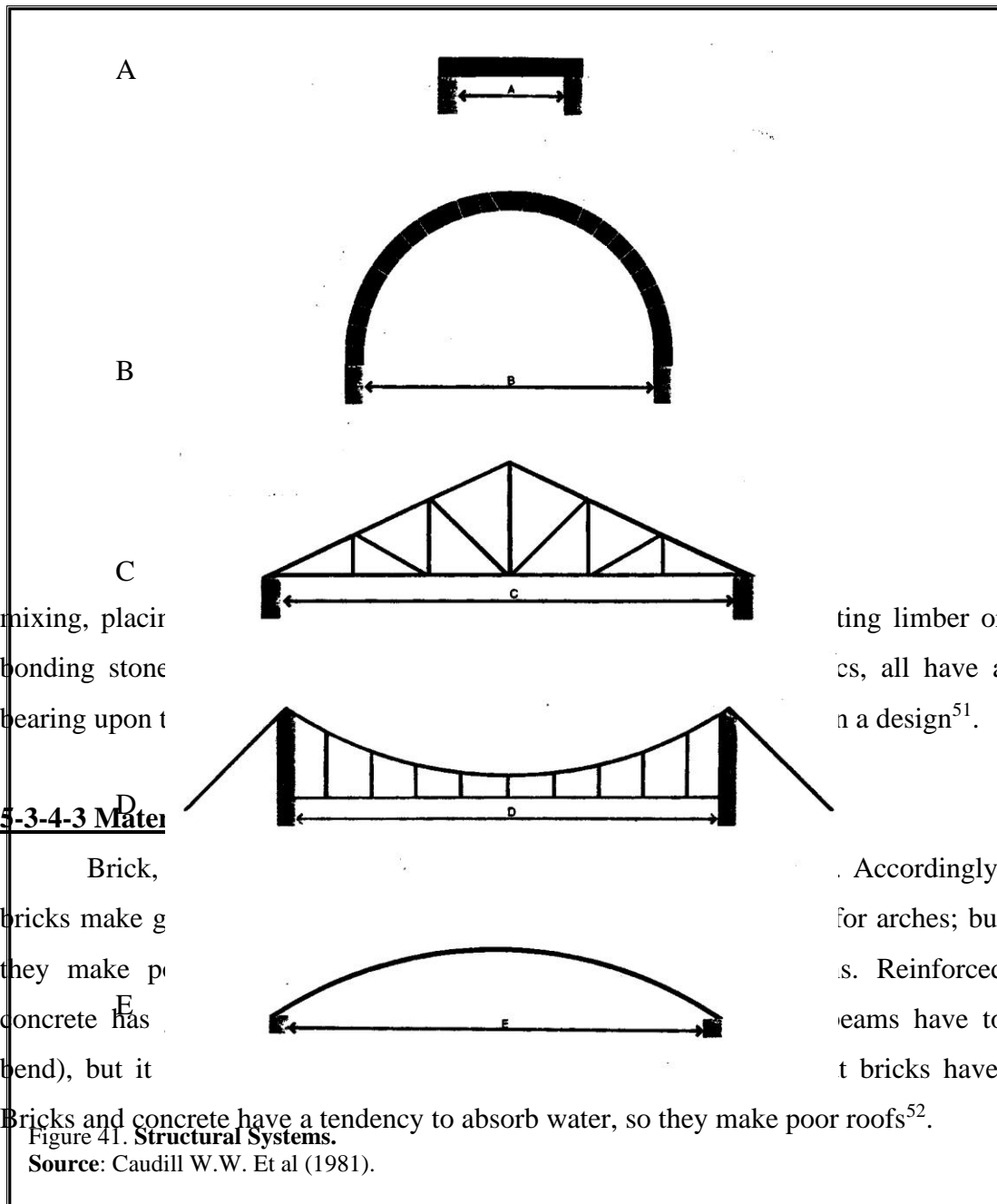
Centuries later it has been discovered how to span larger spaces with smaller stones (B). The *arch* was invented, which led to the *vault*, which led to the *dome*. Arch technology reached its height during the era of the Gothic churches. About the same time, it has been discovered that tying short sticks together in triangular arrangements will span larger spaces (C). The *truss* was invented. The battle of capturing even larger volumes of space requiring greater spans continued until this century when structural engineers perfected cable suspension structures (D). *Suspension structures*, such as the Golden Gate Bridge which represents the advanced technology of this age, came into being. The suspension building arrived. The latest innovation is encapsulating space (E). *Air structures* are capable of spanning great spaces economically. Like balloons, air pressure holds up the roof.

#### **5-3-4-2 Constructional System:**

Let us not confuse between structural and constructional systems. The latter deals with the way that elements are assembled and fitted together to form the building<sup>50</sup>. A most important part of construction is concerned with the making,

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<sup>50</sup>Abercrombie, S. (1984), op cit., p 112-113.



Besides their *functional properties*, materials possess *formal properties*, such as color, texture, and size, which determine with the functional ones the criteria upon which the architect makes his decision on choosing certain materials instead of others.

<sup>51</sup>Smithies, K. W. (1981), op cit., p 48.

<sup>52</sup>Caudill, W. W. Et al (1981), op cit., p 57.



Also we must not forget the economical criterion, meaning the cost of each material and of its transportation.

### 5-3-5 Space:

The fundamental tenet of Kant in his *Critique of Pure Reason* was "*all our awareness is grounded in spatial experience*".<sup>53</sup>

According to Tschumi, space in architecture is not just a physical three-dimensional object, it encloses activities, enables movement, and generates events. He classifies space into three types: *mental space*, *physical space*, and *social space*:

*Distinctions can be made between mental, physical, and social space, or, alternatively between language, matter, and body... They correspond to real and convenient categories of analysis "conceived", "perceived", and "experienced".*<sup>54</sup>

In this part, we are mainly concerned with the physical analysis of the architectural product; then, by investigating the main indices of Spranger's six values on each component, all other dimensions will appear consequently. For instance, when investigating and scoring the indices of values in the space component and we find social indices, it acquires then a social dimension besides its physical one. Therefore, the following will only involve the *physical space*.

According to Schulz, space is defined by its topological-geometrical *form*, by the placing of the *openings*, and by the treatment of the *boundaries*<sup>55</sup>. Ching agrees with Schulz. According to him, physical space consists of: *dimensions* which determine its proportion and scale; *shape* which determine its definition; *surface*

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<sup>53</sup> Wilson, C. S. (1992), *Architectural Reflections, Studies in the Philosophy and Practice of Architecture*, Butterworth Architecture, Oxford, p 24.

<sup>54</sup>Tschumi, B. (1996), in Mofid, R. (2000), op cit., p62.

<sup>55</sup> Norberg-Schulz, C. (1965), op cit., 136-137.

which determine its color and texture; *openings* which determine enclosure, light, and view<sup>56</sup>.

We are concerned in space with its topological-geometrical form or shape, while surface and openings will be studied later in the *expression component* of the architectural product. In addition, we must not forget the 4<sup>th</sup> dimension in architecture, or, according to Giedion, *time-space*<sup>57</sup>.

To conclude, we may divide space into *physical structure* and *spatial sequence*.

### **5-3-5-1 Physical Structure:**

Walls and columns rise from foundations to enclose or define the limits of a space in the horizontal plane. All architecture is either *continuous wall* or *intermittent supports*. The *wall* may be five meters thick and made of granite blocks, or it may be a skin of transparent glass or plastic. *Intermittent support* in the form of columns indicates an enclosure of space but allows for interpenetration, for outside to become involved in inside and for inside to merge into outside. Enclosure is completed by roofs which, being the boundary between the architecture and infinite space<sup>58</sup>. Space could be classified on the basis of *closure* and *shape*.

#### **a- Classification According to Closure:<sup>59</sup>**

According to Allsopp enclosure is space. He classifies closure into two kinds: *enclosure of space* and *enclosure of territory*, or in other words *internal space* and *external space*. A room is an internal space, a patio or terrace is an external space. Enclosure of space creates a difference between inside and outside. To avoid

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<sup>56</sup>Ching, D. K. (1979), op cit., p 175.

<sup>57</sup>Giedion, S. (1941), *Space-Time and Architecture: The Growth of a New Tradition*, in in Mofid, R. (2000), op cit. p76.

<sup>58</sup>Allsopp, B. (1977), op cit., p 51.

<sup>59</sup>Allsopp, B. (1977), op cit., p 51-52.

ambiguity anything with a roof is inside, anything without a roof is outside. Thus a courtyard is outside and a loggia is inside. External space is enclosed by anything which visually separates it from other external spaces; a wall, hedge, fence, parapet.

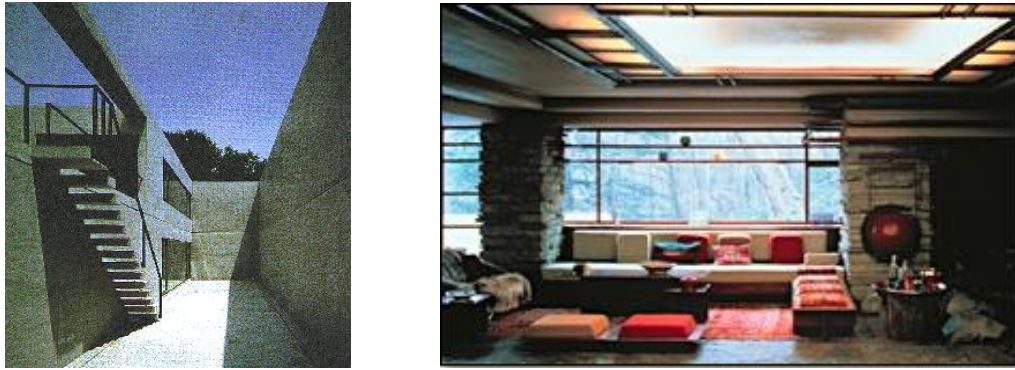


Figure 42. **External and Internal Spaces.** Left, External Space, Nakayama House, Tadao Ando. **Source:** [www.archINFORM.net](http://www.archINFORM.net). Right, Internal Space, Falling Water House, Frank Lloyd Wright. **Source:** [www.homepage.mac.com/architectuemasters](http://www.homepage.mac.com/architectuemasters).

### **b- Classification According to Shape:** <sup>60</sup>

There are two kinds of spaces: *static space* and *dynamic space*.

*Static space* is confined space with no movement. Space has barriers on four sides.

When experiencing static space, you may feel that you are inside a box.

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<sup>60</sup> Caudill, W. W. Et al (1981), op cit., p 18-20.



On the other hand, by experiencing *dynamic space*, there seems to be a fluid quality about it. The outside flows in and the inside flows out. The space extends up, down, or aside to other spaces, and a small space could appear to be larger than it really is and the feeling of containment is greatly lessened<sup>61</sup>. It's important to remember that architects design space as well as form. They shape it and give it quality.

### **5-3-5-2 Spatial Sequence:**

Giedion was the first who mentioned the importance of the 4<sup>th</sup> dimension in architecture, or *space-time*. He approaches space as an experience acquired by moving through a sequence of spaces<sup>62</sup>. Because since we move in *space* through a *sequence of spaces*, we experience a space in relation to where we have been and where we anticipate going<sup>63</sup>.

Architects have dealt intuitively with adjoining volumes of space to provide visual pleasure through spatial contrast. The experience of walking through a low-

<sup>61</sup>Raafat, A. (1997), op cit., p 320.

<sup>62</sup>Collins, P. (1965), Changing Ideals in Modern Architecture, Faber and Faber, London, p 289.

<sup>63</sup>Ching, D. K. (1979), op cit., p 247.

ceiling area (the lower, the better) before entering a much larger, higher space. This contrast sufficiently exaggerates the perception of the space change to cause visual shock—at least that first time. Most people love this kind of spatial sequence—the surprise it offers and the relief from monotony<sup>64</sup>.

### **5-3-6 Expression:**

Expression represents the surface of the masses. According to Schulz, surface plays an independent and influential role in the formal organization; and he defines it as "*a limited surface without thickness but with relief properties.*"<sup>65</sup> In expression, we may distinguish between *color*, *texture*, *porosity*, and *ornaments*.

#### **5-3-6-1 Color:**

Every building has color. We mean by *color* not only the primary hues but also all the neutral tones from white through gray to black and all mixtures. In architecture, color does not function alone, but it is a part of the building form, and it has many uses, for example to emphasize the character of a building, to accentuate its form and material, or to elucidate its divisions<sup>66</sup>.

In this section we will separate color only theoretically as an independent component.

Originally, color was no problem at all; it came of itself. Man used the materials which nature supplied. The walls of his dwelling might be of hard-packed mud dug up on the building site or of stones gathered nearby. The result was a structure in nature's own colors. Primitive man decorated his neutral-colored wooden cot or adobe hut by festooning it with garlands of flowers or by covering the gray walls with colored fabrics. Later, man discovered how to make the materials more

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<sup>64</sup>Caudill, W. W. Et al (1981), op cit., p 20.

<sup>65</sup> Norberg-Schulz, C. (1965), op cit., p 137.

<sup>66</sup>Robertson, H. (1924), *The Principles of Architectural Composition*, The Architectural Press, Westminster, p 215.

durable than they were from nature's hand, and new colors began to appear. By baking clay we get red and yellow bricks instead of the gray, sun-dried variety. By tarring wood we secure a deep black. Through such processes we are given a choice of several colors. From the moment the color of building materials was controlled by man instead of produced by nature a new step in architectural design had been achieved<sup>67</sup>. Three types of color have appeared: environmental colors, expressive colors, and symbolic colors<sup>68</sup>.

**a- Types of color:**

We can generally distinguish -and in architecture in special- between three types of colors: *environmental colors*, *expressive colors*, and *symbolic colors*. A brief explanation for each will be stated in the following.

**- Environmental Color:**

In this type colors of the environment dominate the building as if it is a part of the nature. The main principle of using environmental or natural color is to transform the visual centrality of the building into its surroundings.

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<sup>67</sup>Robertson, H. (1924), op cit., p 216-217.

<sup>68</sup>Raafat, A. (1997), op cit., p 284-288.



Figure 44. **Environmental Colors.** Hassan Fathy.  
Source: [www.](http://www.)

### **- Expressive Color:**

Colors are sometimes used to express the building's individuality, to emphasize some important parts of the building's form, or as a mean of attraction. In addition, it may be used in the form of a pallet as if the building is a painting.



Figure 45. **Expressive Colors.** La Tourette, Le Corbusier.  
Source: [www.homepage.mac.com/architecturemasters.](http://www.homepage.mac.com/architecturemasters.)

### **- Symbolic Color:**

One of the most important uses of color is his symbolic role. For example, yellow is used to symbolize gold or Sun, white to symbolize silver or Moon, red to symbolize iron or Mars...etc. Furthermore, yellow and red are symbols of anger, blue of melancholy, green blue of coolness, yellow green of hope. In architecture, yellow is used as a symbol of earth, blue as a symbol of sky or water...etc.



Figure 46. **Symbolic Colors.** Dixwell Fire Station, Robert Venturi. Yellow symbol of earth. **Source:** www.GreatBuilding.com.

### **b- Qualities of Color:**<sup>69</sup>

There are three qualities of color: *hue*, *value*, and *intensity*. We shall define them in the following.

#### **- Hue:**

It is the quality by which we recognize one color from another, and which we suggest by its name. This we call *hue*. The apple is red; red is the hue (name) of the color. " Hue equals Name." We can alter the hue of a color by mixing another color with it. If we mix red pigment with yellow pigment, we produce orange pigment; this is a change of hue.

#### **- Value:**

The quality by which we discern lightness or darkness in a color is called *value*. It is by value that we are able to discriminate between light red and dark red. If we mix black or white (or water, in the case of watercolor pigments) with a color, we change its value but not its hue. The value of a color is sometimes termed *brightness* or *lightness*.

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<sup>69</sup>Guptill, A. L. (1966), *Color Manual for Artists*, Reinhold Publishing Corporation, New York, p 23-25.

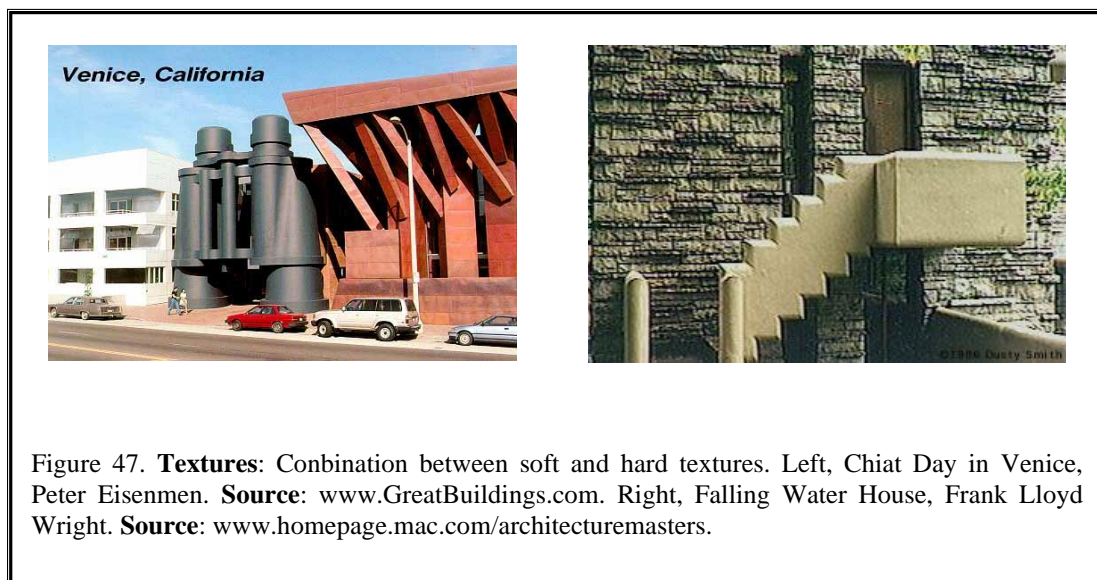


### **- Intensity:**

Some colors are strong and some weak. The quality by which we distinguish strength or weakness in a color is called *intensity*. If we remark that an object is colorful or strong in color, we refer to its intensity, This quality is also called *chroma* or *saturation*.

### **5-3-6-2 Texture:**

One could not entirely differentiate between color and texture and their impressions unless theoretically.



According to Ching, "*Texture is the surface characteristics of a form*", and affects both the tactile and light-reflective qualities of a form's surfaces<sup>70</sup>. Also it can make the form dissolve or may stress its concentration<sup>71</sup>.

But texture is not only the range from smooth to rough; it includes decoration and carving. In a large composition, or any design seen at a distance, larger elements can produce an effect of texture, whether they were materials, openings, or treatment

<sup>70</sup>Ching, D. K. (1979), op cit., p 49.

<sup>71</sup>Norberg-Schulz, C. (1965), op cit., p 135.

of surfaces<sup>72</sup>. In this product's component: *expression* we are concerned with the overall textural impression of the building's elements.

According to the formal dimension of texture, surfaces could reflect impressions like *hardness* or *softness*, *heaviness* or *lightness*, *tautness* or *slackness*. But most buildings consist of a combination of hard and soft, light and heavy, taut and slack, and of many kinds of surfaces<sup>73</sup>.

Besides its formal dimension, texture has a functional dimension. For example, there are surfaces that resist friction and chokes, impermeable and washable surfaces, surfaces that absorb or reflect temperature or sound...etc<sup>74</sup>

### **5-3-6-3 Porosity:**

Porosity is "*the ratio of openings' areas to the overall facades' surfaces.*" Also "*the ratio of openings' areas to the solid facades' surfaces*<sup>75</sup>."

*Porosity* is the scientific term of this architectural element, usually we refer to it as *openness and closeness*<sup>76</sup>. Porosity of any building may be an indicator of its function: the natural light, temperature, humidity, ventilation, sound, views, etc<sup>77</sup>. In addition, it may be an indicator of style like classical, modern, post-modern, vernacular...<sup>78</sup>

The closeness of a wall or mass obstructs our progress through space. Openness makes the surroundings accessible to inhabitants of a building and exposes

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<sup>72</sup>Smithies, K. W. (1981), op cit., p 6.

<sup>73</sup>Rusmussen, S. E. (1973), *Experiencing Architecture*, MIT Press, Cambridge, p 29.

<sup>74</sup>Raafat, A. (1997), op cit., p 265.

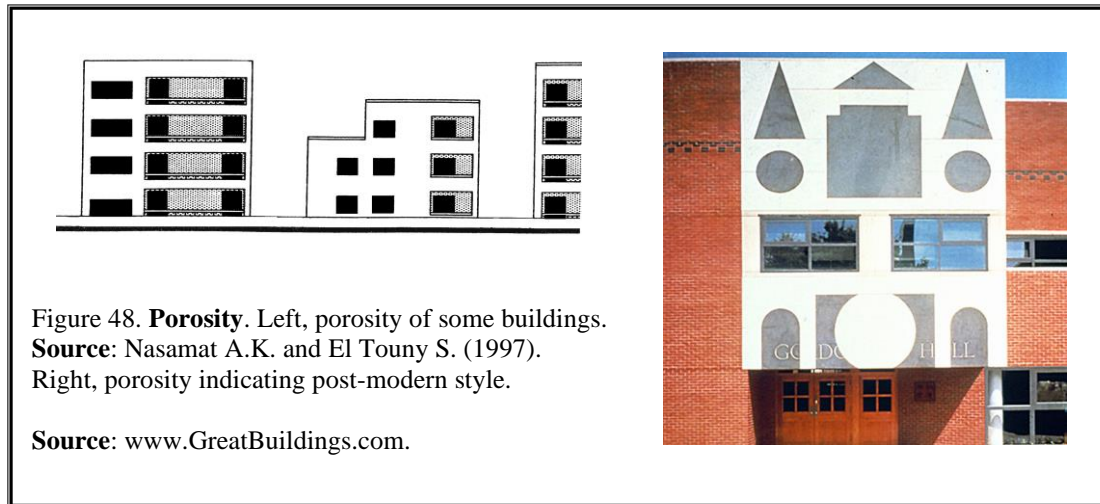
<sup>75</sup>Nasamat, A. K., and El Touny S. (1997), *Tissue and Character*, El Arabi Publishing, Cairo, p 246.

<sup>76</sup>Arnheim, R. (1977), op cit., p 225.

<sup>77</sup>Nassamat, A. K., and El Touny S. (1997), op cit., p 246.

<sup>78</sup>Arnheim, R. (1977), op cit., p 225.

them to intrusion from the outside. Openings mediate between the worlds separated by architectural barriers.



The openness and closeness of any particular building is experienced as part of this great environmental interplay between access and obstacle. A compact building devoid of openings will look much more forbidding when it stands amidst contrastingly open space than when it borders on a narrow street. Conversely, the outgoing openness of a Wright house would be conspicuously inappropriate if there were heavy stone walls next to it.

A building is thought of either as a closed container, into which holes are punched as needed, or it is a set of units added to one another where openings are what is left between them. Every architectural design dwells somewhere between these two extremes. In the first case a window or door interrupting the solid surface displays a positive shape of its own. Surrounded by large wall space which serves as *ground*, the opening stands out as *figure*, even though physically it is a hole, it has a positive dimension. In the opposite case, openings serve as ground. In a typical Frank Lloyd Wright house, we see an airy arrangement of horizontal slabs and uprights with plenty of space left open between them. It is essentially negative space, as neutral and nondescript as the surrounding outside. In fact, the building's openings are continuations of that outer space, reaching into the building, below the overhanging roofs and terraces and between the uprights. As Wright said, "*There is no longer any*

*sense in speaking of doors and windows.*" His openings are like those in a textile weave: they are what is left between the shapes.<sup>79</sup>

#### **5-3-6-4 Ornaments:**

The issue of ornament was and still is an argument that will never be solved. Whether to use ornament or not in architecture; and how to use it, only for delight or for emphasizing form, all these are arguments which will never end. The problem of ornaments appeared at the same time of the functionalism and the purism approaches during the end of the 19<sup>th</sup> century and the beginning of the 20<sup>th</sup> century. One of their principles was to reject all ornaments used in classic buildings and to think of purity and clarity.

According to Allsopp, ornament in architecture could have six roles.<sup>80</sup>

- 1- The pleasing qualities of the material used in building. Thus, for example, stones and timbers are chosen for their appearance as well as their structural utility.
- 2- Moldings, from a simple plinth or panel mould to a full classical cornice or the complex subtleties of a Gothic pier. Moldings are the punctuation of architecture. They are not arbitrary, any more than commas or points in a sentence, and paragraphs in an extended piece of prose.
- 3- The making of transitions between differing materials, between one structural element and another, most notably between a column and a lintel and at points of movement or vibration. The capital and the cover mould are archetypical of this kind of decoration.
- 4- The giving of emphasis without increasing size or proportion. Drawing attention to a main entrance, for example, without making it larger than is functionally necessary.

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<sup>79</sup> Arnheim, R. (1977), op cit., p 225-228.

<sup>80</sup> Allsopp, B. (1977), op cit., 36-37.

5- The giving of appropriate significance to a building, often by the use of symbols or architectural metaphors. Under this heading come mosaic floors, luxurious hangings and rich carpets, also the hygienic appearance of a hospital or the deliberate austerity of certain types of religious building, and similarly penitentiaries.

6- Purely for delight.

One of the mature attempts to approach ornaments was of Louis Sullivan. We can declare some of his reflections:

*A building which is truly a work of art (and I consider none other) is in its nature, essence and physical being an emotional expression. This being so, and I feel deeply that it is so, it must have, almost literally, a life. It follows from this living principle that an ornamented structure should be characterized by this quality, namely, that the same emotional impulse shall flow throughout harmoniously into its varied forms of expression - of which, while the mass-composition is the more profound, the decorative ornamentation is the more intense. Yet must both spring from the same source of feeling... the mass-composition and the decorative system of a structure should be separable from each other only in theory and for purposes of analytical study... An excellent and beautiful building may be designed that shall bear no ornament whatever; but I believe just as firmly that a decorated structure, harmoniously conceived, well considered, cannot be stripped of its system of ornament without destroying its individuality... It follows then, by the logic of growth, that a certain kind of ornament should appear on a certain kind of structure, just as a certain kind of leaf must appear on a certain kind of tree.<sup>81</sup>*

Also Frank Lloyd Wright agreed with Sullivan in his approach to ornament. Under the title *Integral Ornament at last!* In a few important pages Wright defined integral ornament as:

*The developed sense of the building as a whole or the manifest abstract pattern of structure itself. Interpreted. Integral ornament is simply structure-pattern made visibly articulate and seen in the building as it is seen articulate in the structure of the trees or a lily of the Fields.<sup>82</sup>*

<sup>81</sup> Sullivan L. (1892), Ornament in Architecture, in Form and Function, in Benton, t. Et al. Eds., Crosby Lockwood Staples, London, p 2-3.

<sup>82</sup> Arnheim, R. (1977), op cit., p 250.

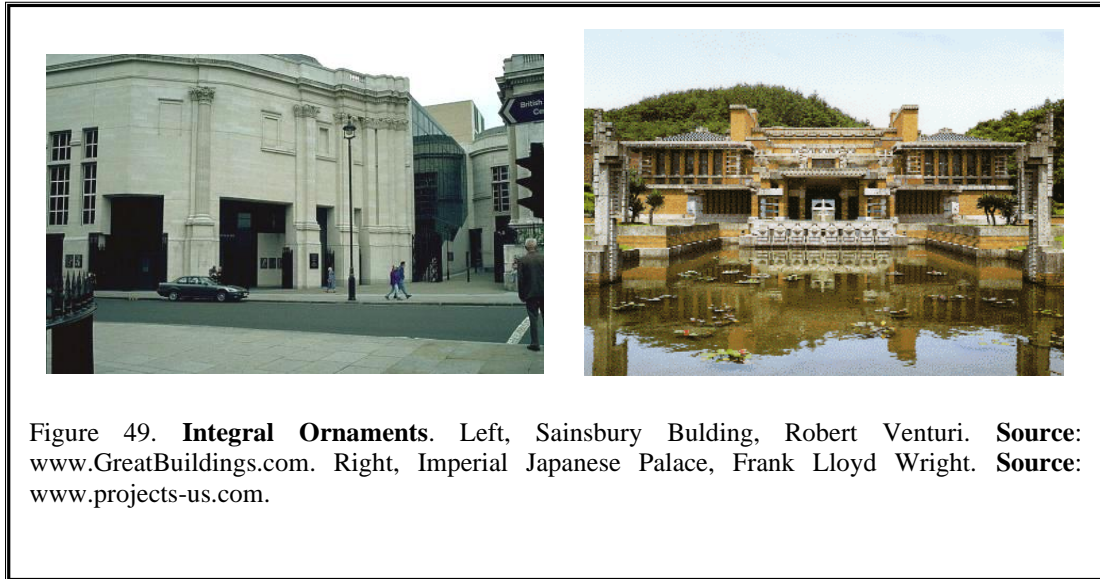


Figure 49. **Integral Ornaments.** Left, Sainsbury Building, Robert Venturi. **Source:** [www.GreatBuildings.com](http://www.GreatBuildings.com). Right, Imperial Japanese Palace, Frank Lloyd Wright. **Source:** [www.projects-us.com](http://www.projects-us.com).

But many architects enjoy ornament for its pure delight. Ornament can be, in their point of view, a pleasure in itself and can even bring architecture to life. Ornament, then, can be admirable in itself; in its relationship to the form beneath it, it can either obscure architecture or clarify it, either smother it or bring it to life.<sup>83</sup>

## **5-4 Conclusion:**

According to the review in chapter five, we have analyzed the architectural project into six main components: *Concept, Form, Function, Structure, Space,* and *Expression*. In this chapter, a more detailed analysis for the previous components was introduced for two reasons. First, to preserve accuracy when investigating and scoring each value indices in each component. This will not be reached unless a detailed analysis for each component into a group of sub-component is made in order to investigate these indices in each sub-component. Second, to study the main

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<sup>83</sup> Abercrombie, S. (1984), op cit., p 48.

characteristics and classifications of each component in order to facilitate the knowledge and assessment of the indices of values. The following will illustrate the chapter's results summarized in fig.50:

- **Concept** may be generated from one or more of three sources: **need variables, context variables, and form variables.**

- **Form** consists of two sub-components: **masses and relations.**

**Masses** are classified according to Caudill into: *plastic, skeletal, and planar masses.* Raafat classifies forms into *geometric form, organic form, sculptural form, and figurative form.*

**Relations:** Scale is classified into *physical scale, associative scale, and effectual scale.* Proportions are classified into *musical proportions, historical proportions, natural proportions, and arithmetic proportions.*

- **Function** consists of **providing spaces for activities:** *existence of the needed spaces and their functional relationships;* and **environmental controls:** *site control, climate control, heat control, light control, sound control, smell control, and things control.*

- **Structure** consists of three sub-components: **structural system, constructional system, and materials** which have *formal and functional* properties.

- **Space** consists of **structure of space and spatial sequence.**

The structure of space could be classified on the basis of *closure: internal and external space;* and *shape: static and dynamic shape.*

- **Expression** consists of **color, texture, porosity, and ornaments.**

There are three types of colors: *environmental colors, expressive colors, and symbolic colors.* *Texture is involved with hardness or softness, heaviness or lightness, tautness or slackness.* *Porosity could be an indicator of the building's function or style.* Ornaments are used for six reasons: the pleasing qualities of the material used in building, moldings from a simple plinth or panel mould to a full classical cornice or

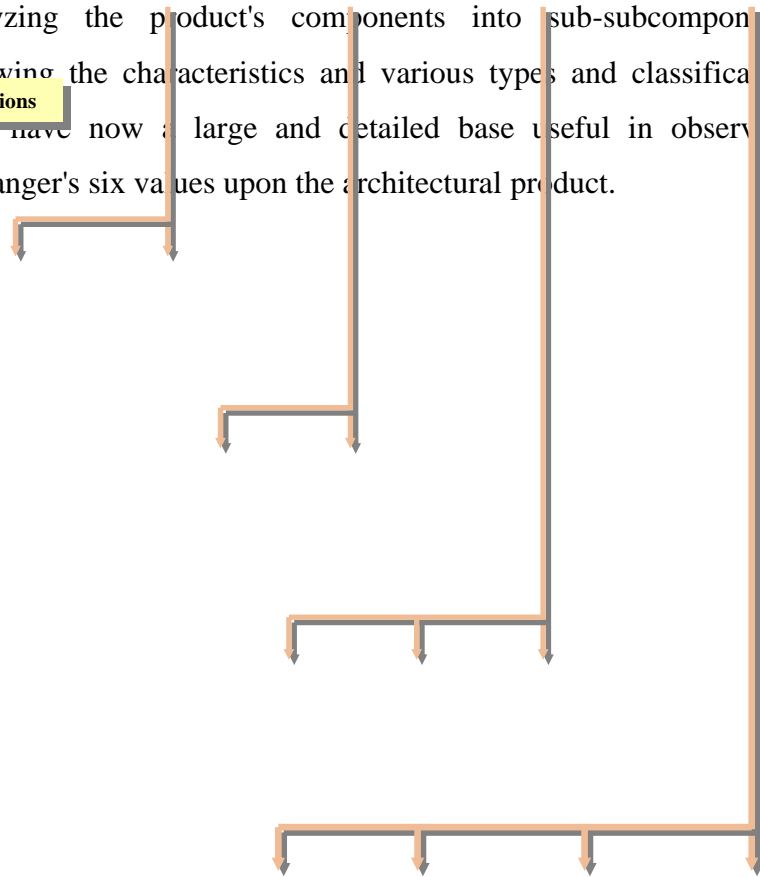
the complex subtleties of a Gothic pier, the making of transitions between differing materials, between one structural element and another, the giving of emphasis without increasing size or proportion, the giving of appropriate significance to a building, often by the use of symbols or architectural metaphors, or finally purely for delight.



After analyzing the product's components into sub-subcomponents or elements and knowing the characteristics and various types and classifications of each of them, we have now a large and detailed base useful in observing the implications of Spranger's six values upon the architectural product.

Masses

Relations



5-3-1

5-3-2

5-3-3

5-3-4

5-3-5

5-3-6

5-3-2-1

5-3-2-2



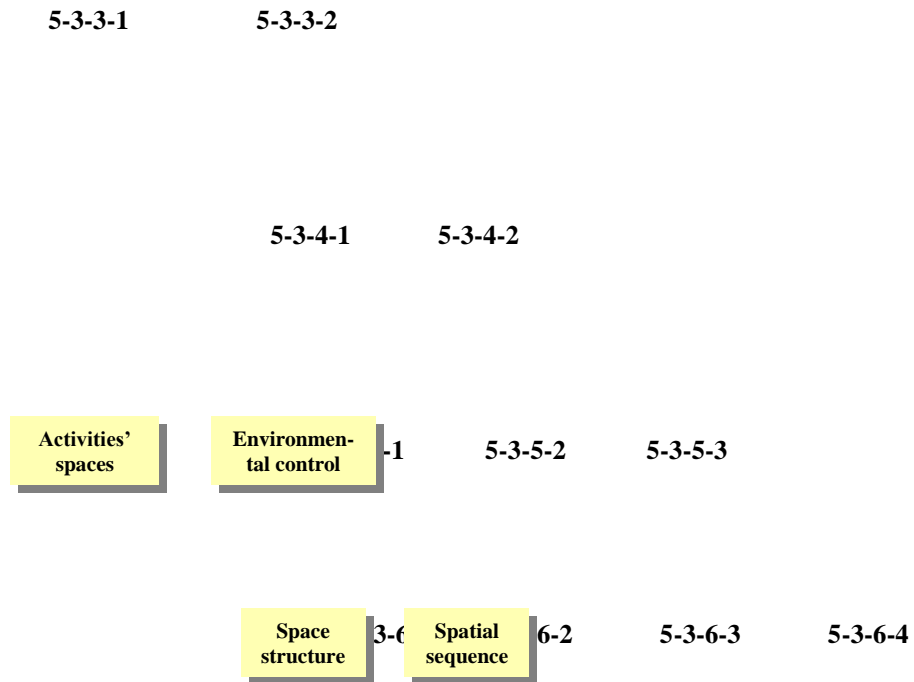
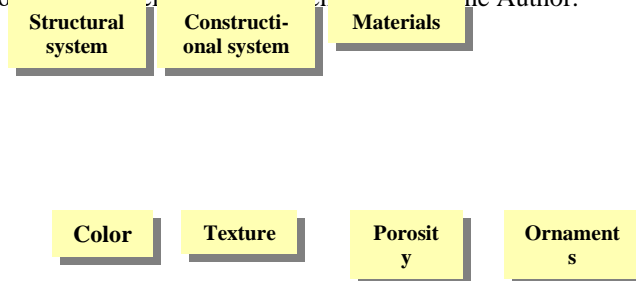


Figure 50. **Product's Components.**

Diagram illustrating the product's components and their sub components. **Source:** the Author.



## **PART THREE: ASSESSMENT OF ARCHITECTURAL PRODUCT**

**Chapter Five: ARCHITECTURAL PRODUCT COMPONENTS**

**Chapter Six: INDICES OF VALUES IN THE PRODUCT'S  
COMPONENTS**

**Chapter Seven: MATRIX FOR THE PRODUCT'S ASSESSMENT  
in terms of values**

## **6-1 Introduction:**

In order to obtain a profile indicating the architectural product's profile in terms of Spranger's six values: theoretical, economic, aesthetic, social, political, and religious, we must first observe the implications or indices of each value on each component of the product in order to assess and score them in relation to the components. Therefore, in this chapter we shall observe these indices in each product's components.

## **6-2 Indices of Values in Concept:**

In this section we shall investigate the possible indices or implications of the six main values: *theoretical*, *economic*, *aesthetic*, *social*, *political*, and *religious* for the concept (table 4).

### **6-2-1 Concept & Theoretical Values:**

The attitudes of the architect possessing theoretical values have two dimensions: *scientific* and *philosophical*. The designer could have one or both of them. One could expect that design concepts according to *scientific dimension* would arise from Need variables or Context variables. It will be a rational response to human activities, environmental control of the building (orientation, temperature, lighting, acoustics...etc) or to the interest in technological innovations and logical structures.

Concepts according to *philosophical dimension* would arise by finding linkages or analogies (metaphors) from sources in traditional philosophy, religion, literature, history, or arts arrived at through intensive research.

### **6-2-2 Concept & Economic Values:**

The architect possessing economic values is interested in what is useful and practical, and regards unapplied knowledge as waste. He avoids aesthetic speculation, verbal theorizing, and radical experimentation. He is worried about cost, schedules, and making things workable. One of his attitudes is to provide accessible, affordable,

and cheap technical systems and materials. We expect not to see a specific concept for each problem confronting him, because he tends to use the same solution to fit different situations without considering a range of imaginative alternatives. His main goal will be the accomplishment of the stated program and providing spaces for needed activities within a simple shape and a cheap structural system.

### **6-2-3 Concept & Aesthetic Values:**

Architect of the aesthetic type sees his highest value in creating abstract forms based on subjective feeling and freedom of imagination. His emblem is "form does not follow function". It is expected that the concepts of his designs will be around the Form variables: sculptural masses, geometrical ideas, aesthetic proportions, formalistic analogies, or any concept related to form.

### **6-2-4 Concept & Social Values:**

The architect of social values is interested in the cultural background of the users (or community) and their social relations. Also he is interested in proposing alternative visions to the existing social order and solving the community present-day problems in order to improve it by creating new forms of social experience which would actively improve their life. Therefore his design concepts will be a response to the community social and cultural values and to socio-behavioral contexts in order to create social experiences through his concept. It can be said that they will arise from Need or Context variables.

### **6-2-5 Concept & Political Values:**

The main purpose of the political type architect is to design powerful, strange, or unrealizable buildings based on subjective feelings and self-imagination. Thus, his design concepts will be concerned with form variables like the aesthetic type with the difference that they will concentrate on the questions of how to let the design be dominant, powerful, unique or strange.

### **6-2-6 Concept & Religious Values:**

The attitudes of the architect possessing religious values will be conservative as well as his design concepts. He is obsessed with past ages and traditional buildings and he will tend to copy them or some of their elements as they were. But some architects of this type will try in their design concepts to submit to past models of architecture without copying them in the belief that these contain universal principles. Here we find their concepts, in one way or the other, integration between traditional and modern architecture.

### **6-3 Indices of Values in Form:**

In order to assess the six values on the form and scoring the existence of each of them, we must observe their indices on the form sub-components: *masses* and *relations* (table 5).

#### **6-3-1 Indices of values in Mass:**

There are certainly indices for the six types of values on mass as a separate element in form. By reviewing the classifications of masses and the different types of relations stated in chapter six, we could find these indices as follows:

##### **6-3-1-1 Mass and Theoretical Values:**

By reviewing the personality type of the theoretical architect, we recognize two dimensions: scientific and philosophical.

Scientific dimension could be seen when mass follows the building's function and reflects the internal spaces, the environmental control, and the structural system. *Skeletal* and *planar* forms possess theoretical values according to the scientific dimension because they reflect the building's components. *Botanic* and *cellular organic* morphology also represent this dimension because it is based on structural concepts in nature.

VALUES	THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
COMPONENT						
CONCEPT	<p><b>Scientific dimension:</b> a rational response to human activities, environmental control of the building (orientation, temperature, lighting, acoustics...etc) or to the interest in technological innovations and logical structures.</p> <p><b>Philosophical dimension:</b> finding linkages or analogies (metaphors) from sources in traditional philosophy, religion, literature, history, or arts.</p>	<p>No specific concept for each problem because economic architect tends to use the same solution to fit different situations.</p> <p>The accomplishment of the stated program and providing spaces for needed activities within a simple shape and a cheap structural system are his ideas</p>	<p>The concept will be around the form variables: sculptural masses, geometrical ideas, aesthetic proportions, formalistic analogies, or any concept related to form.</p>	<p>A response to the community social and cultural values and to socio-behavioral contexts in order to create social experiences through his concept.</p>	<p>Dominant, powerful, unique or strange concept concentrating on form. Strange or unrealizable buildings based on subjective feelings and self-imagination.</p>	<p>Submission to past models of architecture with either copying them or some of their elements exactly, or integrating between traditional and modern architecture.</p>

Table 4. Indices of Values in Concept.

Philosophical dimension is found when the mass reflects the philosophical concept behind it. Form in this case will be generated from analogies arrived at through intensive research in traditional philosophy, religion, literature, history, or arts.

#### **6-3-1-2 Mass and Economic Values:**

Mass implies economic values when it is simple, symmetrical, and easy to construct<sup>1</sup>. They are often basic shapes like the pyramid, cube, cylinder...etc. Geometric form in Raafat's classification represents this type of value.

#### **6-3-1-3 Mass and Aesthetic Values:**

The main characteristic of the aesthetic architect is creating abstract forms based on subjective feeling and freedom of imagination. His emblem is *form does not follow function*. Subsequently, Mass implies aesthetic or formal values when it is formal or sculptural for its own sake. *Plastic form* in Caudill's classification and *sculpturesque form* in Raafat's represents this type of values. Also we could find aesthetic values in the *animal morphology* because it is an analogy of the animals' or plants' superficial shapes not the concept behind it.

#### **6-3-1-4 Mass and Social Values:**

Mass reflects the contextual character and assures its continuity. It represents new social experiences based on intensive studies of the socio-behavioral contexts. Public participation in the building design is an essential phase for the form generation. The generating order could also be influenced and inspired from the contextual pattern.

#### **6-3-1-5 Mass and Political Values:**

Masses carrying political values are also abstract based on subjective feeling and self-imagination. *Plastic forms*, *animal morphology*, and *sculpturesque forms* could carry political values providing that form is strong, dominant, strange,

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<sup>1</sup> See Chapter four: 4-5-3-2 The Economic.

impossible or unrealizable. It is obvious that political forms are spatial cases of the aesthetic (formal) forms.

#### **6-3-1-6 Masses and Religious Values:**

Historical or traditional buildings are the main generators of mass form. Here we could find two probable kinds of form: a copy of the past models of architecture due to the architect's obsession with past ages and traditional buildings as they were; or *figurative forms* stated in Raafat's classification, where traditional elements are used in new forms, contemporary relations, and with modern materials.

#### **6-3-2 Indices of Values in Relations:**

In the following we shall investigate *relations between masses in form* in terms of Spranger's six values: *theoretical, economic, aesthetic, social, political, and religious values*.

##### **6-3-2-1 Relations and Theoretical Values:**

Scientific dimension: the *physical scale* of the building's elements is very well organized. Proportions or relations between masses are *natural* or *arithmetic proportions* providing unifying ordering systems for the building's elements (grids). In addition, relations will reflect the functional relations and environmental controls.

Philosophical dimension: the philosophical concept followed for generating the building's form must be reflected on the relationship between his parts.

##### **6-3-2-2 Relations and Economic Values:**

Simple ordering system (simple grids) arising from *simple arithmetic proportions* (as 1: 2 or 1:1:2) will guarantee the existence of economic values in the masses' relations.

##### **6-3-2-3 Relations and Aesthetic Values:**



Scale and proportions are formal or sculptural. They serve the overall building form. Also we could find aesthetic values when using musical, and natural proportions as generators of building form.

#### **6-3-2-4 Relations and Social Values:**

Formal relations reflect the internal and external social spaces and spatial relations. The form generating order is influenced by the contextual patterns. The social architect, when organizing the building's relations, is concerned with the *effectual scale* of the building's parts and spaces.

#### **6-3-2-5 Relations and Political Values:**

Strange or powerful relations. Scale and proportions are formal or sculptural. They serve the overall strange or dominant and powerful building form.

#### **6-3-2-6 Relations and Religious Values:**

Relations carrying religious values are characterized by coping historical and traditional formal relations as they were, or studying historical / traditional relations as references for modern solutions and contemporary activities. *Historical proportions* and *associate scales* are found in the religious relations.

### **6-4 Indices of Values in Function:**

As we have done with the form component, we shall investigate the indices of the stated six values on the functional component of the product. This will be upon its two sub-components: *providing spaces for activities* and *the physical control of the environment* (table 6).

#### **6-4-1 Indices of Values in Activities' spaces:**

We have seen that this element is represented by the existence of the required spaces and their functional relations. By observing each value on this element, we will find the following implications.

VALUES		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
COMPONENTS							
<b>FORM</b>	<b>Mass</b>	<p>#Scientific: mass follows the building's function and reflects the internal spaces, the environmental controls, and the structural system. Skeletal and planar forms. Botanic and cellular organic morphology.</p> <p>#Philosophical: mass reflects the philosophical concept behind it. Form is generated from analogies in traditional philosophy, religion, literature, history, or arts.</p>	<p>#Mass is simple, symmetrical, and easy to construct .</p> <p>#Often geometric basic shapes like the pyramid, cube, cylinder...etc.</p>	<p>#Formal or sculptural for its own sake.</p> <p>#abstract forms based on subjective feeling and freedom of imagination.</p> <p>#form does not follow function.</p> <p>#Plastic or sculptresque form.</p> <p>#animal morphology</p>	<p>#Mass reflects the contextual character and assures its continuity.</p> <p>#represents new social experiences based on intensive studies of the socio-behavioral contexts.</p> <p>#Public participation in the building design is an essential phase for the form generation.</p>	<p>#Masses are abstract based on subjective feeling and self-imagination.</p> <p>#Plastic forms, animal morphology, and sculptresque forms providing that form is strong, dominant, strange, impossible or unrealizable.</p>	<p>#a copy of the past models of architecture due to the architect's obsession with past ages and traditional buildings</p> <p>#figurative forms where traditional elements are used in new forms, contemporary relations, and with modern materials.</p>
	<b>Relations</b>	<p>#Scientific: the physical scale of the building's elements is very well organized. Proportions or relations between masses are natural or arithmetic proportions providing unifying ordering systems for the building's elements (grids). In addition, relations will reflect the functional relations and environmental controls.</p> <p>#Philosophical: the philosophical concept followed for generating the building's form must be reflected on the relationship between his parts.</p>	<p>#Simple ordering system (simple grids) arising from simple arithmetic proportions (as 1: 2 or 1:1:2)</p>	<p># Scale and proportions are formal or sculptural. They serve the overall building form.</p> <p>#using musical, and natural proportions as generators of building form.</p>	<p># Formal relations reflect the internal and external social spaces and spatial relations.</p> <p>#The form generating order is influenced by the contextual patterns.</p> <p>#effectual scale of the building's parts and spaces.</p>	<p># Strange or powerful relations.</p> <p>#Scale and proportions are formal or sculptural. They serve the overall strange or dominant and powerful building form.</p>	<p>#coping historical and traditional formal relations as they were</p> <p>#studying historical / traditional relations as references for modern solutions and contemporary activities. #Historical proportions and associate scales are found in the religious relations.</p>

Table 5. Indices of Values in Form.

#### **6-4-1-1 Activities' Spaces and Theoretical Values:**

Success in providing spaces for activities' enclosure and rational functional relations.

#### **6-4-1-2 Activities' Spaces and Economic Values:**

Economic and conventional solutions. Open free plan and flexibility of spaces. Symmetrical and simple functional relationships.

#### **6-4-1-3 Activities' Spaces and Aesthetic Values:**

Function follows the subjective abstract form. Providing spaces for activities is not important as realizing formal objectives. Functional relations follow form.

#### **6-4-1-4 Activities' Spaces and Social Values:**

Providing spaces for social activities and experiences. Functional relations express group and collectivity. Functional relations represent the users' behavior and provide social interactions.

#### **6-4-1-5 Activities' Spaces and Political Values:**

Function follows the strange, singular, dominant, powerful or unrealizable form. Functional relations are also strange and follow this form.

#### **6-4-1-6 Activities' Spaces and Religious Values:**

Calling back traditional spaces. Coping historical or traditional functional relations. Studying historical and traditional functional spaces and relations as references for modern solutions and contemporary activities.

### **6-4-2 Indices of Values in Environmental Control:**

We shall investigate the implications of the six value types on the physical control of the environment.

#### **6-4-2-1 Environmental Control and Theoretical Values:**

Site control, climate control, heat control, light control, sound control, and smell control, in this case, are very well considered by the architect. Extreme theoretical values in this element are found when the building's performance according to these controls is completely successful.

#### **6-4-2-2 Environmental Control and Economic Values:**

In this case, control factors are not very important as the economic and practical solution. Facades and treatments do not vary according to these factors, they are almost identical.

#### **6-4-2-3 Environmental Control and Aesthetic Values:**

Control factors are not important as the abstract form. If environmental controls interfere in realizing the form, the architect tends to surpass the former in favor of the latter. Facades and treatments vary according to form.

#### **6-4-2-4 Environmental Control and Social Values:**

When investigating social values on the environmental controls, we could not find any indices of the former in the latter.

#### **6-4-2-5 Environmental Control and Political Values:**

As the aesthetic values, control factors are also not as important as the strange, dominant, or unrealizable form; and the architect surpasses the former in favor of the latter. Facades and treatments vary according to form.

#### **6-4-2-6 Environmental Control and Religious Values:**

When investigating religious values on the environmental controls, we could not find any indices of the former in the latter.

### **6-5 Indices of Values in Structure:**

We shall observe here the implications of Spranger's values on the three sub-components of structure: structural system, constructional system, and materials (table 7).

### **6-5-1 Indices of Values in Structural system:**

Theoretical, economic, aesthetic, social, political, and religious values have implications and indices on the structural system of the building. We shall illustrate them as follows:

#### **6-5-1-1 Structural System and Theoretical Values:**

The structural system is following rational experienced laws and the structural members are characterized by their balance and firmness. It is following the latest technological achievements because of their scientific reason. The theoretical architect uses willingly systems C (trusses), D (suspension systems) or E (air pressure systems).

#### **6-5-1-2 Structural System and Economic Values:**

Common, affordable, and cheap structural systems are economic, such as column and beam or column and floor systems.

#### **6-5-1-3 Structural System and Aesthetic Values:**

Using the structural system for its formal and aesthetic dimensions. The structural system follows the latest technological innovations in order to make the abstract forms constructed or using them just for their aesthetic values.

#### **6-5-1-4 Structural System and Social Values:**

When investigating social values on the structural system, we could not find any indices of the former in the latter.

VALUES		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
COMPONENTS							
FUNCTION	Activities' Spaces	# Success in providing spaces for activities' enclosure. # Rational functional relations.	# Economic, simple, and conventional solutions. # Free plan / activities spaces flexibility. # Symmetrical and simple functional relations.	# Function follows the subjective abstract form # providing spaces for activities is not important as realizing form. # Functional relations follow form.	# Providing spaces for social activities. # Functional relations express group and collectivity. # Functional relations represent the users' behavior and provide social interaction.	# Function follows the strange / singular / dominant / powerful / unrealizable form. # Functional relations are also strange and follow this form.	# Calling back traditional spaces. # Coping historical or traditional functional relations. # Studying historical / traditional functional spaces and relations as references for modern solutions and contemporary activities.
	Environmental Control	# Site control # Climate control # Heat control # Light control. # Sound control # Smell control	# Control factors are not very important as the economic solution, facades and treatments do not vary according to these factors, they are almost identical.	# Control factors are not as important as form, facades and treatments vary according to form.	# No social values could be detected by studying environmental controls.	# Control factors are not as important as the strange, powerful form, facades and treatments vary according to form.	# No religious values could be detected by studying environmental controls.

Table 6. Indices of Values in Function.

#### **6-5-1-5 Structural System and Political Values:**

Systems, according to political values will be strange structural systems or systems generating powerful feelings. Also we will find here, as in the aesthetic values, that the structural system follows the latest technological innovations in order to make the strange or powerful forms constructed.

#### **6-5-1-6 Structural System and Religious Values:**

Historical structural systems such as load bearing walls. Also the structural system B (arches) carries religious values.

### **6-5-2 Indices of Values in Constructional System:**

The indices of the six values in the constructional system are illustrated in the following sections:

#### **6-5-2-1 Constructional System and Theoretical Values:**

Use of modern technology and studying the latest constructional achievements. Firmness and convenience between connections and materials.

#### **6-5-2-2 Constructional System and Economic Values:**

Use of common and affordable constructional systems. The construction process is always in-situ because this is the conventional method of constructing and to reduce the transportation costs.

#### **6-5-2-3 Constructional System and Aesthetic Values:**

When investigating aesthetic values on the constructional system, we could not find any indices of the former in the latter.

#### **6-5-2-4 Constructional System and Social Values:**

The main aspect of social values in this element is the public participation in the construction process. In this process, participants are involved in the implementation of the physical design and take responsibility with the professionals to

see what they want and how it will look like<sup>2</sup> according to their previous participation in the design process.

#### **6-5-2-5 Constructional System and Political Values:**

Because of the strange or unrealizable form, the construction process is difficult or impossible.

#### **6-5-2-6 Constructional System and Religious Values:**

When investigating religious values in the constructional system, we could not find any indices of the former in the latter.

#### **6-5-3 Indices of Values in Materials:**

Materials possess functional and formal properties. In the following we shall see how these properties could be indices of values.

##### **6-5-3-1 Materials and Theoretical Values:**

Use of materials for their structural and functional properties: insulation / friction / permeability / transparency...

##### **6-5-3-2 Materials and Economic Values:**

Use of common and cheap materials. Few materials, one or two in the maximum and they are used only for covering structure.

##### **6-5-3-3 Materials and Aesthetic Values:**

Using materials for their visual characteristics and for the service of the general form. Combinations between materials for creating artful appearance.

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<sup>2</sup> Salama, A. (1994), op cit., p 83.



**6-5-3-4 Materials and Social Values:**

Using local materials for the contextual and cultural continuity.

**6-5-3-5 Materials and Political Values:**

Using attractive materials. Materials represent heaviness and dominance.

**6-5-3-6 Materials and Religious Values:**

Choice of traditional materials such as stones, marbles, and bricks.

**6-6 Indices of Values in Space:**

As the indices of values were investigated in the concept, form, function, and structure component, they will also be investigated in the space component through its sub-components: *structure of space* and *spatial sequence* (table 8).

**6-6-1 Indices of Values in Structure of Space:**

The structure of space is either internal / external (closure) or static / dynamic (shape). This classification will be useful in observing the implications of Spranger's six values on this element.

**6-6-1-1 Structure and Theoretical Values:**

Here space will be *static* and regular. This does not imply that it must have a rectangular or a square plan, but a regular static shape serving the function enclosed. Also the existence of *external and internal spaces* are determined by their functional necessity.

**6-6-1-2 Structure and Economic Values:**

*Static*, regular space and often rectangular or square. We can conclude that there would be *no external spaces*; only internal practical spaces.

VALUES		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
COMPONENTS							
STRUCTURE	<b>Structural System</b>	<ul style="list-style-type: none"> <li># Structural system following rational experienced laws.</li> <li># Balance / firmness between structural members.</li> <li># Following the latest technological achievements because of their scientific reason.</li> </ul>	<ul style="list-style-type: none"> <li># Common, affordable, and cheap structural systems such as column and beam or column and floor systems.</li> </ul>	<ul style="list-style-type: none"> <li># Using the structural system for its formal and aesthetic dimensions.</li> <li># The structural system follows the latest technological innovations to make the abstract forms constructed or using them just for their aesthetic values.</li> </ul>	<ul style="list-style-type: none"> <li># No social values could be detected by studying the structural system.</li> </ul>	<ul style="list-style-type: none"> <li># Strange structural systems.</li> <li># Systems generating powerful feelings.</li> <li># System follows the latest technological innovations in order to make the strange or powerful forms constructed.</li> </ul>	<ul style="list-style-type: none"> <li># Historical structural systems such as load bearing walls or arches and arcades</li> </ul>
	<b>Constructional System</b>	<ul style="list-style-type: none"> <li># Use of modern technology and studying its advances.</li> <li># Firmness and convenience between connections and materials.</li> </ul>	<ul style="list-style-type: none"> <li># Using common and affordable constructional systems.</li> </ul>	<ul style="list-style-type: none"> <li># No aesthetic values could be detected by studying constructional system.</li> </ul>	<ul style="list-style-type: none"> <li># Public participation in the construction process.</li> </ul>	<ul style="list-style-type: none"> <li># Difficult or impossible to construct.</li> </ul>	<ul style="list-style-type: none"> <li># No religious values could be detected by studying the constructional system.</li> </ul>
	<b>Materials</b>	<ul style="list-style-type: none"> <li># Use of materials for their structural characteristics insulation / friction / permeability / transparency...</li> </ul>	<ul style="list-style-type: none"> <li># Current and cheap materials.</li> <li># Few materials.</li> <li># Used only for covering structure (usually paintings).</li> </ul>	<ul style="list-style-type: none"> <li># Using materials for their visual characteristics and for the service of the general form.</li> <li>#Combinations between materials for creating artful appearance.</li> </ul>	<ul style="list-style-type: none"> <li># Local materials for the contextual and cultural continuity.</li> </ul>	<ul style="list-style-type: none"> <li># Attractive materials.</li> <li># Materials representing heaviness and dominance.</li> </ul>	<ul style="list-style-type: none"> <li># Choice of traditional materials such as stones, marbles, and bricks</li> </ul>

Table 7. Indices of Values in Structure.

### **6-6-1-3 Structure and Aesthetic Values:**

*Dynamic* and formal space. *External and internal spaces* are resulting from the form level.

### **6-6-1-4 Structure and Social Values:**

The internal or external space has a social dimension and arises from users' behavior. We could find social values in the external space when the architect's intentions by designing it are to provide social experiences, relationships, and interactions.

### **6-6-1-5 Structure and Political Values:**

Dynamic, strange, or powerful spaces.

### **6-6-1-6 Structure and Religious Values:**

Copying same historical structure of the space. Space generates spiritual feelings reminding of the historical spaces. Islamic courts, complex and irregular spaces are examples of spaces carrying religious values.

## **6-6-2 Indices of Values in Spatial Sequence:**

The spatial sequence is a very important element upon which values and their indices must be investigated. On the following we will illustrate the values' implications on this element.

### **6-6-2-1 Spatial Sequence and Theoretical Values:**

According to the scientific dimension, the spatial sequence has its functional reason. According to the philosophical, spatial follows the philosophical concept.

### **6-6-2-2 Spatial Sequence and Economic Values:**

Spatial sequence has no special experience, only reflecting the spaces' symmetrical organization.

### **6-6-2-3 Spatial Sequence and Aesthetic Values:**

Sequence of formal or plastic shots.

**6-6-2-4 Spatial Sequence and Social Values:**

Spatial sequence has a social dimension. It provides social experience and follows the users' social behavior.

**6-6-2-5 Spatial Sequence and Political Values:**

Spatial sequence generates powerful or violent feelings.

**6-6-2-6 Spatial Sequence and Religious Values:**

Copying same historical spatial sequences. Spatial sequence generates spiritual feelings similar to the historical spaces.

**6-7 Indices of Values in Expression:**

In the following section we shall investigate the indices of the *theoretical*, *economic*, *aesthetic*, *social*, *political*, and *religious* values in the expression's sub-components: *color*, *texture*, *porosity*, and *ornaments* (table 9).

**6-7-1 Indices of Values in Color:**

As it has been mentioned before, color in architecture does not function alone, but it is a part of the building form. However, we will study color in this section as an independent component in order to measure Spranger's values separately on it.

**6-7-1-1 Color and Theoretical Values:**

Theoretical color reflects the natural color of the material. And the composition of colors is according to the organization of materials used in the building for their functional properties.

**6-7-1-2 Color and Economic Values:**

Economy in colors. Very few colors of paintings or cheap and common materials.

VALUES		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
COMPONENTS							
SPACE internal / external	Structure	# Space is static and regular serving the function enclosed. # the existence of external and internal spaces are determined by their functional necessity.	# Static, regular space and often rectangular or square. #Usually no external spaces; only internal practical spaces.	# Dynamic and formal space. # External and internal spaces are resulting from the form level.	# Internal or external space has a social dimension. its structure arises from users' behavior.	# Dynamic, strange, or powerful space.	# Copying same historical space structure. # Space generates spiritual feelings reminding of the historical spaces.
	Spatial sequence	# The spatial sequence has its functional reason. # The spatial sequence follows the philosophical concept.	# Spatial sequence has no special experience, only reflecting the spaces' symmetrical organization.	# Sequence of formal or plastic shots.	# Spatial sequence has a social dimension. It provides social experience and follows the users' social behavior.	# Spatial sequence generates powerful or violent feelings.	# Copying same historical spatial sequence. # Spatial sequence generates sequential spiritual feelings reminding of the historical spaces.

Table 8. Indices of Values in Space.

### **6-7-1-3 Color and Aesthetic Values:**

The architect here is concerned with colors in terms of hue, value, and intensity and their composition is artistic. *Expressive colors* in Raafat's Classification carry aesthetic values.

### **6-7-1-4 Color and Social Values:**

The *environmental color* represents this type of values. In this case the color respects the contextual character and the users' cultural background.

### **6-7-1-5 Color and Political Values:**

Political colors are high in hue, value, or intensity. Also we will find a strange composition of colors. Or one dominant color, high in hue, value, or intensity.

### **6-7-1-6 Color and Religious Values:**

The religious architect is using *symbolic colors*, or generally he uses colors similar to certain historical periods.

## **6-7-2 Indices of Values in Texture:**

Texture is like color, it could not be separated from material, ornaments, or generally the building's composition. But the architect sometimes uses this element as a separate tool of design. Raafat mentioned in his book *Artistic Creativity in Architecture*, designing by Texture<sup>3</sup>.

### **6-7-2-1 Texture and Theoretical Values:**

Hardness or softness, heaviness or lightness, tautness or slackness, all these characteristics in the case of theoretical textures reflect the functional dimension of the building's masses and the materials used for purposes of: insulation / friction / permeability / transparency....

### **6-7-2-2 Texture and Economic Values:**

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<sup>3</sup> More details about this subject are in Raafat, A. (1997), op. cit.

Generally economic textures are soft and smooth reflecting the common and cheap materials, and the simple and symmetrical masses.

#### **6-7-2-3 Texture and Aesthetic Values:**

The architect in this case is concerned with the formal dimension of the textural element. Degrees of hardness or softness, heaviness or lightness, tautness or slackness vary according to formal decisions. Composition between textures is artistic.

#### **6-7-2-4 Texture and Social Values:**

Textures follow the textures of the contextual character or the users' cultural background.

#### **6-7-2-5 Texture and Political Values:**

Textures are hard, heavy, or slack. This will guarantee the attractive or the dominant appearance of the building.

#### **6-7-2-6 Texture and Religious Values:**

Historical textural effects generally representing hardness and heaviness due to the heavy historical materials. Texture will also be influenced by the simple or complex masses.

### **6-7-3 Indices of Values in Porosity:**

Porosity, or openness and closeness, could be an indicator of values. We have mentioned earlier that it is an indicator of function or style. In the next section we shall illustrate this matter.

#### **6-7-3-1 Porosity and Theoretical Values:**

Porosity in this case reflects the function of the space. In addition, degree of openness or closeness reflects the environmental control: light / sound / heat / ventilation...

**6-7-3-2 Porosity and Economic Values:**

Regular and ordinary porosity with few variations. Here, the building looks like a closed container in which holes are punched as needed.

**6-7-3-3 Porosity and Aesthetic Values:**

Porosity has a formal composition in itself or serves the whole abstract form.

**6-7-3-4 Porosity and Social Values:**

According to the pattern of the contextual character and the users' culture. Also it reflects the social function of the spaces.

**6-7-3-5 Porosity and Political Values:**

Strange unusual porosity.

**6-7-3-6 Porosity and Religious Values:**

Religious porosity is usually an indicator of style. It is a result of solid masses perforated with historical openings.

**6-7-4 Indices of Values in Ornaments:**

By reviewing the six roles of ornaments in architecture stated by Allsopp and the reflections of Sullivan and Wright <sup>4</sup>, we recognized that the indices of Spranger's values could be found in *ornaments* as follows:

**6-7-4-1 Ornaments and Theoretical Values:**

Integral ornaments: structure is the source of ornaments. Ornaments are generated from the formal qualities of materials. They serve also in making the transition between different materials, between one structural element and another.

**6-7-4-2 Ornaments and Economic Values:**

No ornaments.

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<sup>4</sup>More details in Allsopp, B. (1977), op. cit. P 36-37.



**6-7-4-3 Ornaments and Aesthetic Values:**

Ornaments are used purely for delight. The architect is concerned with the formal dimension of ornaments.

**6-7-4-4 Ornaments and Social Values:**

Cultural ornaments, familiar to community.

**6-7-4-5 Ornaments and Political Values:**

Original and powerful ornaments. Also, they are used for giving emphasis and drawing attention to the building's parts.

**6-7-4-6 Ornaments and Religious Values:**

Copying historical traditional ornaments or using them as references for new original ornaments.

**6-8 Conclusion:**

A summary and conclusion of the indices of each value in each component are illustrated in table 10.

VALUES		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
COMPONENTS							
<b>EXPRESSION</b>	<b>Color</b>	# Color reflects the natural color of material. # Composition of colors are according to the organization of materials.	# Economy in colors. Very few colors of paintings or cheap and common materials.	# Interest in colors in terms of hue, value, and intensity: expressive colors # color serves the entire form. # Composition of colors is artistic.	# The environmental color represents this type of value: color respects the contextual character and the users' cultural background.	# Colors high in hue, value, or intensity. # Strange composition of colors. # One dominant color high in hue, value, or intensity.	# symbolic colors, generally, using colors reminding of certain historical periods.
	<b>Texture</b>	# textures reflect the functional dimension of the building's masses # textures reflect the materials used for purposes of: insulation / friction / permeability / transparency....	Generally soft smooth textures: # Reflecting the current and cheap materials. # Reflecting the simple and symmetrical masses.	# Degree of hardness or softness, heaviness or lightness, tautness or slackness vary according to formal purposes. # Composition between textures is artistic.	# According to the textures of the contextual character or the users' culture.	# hard, heavy, or slack textures.	Historical textural effects generally representing hardness and heaviness due to the heavy historical materials. #Textures are influenced by the simple or complex masses.
	<b>Porosity</b>	# Porosity reflects the function of the space. # Porosity reflects the environmental control: light / sound / heat / ventilation...	# Regular and ordinary porosity with few variations, the building looks like a closed container in which holes are punched as needed.	# Porosity has a formal composition in itself. # Porosity serves the aesthetic form.	# According to the pattern of the contextual character or the users' culture. # Reflects the social function of the spaces.	# Strange unusual porosity.	# Religious porosity is usually an indicator of style. It is a result of solid masses perforated with historical openings.
	<b>Ornaments</b>	# Integral ornaments: structure is the source of ornaments. #Ornaments are generated from the formal qualities of materials. #They serve in making the transition between different materials, between one structural element and the other	# No ornaments.	# Ornaments are used purely for delight. The architect is concerned with the formal dimension of ornaments.	# Cultural ornaments, familiar to community.	# Original, powerful ornaments. # are used for giving emphasis and drawing attention to the building's parts.	# Copying historical or traditional ornaments. # New modern forms of traditional ornaments.

Table 9. Indices of Values in Expression.

VALUES COMPONENTS		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
CONCEPT		<ul style="list-style-type: none"> <li>Scientific dimension is a rational response to human activities, environmental context, the building (orientation, temperature, lighting, acoustics, ...), and to the latest technological innovations and logical structures.</li> <li>Philosophical dimension finds</li> </ul>	<ul style="list-style-type: none"> <li>No specific concept for each problem because economic architects tend to use the same solution to face different situations. The accomplishment of the stated program and providing spaces for needed activities within a simple shape and a cheap structural s</li> </ul>	<ul style="list-style-type: none"> <li>The concept will be around the form variables: sculptural masses, geometrical ideas, aesthetic proportions, formalistic analogies, or any concept related to form.</li> </ul>	<ul style="list-style-type: none"> <li>A response to the community social and cultural values and to socio-behavioral contexts in order to create social experiences through his concept.</li> </ul>	<ul style="list-style-type: none"> <li>Dominant, powerful, unique or strange concept concentrating on form. Strange or unrealizable buildings based on subjective feelings and self-imagination.</li> </ul>	<ul style="list-style-type: none"> <li>Submission to past models of architecture with either copying them or some of their elements exactly, or integrating between traditional and modern architecture.</li> </ul>
	FORM	Mass	<ul style="list-style-type: none"> <li>Scientific mass follows the building's function and reflects the internal spaces, environmental controls, and the structural system. Skeletal and planar forms. Botanical and cellular organic morphology.</li> <li>Philosophical mass reflects the philosophical c</li> </ul>	<ul style="list-style-type: none"> <li>Mass is simple, symmetrical and easy to construct.</li> <li>Often geometric basic shapes like the pyramid, cube, cylinder...etc.</li> </ul>	<ul style="list-style-type: none"> <li>Formal or sculptural for its own sake.</li> <li>Abstract forms based on subjective feeling and freedom of imagination.</li> <li>Form does not follow function.</li> <li>Plastic or sculptural form.</li> <li>Animal morp</li> </ul>	<ul style="list-style-type: none"> <li>Mass reflects the contextual character and assures its continuity.</li> <li>represents new social experiences based on intensive studies of the socio-behavioral contexts.</li> <li>Public participation in the building</li> </ul>	<ul style="list-style-type: none"> <li>Masses are abstract based on subjective feeling and self-imagination.</li> <li>Plastic forms, animal morphology, and sculptural forms providing that forms strong, dominant, strange, impossible or unrealizable.</li> </ul>
Relations		<ul style="list-style-type: none"> <li>Scientific: the physical scale of the building's elements is very well organized. Proportions or relations between masses, natural or arithmetic proportions providing a simple ordering system for the building elements (grid). In addition, relation</li> </ul>	<ul style="list-style-type: none"> <li>Simple ordering system (simple grids) arising from simple arithmetic proportions as 1:2 or 1:1:2)</li> </ul>	<ul style="list-style-type: none"> <li>Scale and proportions are formal or sculptural. They serve the overall building form.</li> <li>fusing musical, and natural proportions as generators of building form.</li> </ul>	<ul style="list-style-type: none"> <li>Formal relations reflect the internal and external social spaces and spatial relations.</li> <li>The form generating order is influenced by the contextual patterns.</li> <li>reflects scale of the building's parts and spaces.</li> </ul>	<ul style="list-style-type: none"> <li>Strange or powerful relations.</li> <li>Scale and proportions are formal or sculptural. They serve the overall strange or dominant and powerful building form.</li> </ul>	<ul style="list-style-type: none"> <li>Copying historical and traditional formal relations as they were</li> <li>studying historical / traditional relations as references for modern solutions and contemporary activities.</li> <li>Historical proportions and associate scales are found in the</li> </ul>
FUNCTION	Activities' spaces	<ul style="list-style-type: none"> <li>Success in providing spaces for activities' enclosure.</li> <li>Rational functional relations</li> </ul>	<ul style="list-style-type: none"> <li>Economic, simple, and conventional solutions.</li> <li>free plan / activities spaces flexibility.</li> <li>Symmetrical and simple functional relations.</li> </ul>	<ul style="list-style-type: none"> <li>Function follows the subjective abstract form</li> <li>Providing spaces for activities is not important as realizing form.</li> <li>Functional relations follow form.</li> </ul>	<ul style="list-style-type: none"> <li>Providing spaces for social activities.</li> <li>Functional relations express group and individuality.</li> <li>Functional relations represent the users' behavior and provide social interaction.</li> </ul>	<ul style="list-style-type: none"> <li>Function follows the strange / singular / dominant / powerful / unrealizable form.</li> <li>Functional relations are also strange and follow this form.</li> </ul>	<ul style="list-style-type: none"> <li>Copying back traditional spaces</li> <li>Copy historical or traditional functional relations.</li> <li>Studying historical / traditional functional spaces and relations as references for modern solutions and contemporary activities.</li> </ul>
	Environmental control	<ul style="list-style-type: none"> <li>Site control</li> <li>Climate control</li> <li>Heat control</li> <li>Light control</li> <li>Sound control</li> <li>Smell control</li> </ul>	<ul style="list-style-type: none"> <li>Control factors are not very important</li> <li>the economic solution, facade and treatments do not vary according to these factors, they are almost identical.</li> </ul>	<ul style="list-style-type: none"> <li>Control factors are not as important as form, facades and treatments vary according to form.</li> </ul>	<ul style="list-style-type: none"> <li>No social values could be detected by studying environmental controls.</li> </ul>	<ul style="list-style-type: none"> <li>Control factors are not as important as the strange, powerful form, facades and treatments vary according to form.</li> </ul>	<ul style="list-style-type: none"> <li>No religious values could be detected by studying environmental controls.</li> </ul>
STRUCTURE	Structural system	<ul style="list-style-type: none"> <li>Structural system following rational experienced laws.</li> <li>Balance / firmness between structural members.</li> <li>following the latest technological achievements because of their scientific reason.</li> </ul>	<ul style="list-style-type: none"> <li>Common, affordable, and cheap structural systems such as column and beam or column and floor systems.</li> </ul>	<ul style="list-style-type: none"> <li>Using the structural system for its formal and aesthetic dimensions.</li> <li>The structural system follows the latest technological innovations to make the abstract forms constructed or using them just for their aesthetic value</li> </ul>	<ul style="list-style-type: none"> <li>No social values could be detected by studying the structural system.</li> </ul>	<ul style="list-style-type: none"> <li>Strange structural systems.</li> <li>Systems generating powerful feelings.</li> <li>system follows the latest technological innovations in order to make the strange or powerful forms constructed.</li> </ul>	<ul style="list-style-type: none"> <li>Historical structural systems such as load bearing walls or arches and arcades</li> </ul>
	Constructional system	<ul style="list-style-type: none"> <li>Use of modern technology and studying its advances.</li> <li>Firmness and convenience between connections and materials.</li> </ul>	<ul style="list-style-type: none"> <li>Using common and affordable constructional systems.</li> </ul>	<ul style="list-style-type: none"> <li>No aesthetic values could be detected by studying constructional system.</li> </ul>	<ul style="list-style-type: none"> <li>Public participation in the construction process.</li> </ul>	<ul style="list-style-type: none"> <li>Difficult or impossible to construct.</li> </ul>	<ul style="list-style-type: none"> <li>No religious values could be detected by studying the constructional system.</li> </ul>
	Materials	<ul style="list-style-type: none"> <li>Use of materials for their structural characteristics</li> <li>insulation / friction / permeability / transparency...</li> </ul>	<ul style="list-style-type: none"> <li>Current and cheap materials.</li> <li>Few materials.</li> <li>Used only for covering structure (usually paintings).</li> </ul>	<ul style="list-style-type: none"> <li>Using materials for their visual characteristics and for the service of the general form.</li> <li>Combinations between materials for creating artificial appearance.</li> </ul>	<ul style="list-style-type: none"> <li>Local materials for the contextual and cultural continuity.</li> </ul>	<ul style="list-style-type: none"> <li>Attractive materials.</li> <li>Materials representing heaviness and dominance.</li> </ul>	<ul style="list-style-type: none"> <li>Choice of traditional materials such as stones, marbles, and bricks</li> </ul>
SPACE	Structure	<ul style="list-style-type: none"> <li>Space is static and regular serving the function enclosed.</li> <li>the existence of internal and external spaces are determined by their functional necessity.</li> </ul>	<ul style="list-style-type: none"> <li>Static, regular space and often rectangular or square.</li> <li>Usually no external spaces; only internal practical spaces.</li> </ul>	<ul style="list-style-type: none"> <li>Dynamic and formal space.</li> <li>External and internal spaces are resulting from the form level.</li> </ul>	<ul style="list-style-type: none"> <li>Internal or external space has a social dimension. Its structure arises from users' behavior.</li> </ul>	<ul style="list-style-type: none"> <li>Dynamic, strange, or powerful space.</li> </ul>	<ul style="list-style-type: none"> <li>Copying same historical space structure</li> <li>Space generates spiritual feelings reminding of the historical spaces.</li> </ul>
	Spatial sequence	<ul style="list-style-type: none"> <li>The spatial sequence has its functional reason.</li> <li>The spatial sequence follows the philosophical concept.</li> </ul>	<ul style="list-style-type: none"> <li>Spatial sequence has no special experience, only reflecting the spaces' symmetrical organization.</li> </ul>	<ul style="list-style-type: none"> <li>Sequence of formal or plastic shots.</li> </ul>	<ul style="list-style-type: none"> <li>Spatial sequence has a social dimension. It provides social experience and follows the users' social behavior.</li> </ul>	<ul style="list-style-type: none"> <li>Spatial sequence generates powerful or violent feelings.</li> </ul>	<ul style="list-style-type: none"> <li>Copying same historical spatial sequence</li> <li>Spatial sequence generates sequential spatial feelings reminding of the historical spaces.</li> </ul>
EXPRESSION	Color	<ul style="list-style-type: none"> <li>Color reflects the natural color of materials.</li> <li>Composition of colors are according to organization of materials.</li> </ul>	<ul style="list-style-type: none"> <li>Economy in colors. Very few colors of paintings or cheap and common materials.</li> </ul>	<ul style="list-style-type: none"> <li>Interest in colors in terms of hue, value and intensity; expressive colors color serves the entire form.</li> <li>Composition of colors is artistic.</li> </ul>	<ul style="list-style-type: none"> <li>The environmental color represents this type of value; color respects the contextual character and the users' cultural background</li> </ul>	<ul style="list-style-type: none"> <li>Color high in hue, value, or intensity</li> <li>Strong composition of color.</li> <li>One dominant color high in hue, value intensity.</li> </ul>	<ul style="list-style-type: none"> <li>symbolic colors, generally, using colors reminding of certain historical periods.</li> </ul>
	Texture	<ul style="list-style-type: none"> <li>Textures reflect the functional dimension of the building's masses.</li> <li>textures reflect the materials used for purposes of: insulation / friction / permeability / transparency...</li> </ul>	<ul style="list-style-type: none"> <li>Generally soft smooth textures.</li> <li>Reflecting the current and cheap materials.</li> <li>Reflecting the simple and symmetrical masses.</li> </ul>	<ul style="list-style-type: none"> <li>Degree of hardness or softness, heaviness or lightness, tumescence or lackness vary according to formal purposes.</li> <li>Composition between textures is artistic.</li> </ul>	<ul style="list-style-type: none"> <li>According to the textures of the contextual character or the users' culture.</li> </ul>	<ul style="list-style-type: none"> <li>hard, heavy, or slack textures.</li> </ul>	<ul style="list-style-type: none"> <li>Historical textural effects generally representing hardness and heaviness due to the heavy historical materials</li> <li>Textures are influenced by the simple or complex masses.</li> </ul>
	Porosity	<ul style="list-style-type: none"> <li>Porosity reflects the function of the space.</li> <li>Porosity reflects the environmental control: light / sound / heat / ventilation...</li> </ul>	<ul style="list-style-type: none"> <li>Regular and ordinary porosity with few variations.</li> <li>the building looks like a closed container in which holes are punched as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Porosity has a formal composition in itself</li> <li>Porosity serves the aesthetic form.</li> </ul>	<ul style="list-style-type: none"> <li>According to the pattern of the contextual character or the users' culture.</li> <li>Reflects the social function of the spaces.</li> </ul>	<ul style="list-style-type: none"> <li>Strange unusual porosity.</li> </ul>	<ul style="list-style-type: none"> <li>Religious porosity is usually an indicator of style. It is a result of solid masses perforated with historical openings.</li> </ul>
	Ornaments	<ul style="list-style-type: none"> <li>Integral ornaments: structure is the source of ornaments.</li> <li>Ornaments are generated from the formal qualities of materials.</li> <li>The serve in making the transition between different materials, between the structural element and another.</li> </ul>	<ul style="list-style-type: none"> <li>No ornaments.</li> </ul>	<ul style="list-style-type: none"> <li>Ornaments are used purely for delight. The architect is concerned with the formal dimension of ornaments.</li> </ul>	<ul style="list-style-type: none"> <li>Cultural ornaments, familiar to community.</li> </ul>	<ul style="list-style-type: none"> <li>Original, powerful ornaments.</li> <li>are used for giving emphasis and drawing attention to the building's parts.</li> </ul>	<ul style="list-style-type: none"> <li>Copying historical or traditional ornaments.</li> <li>New modern forms of traditional ornaments.</li> </ul>

Table 10. Indices of Spranger's six values in the architectural product.

## **PART THREE: ASSESSMENT OF ARCHITECTURAL PRODUCT**

**Chapter Five: ARCHITECTURAL PRODUCT COMPONENTS**

**Chapter Six: INDICES OF VALUES IN THE PRODUCT'S  
COMPONENTS**

**Chapter Seven: MATRIX FOR THE PRODUCT'S ASSESSMENT  
in terms of values**

## **7-1 Introduction:**

The aim of this chapter is to assess the values in the architectural product. After reviewing the results of the previous chapter, a matrix of *Values / Components* is suggested for this assessment. The columns represent the components and their sub-divisions, and the rows represent the values. Each value will be scored in each sub-component according to the existence of its indices. Then, by summing up the scores of each value, for example social values, a total score representing the existence of social values in the product will be obtained under each column. By scoring the other values, six scores representing the nature of the architectural product in terms of Spranger's values will be obtained. These results will be represented by a graph similar to the graph assessing the personality profile obtained by Allport - Vernon - Lindzey scale. This graph will be termed the Product's Profile.

## **7-2 Determination of the Relative Importance of Components:**

This section deals with the problem of evaluating the components according to each other, or in other words, their relative importance.

According to Schulz, the structure level is a mean and function is a basic component. His exact words are:

*The technical dimension does not form a part of the building task. The technical possibilities surely belong to the prerequisites the architect has to take into consideration, but this does not prevent technics from being a means to the solution of the tasks...*<sup>1</sup>

Also Allsopp agrees that the structure component is a mean:

*...The excitement of novelty did for a time distract the minds of designers from quality. Equilibrium is now returning and 'gimmickry' is going out of fashion. In architecture, as in mathematics, there is much to be said for*

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<sup>1</sup>Norberg-Schulz, C. (1965), op cit., p 102.

*clarity and simplification. Technology is a servant not a master, and not a plaything for architects.*<sup>2</sup>

Bryan Lawson, in *Design in Mind*, interviewed ten architects asking them about their way of thinking during the design process. By asking about their attitude towards technology, he found that their fascination about it represents a sort of curiosity about how things might be done, however, they want to contain technology to serve their higher purpose rather than dominate. Some of them even feel technology to be a secondary, if not tertiary, consideration<sup>3</sup>.

But what about form? One could say that it does not also form a part of the building function, does it? Let us continue Schulz words about the matter of form and techniques:

*...As both form and technics belong to this category, one could imagine the possibility of bringing them together in a unified means-concept. This, however, is not expedient. The syntactical analysis describes formal properties without asking how forms are materially constructed. It is also an empirical fact that the formal organization often stands in opposition to or is independent of the construction.*<sup>4</sup>

Also, he emphasizes on the importance of building form as a special world through which architect fulfills the building function:

*The formal problems are of special interest to the architect, because they concern the means which are his own particular domain... for although the architect has to formulate the tasks, the means to a certain extent have their own life. Within a language of form the elements may be combined in new ways, and 'expressions' are produced, expressions which may be meaningless as well as giving important new insight.*<sup>5</sup>

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<sup>2</sup> Allsopp, B. (1977), op cit., p 35.

<sup>3</sup> Lawson, B. (1994), op cit., p 88.

<sup>4</sup> Norberg-Schulz, C. (1965), op cit., p 102.

<sup>5</sup> Norberg-Schulz, C. (1965), op cit., p 102.

By reviewing the opinions of Schulz, Allsopp, and Lawson, we may say that *concept, form, function, space, and expression* are very basic components in architecture upon which values must be assessed and must be of the same importance, while *structure* could be, relative to them, half important in assessing the six values. Ten degrees are suggested to be given to the first five levels and five degrees to the last.

- 10 degrees for the concept level.
- 10 degrees for the form level: 5 for the mass element and 5 for the relations between masses.
- 10 degrees for the function level: 5 for the spaces for activities, and 5 for the physical control of the environment.
- 5 degrees for structure level: 2 for the structural system, 1 for the constructional system, and 2 for materials. This is because we found that the importance of construction level in finding indices of values is relatively less than the other two elements.
- 10 degrees for the space level: 5 for space and 5 for spatial sequence.
- 10 degrees for the expression level: 2.5 for each of color, texture, porosity, and ornaments.

### **7-3 Scoring Values in each Component:**

We will first deal with each value individually by scoring it according to the previous rating of the components. For example, in the column of theoretical values we will give a degree for the existence of this type of value according to each component. This is determined by the existence of indices arrived at in the previous chapter. A scale rated from 0 to 10 (0 - 2.5 - 5 - 7.5 - 10) or 0 to 5 (0 - 1.25 - 2.5 - 3.75 - 5)<sup>6</sup> is suggested to facilitate the scoring and to reduce the subjectivity. We will sum at the end of each value column the scores resulting from each component, and this will be the degree of its existence in the product. By repeating this sequence with each

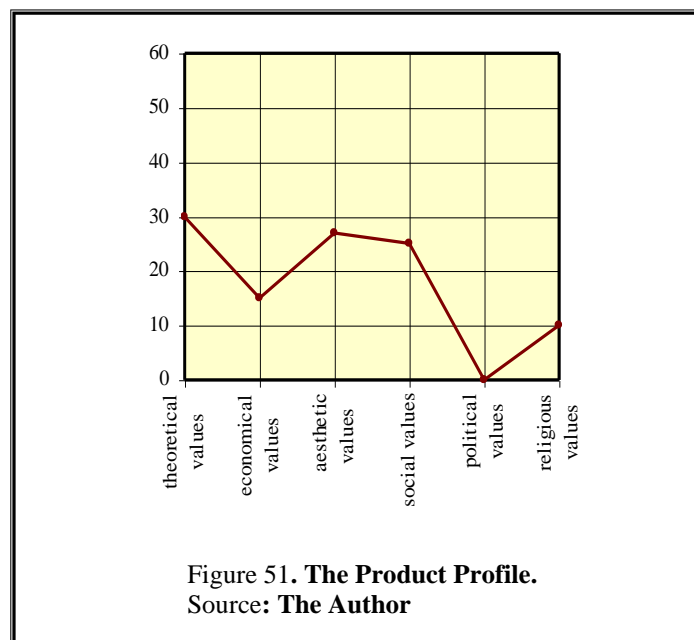
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<sup>6</sup> It depends on the component's relative importance.

value separately, we will obtain 6 scores representing the architectural product's nature according to Spranger's values.

## **7-4 Developing the Matrix**

The matrix in table 11 is developed according to three main factors: first, from the investigation of the indices of values in product's components arrived at in the previous chapter; second, the relative importance of each component; and finally, the scale from 1 to 10 or from 1 to 5 suggested above. The columns of the matrix represent the components and the rows represent the values. The final result of applying the matrix is shown in fig.51. This graph will be termed *The Product's Profile*.





VALUES COMPONENTS		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
CONCEPT 10	10	<p>Scientific dimension: a rational response to human activities, environmental context, the building (orientation, temperature, lighting, acoustics...etc) or to the interest technological innovations and logical structures.</p> <p>Philosophical dimension: finding linkage or analogies (metaphors) from sources in traditional philosophy, religion, literature, history, or arts.</p>	<p>No specific concept for each problem because economic architect tends to use the same solution to face different situations. The accomplishment of the stated program and providing spaces for needed activities within a simple shape and a cheap structural system are his ideas.</p>	<p>The concept will be around the form variables: sculptural masses, geometrical ideas, aesthetic proportions, formalistic analogies, or any concept related to form.</p>	<p>A response to the community social and cultural values and to socio-behavioral contexts in order to create social experiences through his concept.</p>	<p>Dominant, powerful, unique or strange concept concentrating on form. Strange or unrealizable buildings based on subjective feelings and self-imagination.</p>	<p>Submission to past models of architecture with either copying them or some of their elements exactly, or integrating between traditional and modern architecture.</p>
	FORM 10	Mass 5	<p>Scientific mass follows the building's function and reflects the internal spaces, environmental context, and the structural system. Skeletal and planar form. Botanical and cellular organic morphology.</p> <p>Philosophical: mass reflects the philosophical concept behind it. Form is generated from analogies in traditional philosophy, religion, literature, history, or arts.</p>	<p>Mass is simple, symmetrical, and easy to construct.</p> <p>Often geometric basic shapes like the pyramid, cube, cylinder...etc.</p>	<p>Formal or sculptural for its own sake.</p> <p>Abstract forms based on subjective feeling and freedom of imagination.</p> <p>Form does not follow function.</p> <p>Plastic or sculptural form.</p> <p>Minimal morphology</p>	<p>Mass reflects the contextual character and assures its continuity.</p> <p>Represents new social experiences based on intensive studies of the socio-behavioral contexts.</p> <p>Public participation in the building design is an essential phase for the form generation.</p>	<p>Masses are abstract based on subjective feeling and self-imagination.</p> <p>Plastic forms, animal morphology, and sculptural forms providing that forms strong, dominant, strange, impossible or unrealizable.</p>
Relations 5		<p>Scientific: the physical scale of the building's elements is very well organized. Proportions or relations between masses as manual or arithmetic proportions providing guiding ordering systems for the building elements (grids). In addition, relations will reflect the functional relations and environmental contexts.</p> <p>Philosophical: the philosophical concept followed for generating the building's form must be reflected on the relationship between his parts.</p>	<p>Simple ordering system (simple grids) arising from simple arithmetic proportions (as 1:2 or 1:1.2)</p>	<p>Scale and proportions are formal or sculptural. They serve the overall building form.</p> <p>Musical, and natural proportions as generators of building form.</p>	<p>Formal relations reflect the internal and external social spaces and spatial relations.</p> <p>The form generating order is influenced by the contextual patterns.</p> <p>Effect scale of the building's parts and spaces.</p>	<p>Strange or powerful relations.</p> <p>Scale and proportions are formal or sculptural. They serve the overall strange or dominant and powerful building form.</p>	<p>Copying historical and traditional formal relations as they were studying historical / traditional relations as references for modern solutions and contemporary activities.</p> <p>Historical proportions and associate scales are found in the religious relations.</p>
FUNCTION 10	Activities' spaces 5	<p>Success in providing spaces for activities' enclosure.</p> <p>Rational functional relations.</p>	<p>Economic, simple, and conventional solutions.</p> <p>Free plan / activities spaces flexibility.</p> <p>Symmetrical and simple functional relations.</p>	<p>Function follows the subjective abstract form (providing spaces for activities is not important as realizing form).</p> <p>Functional relations follow form.</p>	<p>Providing spaces for social activities.</p> <p>Functional relations express group and collectivity.</p> <p>Functional relations represent the users' behavior and provide social interaction.</p>	<p>Function follows the strange / singular / dominant / powerful / unrealizable form.</p> <p>Functional relations are also strange and follow this form.</p>	<p>Falling back traditional spaces.</p> <p>Copying historical or traditional functional relations.</p> <p>Studying historical / traditional functional spaces and relations as references for modern solution and contemporary activities.</p>
	Environmental control 5	<p>Site control</p> <p>Climate control</p> <p>Heat control</p> <p>Light control</p> <p>Sound control</p> <p>Smell control</p>	<p>Control factors are not very important as the economic solution, facades and treatments do not vary according to these factors, they are almost identical.</p>	<p>Control factors are not as important as form, facades and treatments vary according to form.</p>	<p>No social values could be detected by studying environmental controls.</p>	<p>Control factors are not as important as the strange, powerful form, facades and treatments vary according to form.</p>	<p>No religious values could be detected by studying environmental controls.</p>
STRUCTURE 5	Structural system 2	<p>Structural system following rational experienced laws.</p> <p>Balance / firmness between structural members.</p> <p>Following the latest technological achievements because of their scientific reason.</p>	<p>Common, affordable, and cheap structural systems such as column and beam or column and floor systems.</p>	<p>Using the structural system for its formal and aesthetic dimensions.</p> <p>The structural system follows the latest technological innovations to make the abstract forms constructed or using them just for their aesthetic values.</p>	<p>No social values could be detected by studying the structural system.</p>	<p>Strange structural systems.</p> <p>Systems generating powerful feelings.</p> <p>Functional relations are also strange and follow this form.</p>	<p>Historical structural systems such as load bearing walls or arches and arcades</p>
	Constructional system 1	<p>Use of modern technology and studying its advances.</p> <p>Firmness and convenience between connections and materials.</p>	<p>Using common and affordable constructional systems.</p>	<p>No aesthetic values could be detected by studying constructional system.</p>	<p>Public participation in the construction process.</p>	<p>Difficult or impossible to construct.</p>	<p>No religious values could be detected by studying the constructional system.</p>
	Materials 2	<p>Use of materials for their structural characteristics (insulation / friction / permeability / transparency...)</p>	<p>Current and cheap materials.</p> <p>Few materials.</p> <p>Used only for covering structure (usually paintings).</p>	<p>Using materials for their visual characteristics and for the service of the general form.</p> <p>Combinations between materials for creating artificial appearance.</p>	<p>Local materials for the contextual and cultural continuity.</p>	<p>Attractive materials.</p> <p>Materials representing heaviness and dominance.</p>	<p>Choice of traditional materials such as stones, marbles, and bricks</p>
SPACE 10	Structure 5	<p>Space as static and regular serving the function enclosed.</p> <p>The division of external and internal spaces are determined by their functional necessity.</p>	<p>Static, regular space and often rectangular or square.</p> <p>Usually no external spaces; only internal practical spaces.</p>	<p>Dynamic and formal space.</p> <p>External and internal spaces are resulting from the form level.</p>	<p>Internal or external space has a social dimension; its structure arises from users' behavior.</p>	<p>Dynamic, strange, or powerful space.</p>	<p>Copying same historical space structures.</p> <p>Space generates spiritual feelings reminding of the historical spaces.</p>
	Spatial sequence 5	<p>The spatial sequence has its functional reason.</p> <p>The spatial sequence follows the philosophical concept.</p>	<p>Spatial sequence has no special experience, only reflecting the spaces' symmetrical organization.</p>	<p>Sequence of formal or plastic shots.</p>	<p>Spatial sequence has a social dimension. It provides social experience and follows the users' social behavior.</p>	<p>Spatial sequence generates powerful or violent feelings.</p>	<p>Copying same historical spatial sequences.</p> <p>Spatial sequence generates sequential spiritual feelings reminding of the historical spaces.</p>
EXPRESSION 10	Color 2.5	<p>Color reflects the natural color of materials.</p> <p>Composition of colors according to organization of materials.</p>	<p>Economy in colors. Very few colors of paintings or cheap and common materials.</p>	<p>Intense or color in terms of hue, value, and intensity; expressive colors color serves the entire form.</p> <p>Composition of colors is artistic.</p>	<p>The environmental color represents this type of value; color respects the structural character and the users' cultural background.</p>	<p>Colors high in hue, value, or intensity.</p> <p>Strange composition of color.</p> <p>One dominant color high in hue, value, or intensity.</p>	<p>Symbolic colors, generally, using colors reminding of certain historical periods.</p>
	Texture 2.5	<p>Textures reflect the functional dimension of the building's masses.</p> <p>Textures reflect the materials used for purposes of: insulation / friction / permeability / transparency...</p>	<p>Generally soft smooth textures.</p> <p>Reflecting the current and cheap materials.</p> <p>Reflecting the simple and symmetrical masses.</p>	<p>Degree of hardness or softness, heaviness or lightness, smoothness or lackness vary according to formal purposes.</p> <p>Composition between textures is artistic.</p>	<p>According to the textures of the contextual character or the users' culture.</p>	<p>Hard, heavy, or slack textures.</p>	<p>Historical textural effects generally representing hardness and heaviness due to the heavy historical materials.</p> <p>Textures are influenced by the simple or complex masses.</p>
	Porosity 2.5	<p>Porosity reflects the function of the space.</p> <p>Porosity reflects the environmental control: light / sound / heat / ventilation...</p>	<p>Regular and ordinary porosity with few variations, the building looks like a closed container in which holes are punched as needed.</p>	<p>Porosity has a formal composition in itself.</p> <p>Porosity serves the aesthetic form.</p>	<p>According to the pattern of the contextual character or the users' culture.</p> <p>Reflects the social function of the spaces.</p>	<p>Strange unusual porosity.</p>	<p>Religious porosity is usually an indicator of style. It is a result of solid masses perforated with historical openings.</p>
	Ornaments 2.5	<p>Integral ornaments: structure is the source of ornaments.</p> <p>Ornaments are generated from the formal qualities of materials.</p> <p>They serve in making the transition between different materials, between one structural element and another.</p>	<p>No ornaments.</p>	<p>Ornaments are used purely for delight. The architect is concerned with the formal dimension of ornaments.</p>	<p>Cultural ornaments, familiar to community.</p>	<p>Original, powerful ornaments.</p> <p>Are used for giving emphasis and drawing attention to the building's parts.</p>	<p>Copying historical or traditional ornaments.</p> <p>New modern forms of traditional ornaments.</p>
TOTAL							

Table 11. Matrix for assessing the nature of the architectural product in terms of Spranger's six values.



### **7-5 Conclusion:**

In this chapter a matrix was suggested for assessing the architectural product' nature in terms of Spranger's six values *theoretical, economic, aesthetic, social, political,* and *religious* by scoring their indices in the product's components: *concept, form, function, structure, space,* and *expression*. The rows represent the product's components and the columns represent the values. A graph, similar to the graph of the personality profile obtained by Allport - Vernon - Lindzey scale, is finally obtained (fig.51). A concrete and visible comparison between both may thus be made.

**PART ONE: SUBJECTIVITY IN DESIGN in the Light  
of the Contemporary Theory of Design Epistemology**

**PART TWO: ASSESSMENT OF PERSONALITY**

**PART THREE: ASSESSMENT OF ARCHITECTURAL  
PRODUCT**

**PART FOUR: EMPIRICAL APPLICATION**

This part investigates empirically the relationship between the designer's personality profile and the nature of his architectural product. In part two, personality has been analyzed into its components in order to determine which one mainly emphasizes the architect's decision making process during design. *Personal Values* were found to be the main influential component. It was also concluded that values were principal in representing the type and character of personality. We suggested also, in part two, *Allport - Vernon - Lindzey scale* for assessing personality in terms of values. This scale is based on Spranger's classification of personality into six types according to their values: theoretical, economic, aesthetic, social, political, and religious values. The scale's final result is in the form of a graph representing the *personality profile* according to the degree of existence of these values. At the end of part two, the architectural aspects of each value were analyzed and a re-explanation of each in architectural terms was introduced.

Part three, on the other hand, dealt with the product and assessing its nature. An analysis of the product into a group of components and sub-components was made. These components are concept, form, function, structure, space, and expression. Then, the main indices of the above six values on the architectural product were concluded; meaning that the implications of each value on each component were observed. Then a *matrix of Values / Components* was suggested to assess the product's nature in terms of the six values. The columns of the matrix represent the six values and the rows represent the product's components and sub-components. In order to assess the product's nature, each value should be scored in each component according to the degree of existence of its indices in this component. A total score for each value in the whole product will be thus obtained; therefore, six scores representing the indices of the theoretical, economic, aesthetic, social, political, and religious values will determine the *nature of the architectural product*. The final result will be a graph similar to the personality profile, and will be then compared with it.

This part deals with the empirical application of the study. A sample of architects will be chosen, then *Allport - Vernon - Lindzey scale* will be applied on

each to determine their personality profile. A sample of the works of each will then be analyzed and assessed by the product's *matrix of Values / Components*. The results of each architect will consist of a graph representing his personality profile and several graphs representing the nature of each product (product profile). A comparison between them will be made to see if there is a resemblance or not between the two graphs and thus to investigate the relationship between the designer's personality profile and each of his works.

In this chapter, the methodology followed in the research's empirical application will be explained. Furthermore, the criteria for choosing the architects and their works and the main tools used in this empirical part will be also illustrated. The chapter is thus composed of three sections: *Methodology*, *tools*, and *samples*.

## **8-1 Methodology:**

It is meant by methodology, the main steps followed in the empirical investigation of the relationship between each designer's personality profile and the nature of his architectural product. It consists simply of three stages illustrated in fig.52: Determination of his personality profile (graph) by applying Allport - Vernon - Lindzey scale, determination of the nature of each product according to the matrix Values / Components (graph), and finally making a comparison between both to observe the degree of the architect's intuition during design and the degree of consistency of his personality in his work.

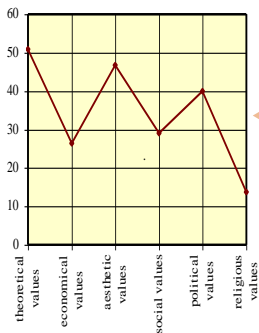
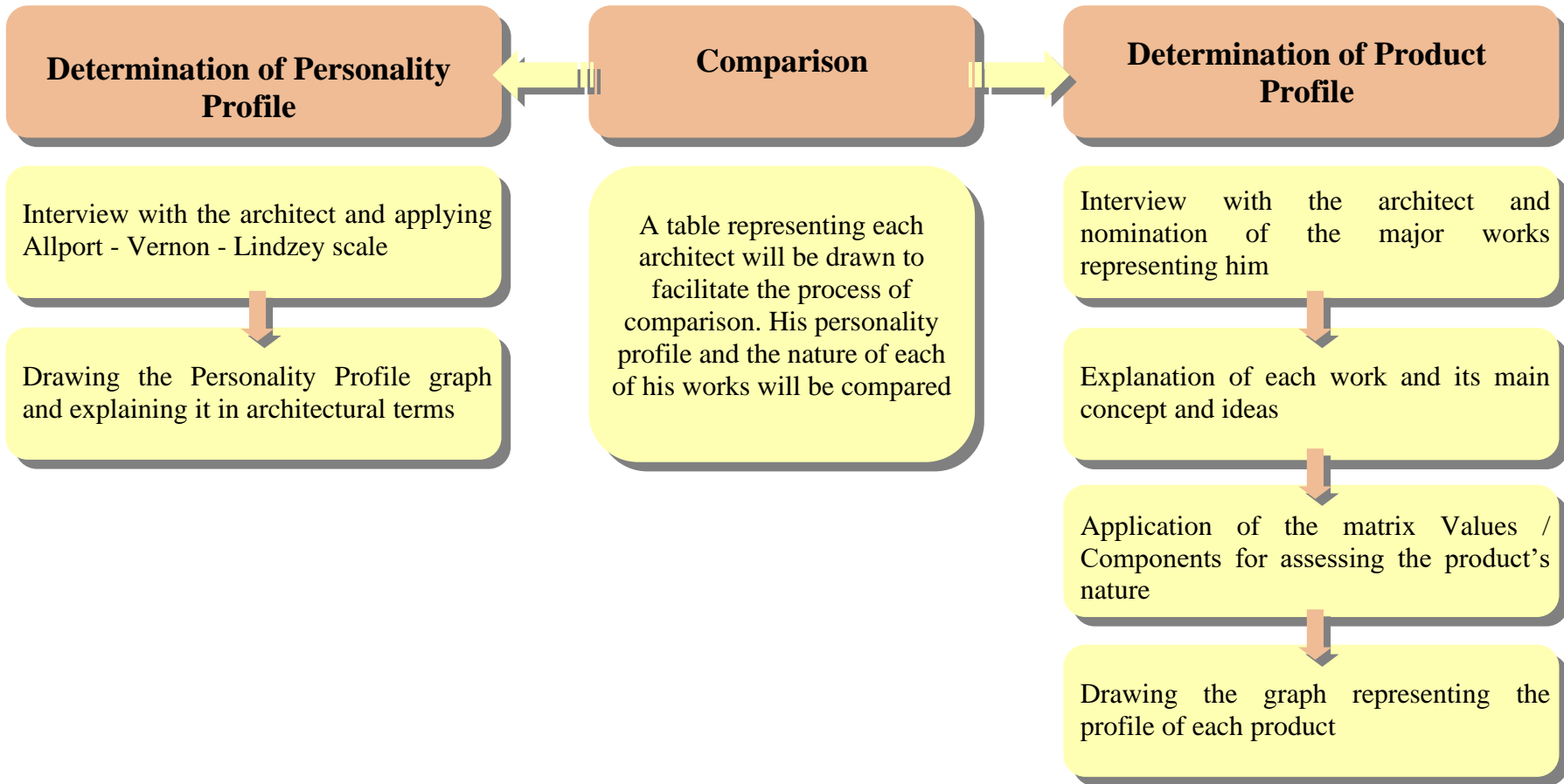
## **8-2 Tools:**

Two main tools were used in this empirical investigation: *Allport - Vernon - Lindzey scale* for assessing the designer's personality profile, and *the matrix Values / Components* for assessing the nature of each product.

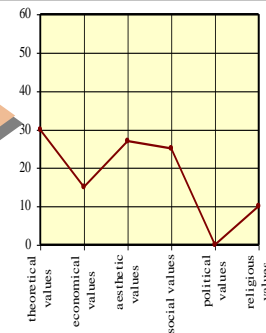
### **8-2-1 Allport - Vernon - Lindzey Scale:**

This scale was initially applied in America in 1931, and then it was adapted and translated for its use in Egypt by Attya Hana, a professor teaching at Ein Shams University. It measures the strength of six values in his personality. The values are the theoretical, economic, aesthetic, social, political, and religious values. Table illustrates the main characteristics of each value and its architectural aspects. After the application of the scale, one could obtain a graph representing his personality profile in terms of these six values. The *adapted scale* consists of two parts: part one is composed of a number of controversial statements or questions with two alternative answers. The subject should indicate his personal preferences by writing the appropriate figures in the columns. If he agrees with alternative (a) and disagrees with

Figure 52. Methodology of the Empirical Investigation of the Relationship between the Designer’s Personality Profile and the Nature of his Architectural Product



COMPARISON





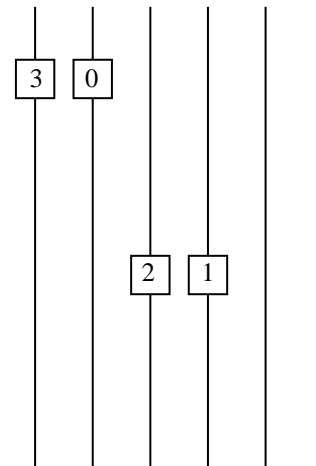
(b), he writes 3 in the first column and 0 in the second column. If he agrees with (b) and disagrees with (a), he writes 0 in the first column and 3 in the second column. If he has a slight preference for (a) over (b), he writes 2 in the first column and 1 in the second one, and vice versa. The next example will illustrate this part:

**Example:**

The main object of scientific research should be the discovery of pure truth rather than its practical applications (a) Yes; (b) No.

Do you think that it is justifiable for the greatest artists, such as Sayed Darweesh (the musician), Salama Hegazi (the singer), and Ahmed Shawki (the poet), to be selfish and negligent of the feelings of others?

(a) Yes; (b) No.



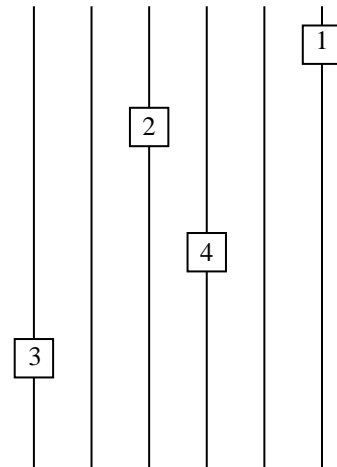
Part two consists of a group of situations or questions followed by four possible attitudes or answers. The subject should arrange these answers in the order of his personal preference from first to fourth by writing:

- 4 besides the answer that appeals to him most,
- 3 besides the answer which is next most important to him,
- 2 besides the next,
- 1 besides the answer that least represents his interest or preference.

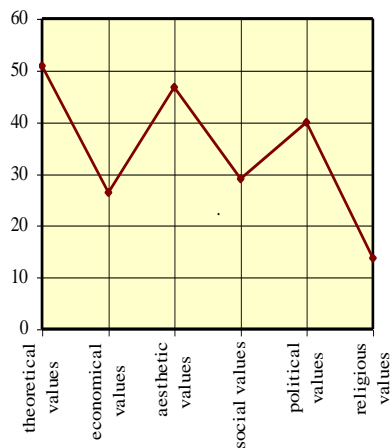
**Example:**

Do you think that a good government should aim chiefly at:

- (a) More aid for the poor, sick, and old?
- (b) The development of manufacturing and trading?
- (c) Introducing more ethical principles into its policies and diplomacy?
- (d) Establishing a position of prestige and respect among nations?



After applying the scale on the subject and scoring the six values in his personality, a graph like the following is obtained:

**8-2-2 Matrix Values / Components:**

A detailed study of the matrix and the indices of each of the six values on the product's components could be found in table 11, chapter seven. Scoring the indices of values will be as follows:

Each value will be scored over 10 degrees in *Concept*.

Each value will be scored over 10 degrees in **Form**:

- 5 for the Mass element
- 5 for the Relations between masses.

Each value will be scored over 10 degrees in **Function**:

- 5 for Providing spaces for activities
- 5 for Environmental control

Each value will be scored over 5 degrees in **Structure**:

- 2 for Structural system
- 1 for the Constructional system
- 2 for Materials

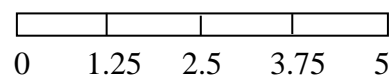
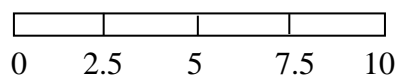
Each value will be scored over 10 degrees in **Space**:

- 5 for Space
- 5 for Spatial sequence.

Each value will be scored over 10 degrees in **Expression**:

- 2.5 for each of its sub-components: color, texture, porosity, and ornaments.

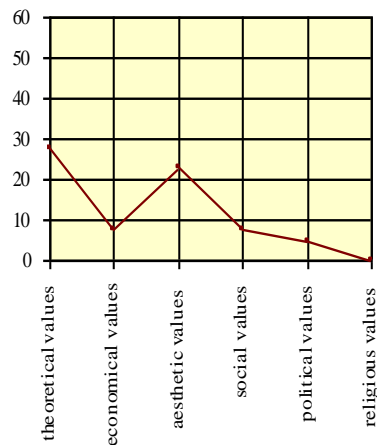
This scoring will be according to the existence of the indices of values in each component and a scale rated from 0 to 10 (0 - 2.5 - 5 - 7.5 - 10) or 0 to 5 (0 - 1.25 - 2.5 - 3.75 - 5) is suggested to facilitate the scoring and to reduce the subjectivity. We will sum at the end of each value column the scores resulting from each component, and this will be the degree of its existence in the whole product.



**Example of applying the Matrix:**

VALUES		THEORETICAL	ECONOMIC	AESTHETIC (FORMAL)	SOCIAL	POLITICAL	RELIGIOUS (TRADITIONAL)
COMPONENTS							
CONCEPT	10	10			2.5		
FORM	Mass 5	5		2.5	2.5		
	Relations 5			5			
FUNCTION	Activities spaces 5	5					
	Environmental control 5	5					
STRUCTURES	Structural system 2		2				
	Constructional system 1		1				
	Materials 2		2				
SPACE	Structure 5			5		2.5	
	Spatial sequence 5			5		2.5	
EXPRESSION	Color 2.5			2.5	2.5		
	Texture 2.5	1.25		1.25			
	Porosity 2.5	1.25		1.25			
	Ornaments 2.5		2.5				
<b>TOTAL</b>		<b>27.5</b>	<b>7.5</b>	<b>22.5</b>	<b>7.5</b>	<b>5</b>	<b>0</b>

A graph similar to the Personality Profile will be obtained for determining the profile of each architectural product.



### **8-3 Samples:**

In our empirical investigation, there will certainly be two kinds of samples: first, the architects; and secondly, the products.

#### **8-3-1 Architects:**

Not only well-experienced architects were chosen as samples of the empirical study, but also younger generations. In addition, a group of final undergraduate year students from the Architectural Department, Faculty of Engineering, Cairo University, was chosen. If we found a relationship between the personality profile and the product's nature all along the various generations, that means that the designer's values influences his decision during design and thus his architectural product regardless his experience. Of course one could expect that experience have its influence in strengthening or rearranging certain values, but personality will then still have the most influential role on the designer's decision making process. The first generation will be from 55 to 75 years old, it consists of Ali Raafat, Gamal Bakry, and Abdel Halim Ibrahim. The second from 35 to 55 years old, it consists of Tarek Abou El Naga, Akram El Magdoub, and Ahmed Mito. The third will be from 25 to 35, it consists of Amani Kamel and Ahmed Emam. Besides sixteen final undergraduate year students to guaranty the formulation of their architectural personality.

#### **8-3-2 Products:**

Products were chosen according to the nomination of the architect himself. He was asked to nominate at least five products representing, in his opinion, his architectural product. But because of some difficulties in interviewing them about their works, some architects have nominated only three. Generally, we could say that the number of each architect's products has varied from three to five. Since the students do not have a considerable number of designs, only one product for each student was chosen to be assessed. This product was in fact a project submitted by the whole class, and it was a very good opportunity to observe the variation of approaches and designs of the same project according to the differences in their personal values.

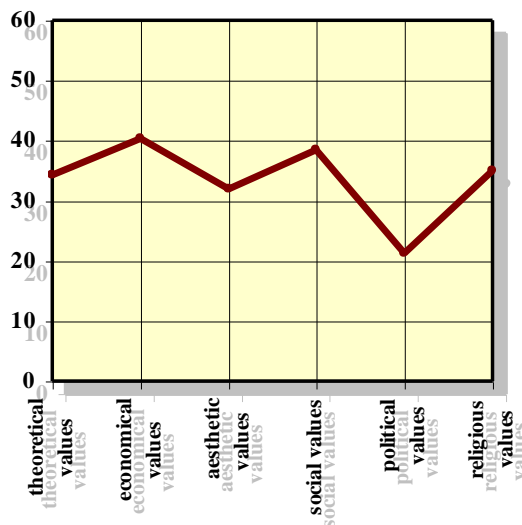
This chapter deals with the assessment of personality profile for each architect and student. Allport - Vernon - Lindzey scale was applied either by interviewing the subject and filling the test by myself, or by asking the subject to fill it alone and submit it later. A graph representing the personality profile in terms of Spranger's six values the theoretical, economic, aesthetic, social, political, and religious was obtained. According to this profile, and by reviewing table in chapter four or its key words below, the main psychological and architectural attitudes and interests of each personality could be determined. In the next sections, we shall observe the results of applying the scale on the samples.

### **9-1 Ali Raafat:**

Ali Raafat, professor of Design and Theory in Cairo University, filled Allport - Vernon - Lindzey scale and his Personality Profile was the following:

Figure 53. Personality Profile of Ali Raafat.

Source: the Author.



Economic values came at the first place, then social values, theoretical values, religious values, aesthetic values, and finally political values. We could notice that there are slight differences between values and all of them are almost equal in strength in Raafat's personality.

**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.

## 9-2 Gamal Bakry:

The scale was applied on Bakry, a very well known Egyptian architect, in an interview where he discussed every single question or statement in the scale before answering it. His personality profile was as indicated in the following graph:

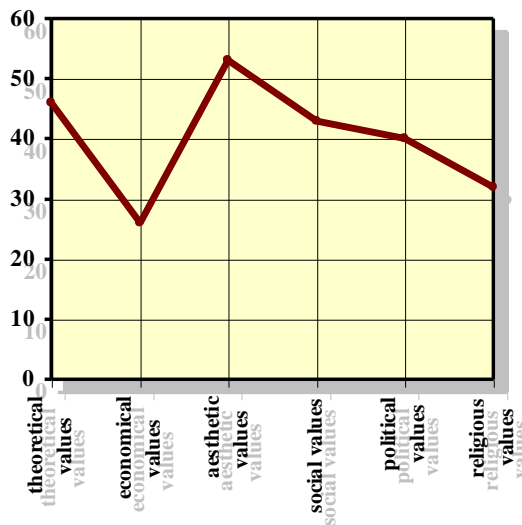


Figure 54. Personality Profile of Gamal Bakry.

Source: the Author.

Aesthetic values and theoretical values are dominant in Bakry's personality, then come the social values, and political values. Religious and economic values are recessive in his personality.

## 9-3 Abdel Halim Ibrahim:

After interviewing Abdel Halim Ibrahim, professor of Design and Theory in Cairo University, and applying the scale of Allport - Vernon – Lindzey, his personality profile is obtained as follows:

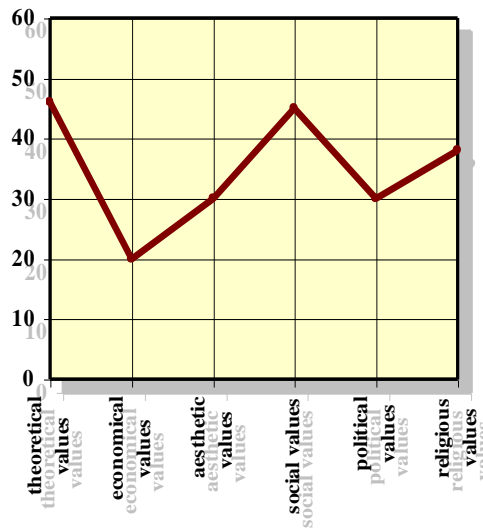
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**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.



Figure 55. Personality Profile of Abdel Halim Ibrahim.

Source: the Author.



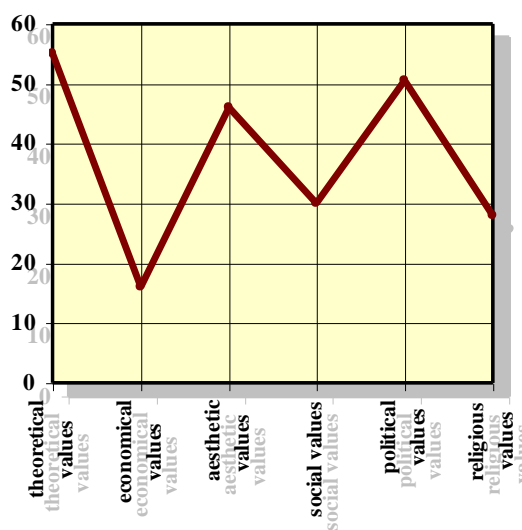
Theoretical and social values seem to be very dominant values controlling his personality; then the religious, political, and aesthetic values; and finally economic values.

## 9-4 Tarek Abou El Naga:

Naga is actually teaching in South California Institute for Architecture and California Politechnique. He is characterized by a unique approach in his designs. When assessing his personality by Allport - Vernon – Lindzey, the following profile was obtained.

Figure 56. Personality Profile of Tarek Abou El Naga.

Source: the Author.



**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.

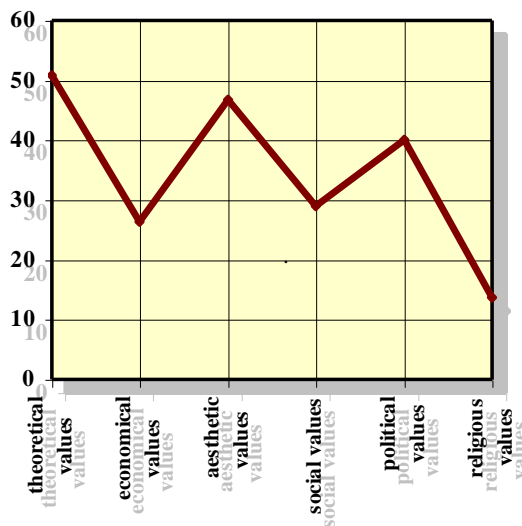
Theoretical, political, and aesthetic values dominate Naga's personality; while social and religious values followed them with big differences. Economic values came in the last position.

### **9-5 Akram El Magdoub:**

El Magdoub is one of the well-known and promising architects in Egypt; he has participated in and won many architectural competitions. By interviewing him and applying the scale, his personality profile was as indicated below:

Figure 57. Personality Profile of Akram El Magdoub.

Source: the Author.



Theoretical and aesthetic values came in the first place, then political values, social values, economic values. Religious values were recessive relative to the other five.

### **9-6 Ahmed Mito:**

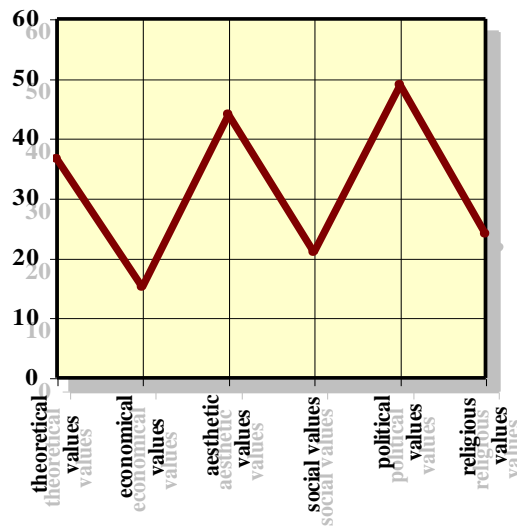
Ahmed Mito is one of the famous architects in Egypt in participating and winning prizes, usually the first, in many architectural competitions. In addition, he teaches at Ein Shams University. When applying Allport - Vernon - Lindzey scale, his personality profile was found as follows:

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**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.

Figure 58. **Personality Profile of Ahmed Mito.**

Source: the Author.



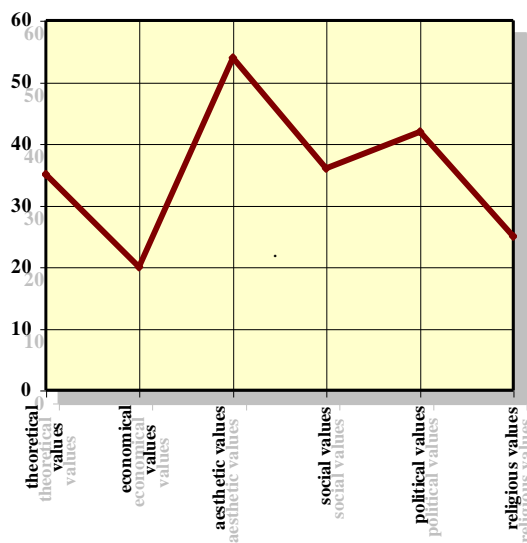
Political values came first, followed by aesthetic then theoretical values. Religious, social, and economic values came after them with a remarkable difference.

### 9-7 Amani Kamel:

Amani Kamel represents one of the talented and active architects in the young generation. She participated in a considerable number of competitions and won the first price in Edfu National Museum. After filling and submitting the scale, it was found that she has the following personality profile:

Figure 59. **Personality Profile of Amani Kamel.**

Source: the Author.



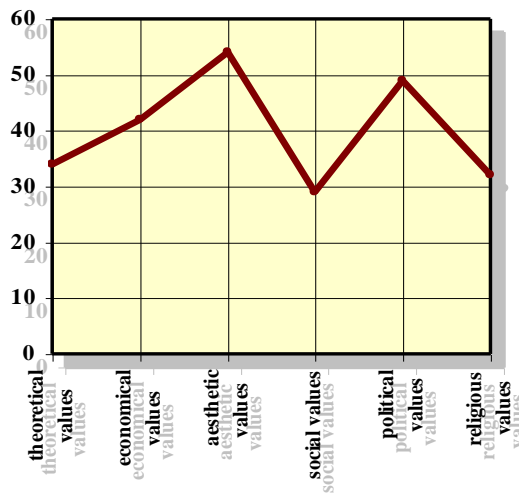
*Theoretical:* rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. *Economic:* cheap systems, conventional and functional solutions, cost, no interest in form. *Aesthetic:* abstract forms, subjective, selfish, imagination. *Social:* unselfish, architecture as a social means, culture, community, character, social spaces. *Political:* subjective, strange, unrealizable, powerful. *Religious:* submission to past models, traditional architecture, conservative, post modern.

## 9-8 Ahmed Emam:

Emam belongs to the young generation of architects and he participated in many competitions. He is a lecturer at Faculty of Engineering in Matareya. He was interviewed and filled the scale for assessing personality. His personality profile is represented by the following graph:

Figure 60. **Personality Profile of Ahmed Emam.**

Source: the Author.



Aesthetic values, then political values dominate Emam's personality. Economic values came in the third position, followed by theoretical, religious, then social values.

## 9-9 Students:

Sixteen students were chosen from the final undergraduate year in the Architectural Department, Faculty of Engineering, Cairo University. The next table illustrates their personality profiles:

---

**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.

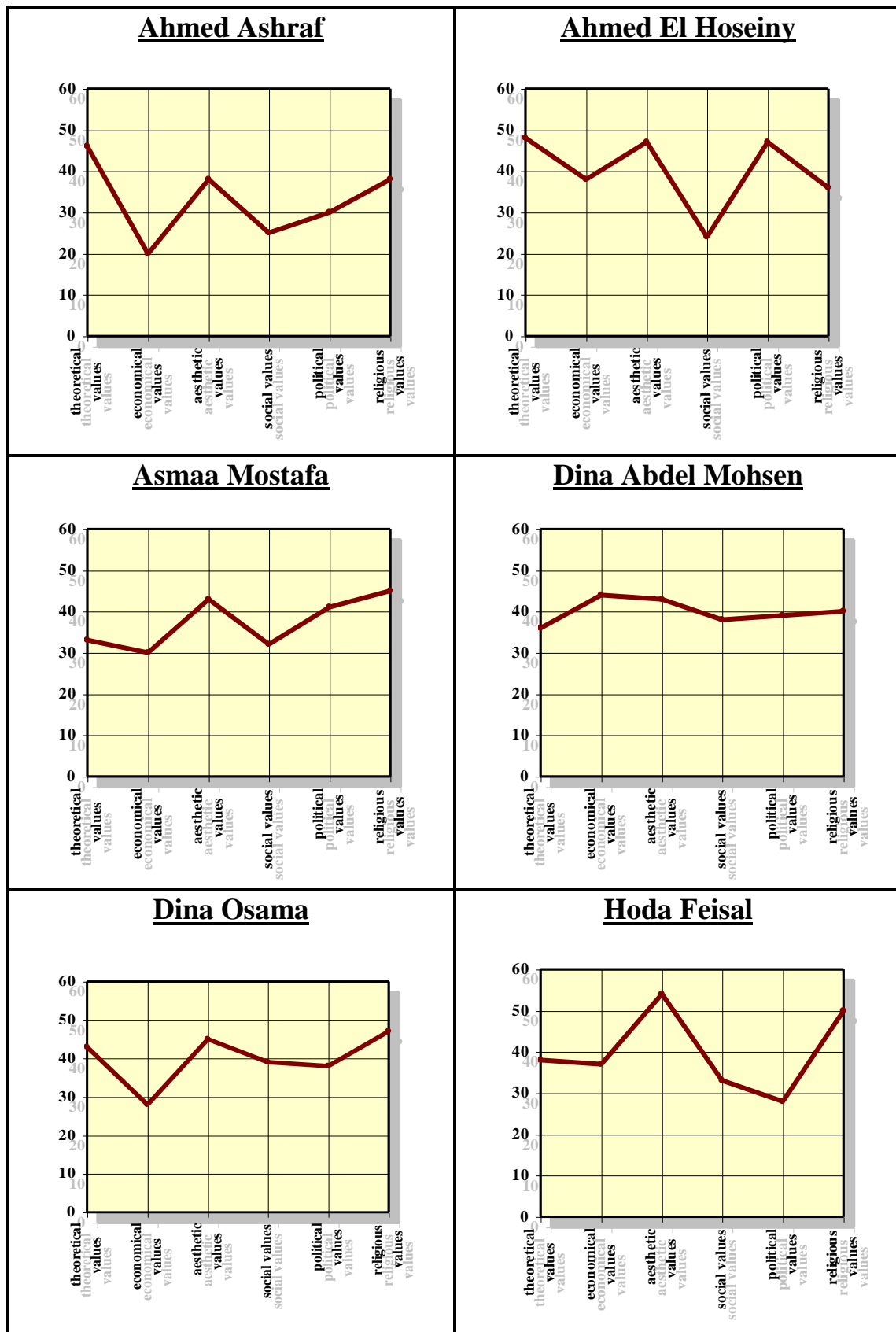


Table12. Personality Profiles of Students (group 1).

**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.

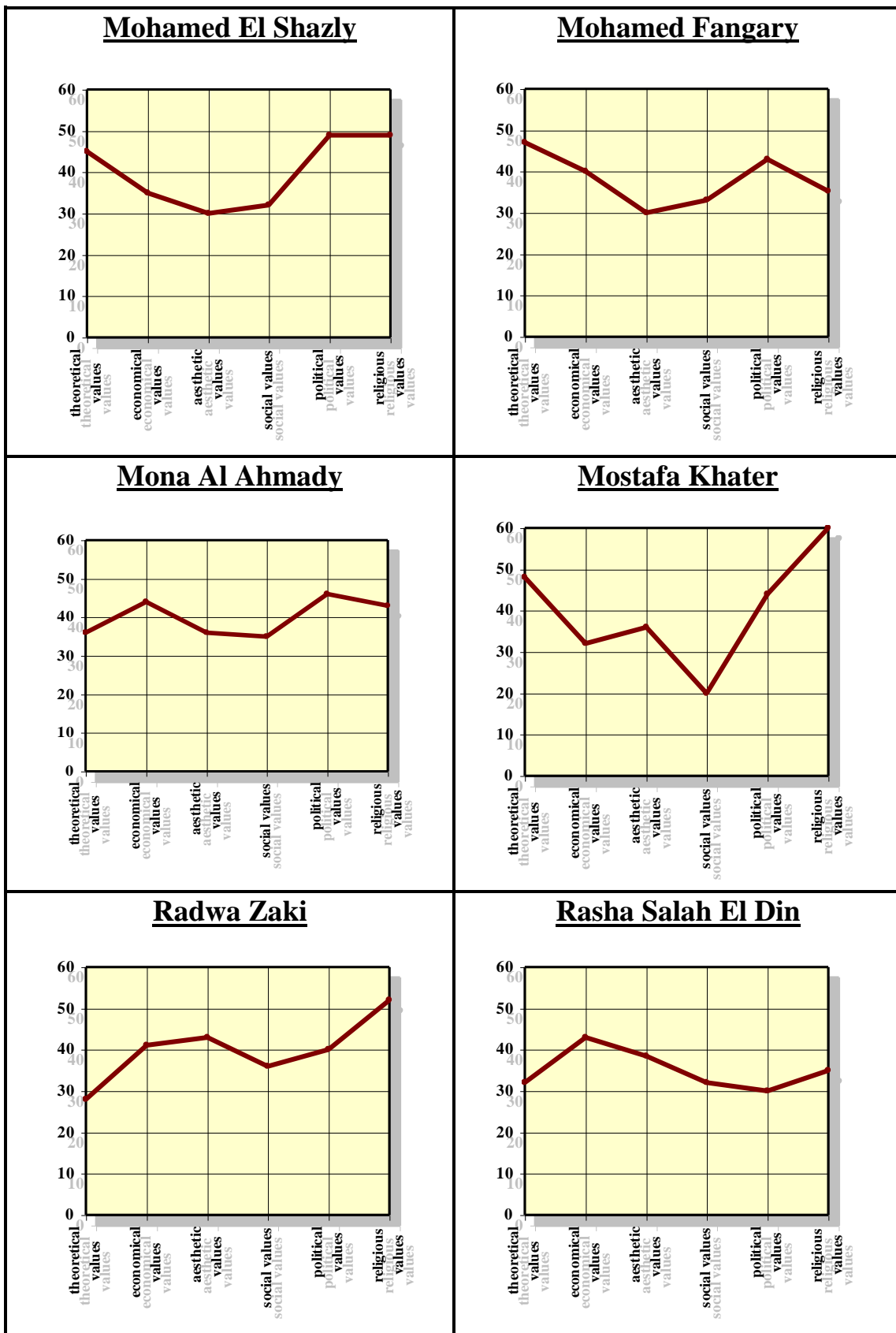


Table13. Personality Profiles of Students (group 2).

**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.

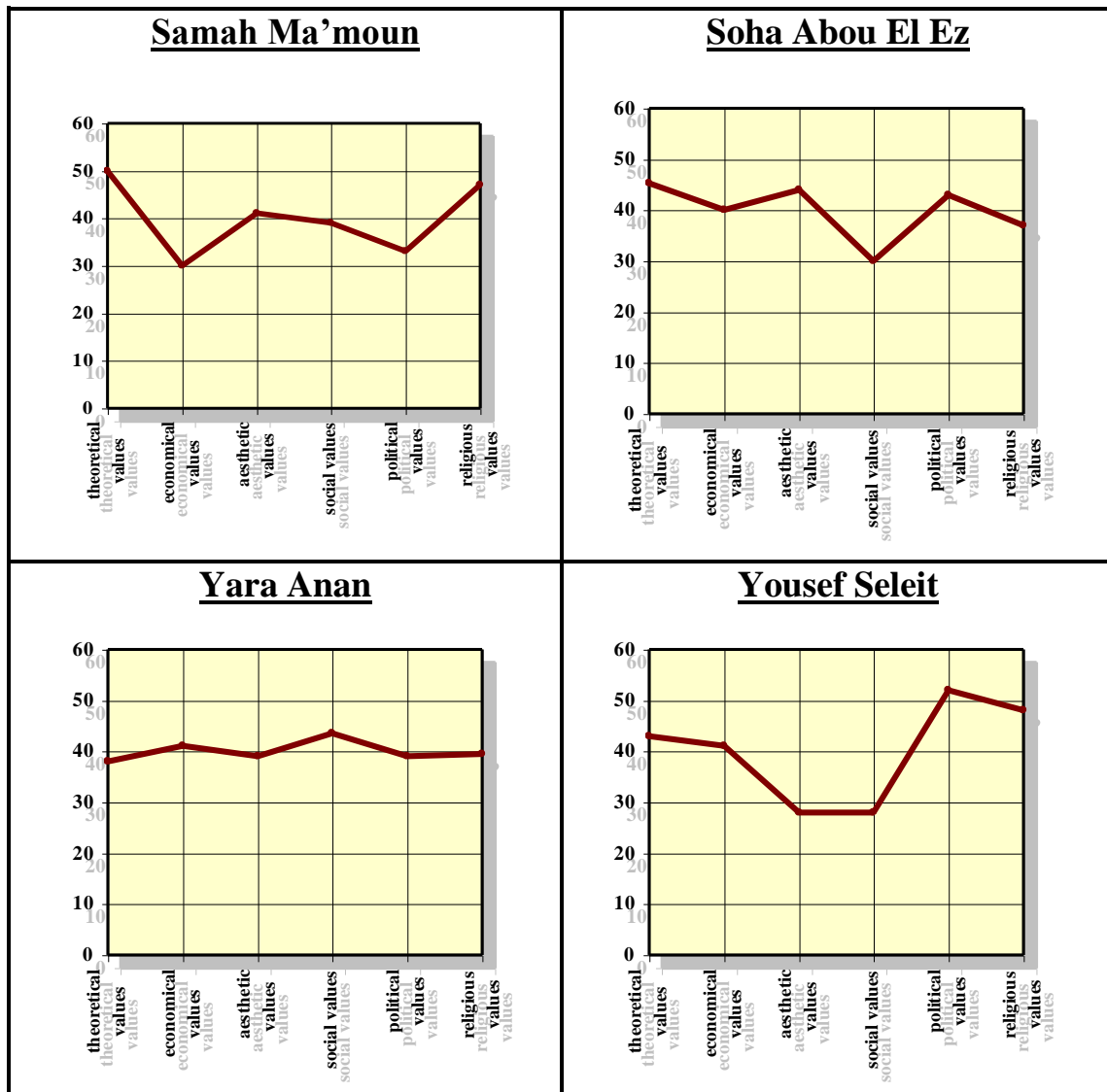


Table14. Personality Profiles of Students (group 3).

**Theoretical:** rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research, technology. **Economic:** cheap systems, conventional and functional solutions, cost, no interest in form. **Aesthetic:** abstract forms, subjective, selfish, imagination. **Social:** unselfish, architecture as a social means, culture, community, character, social spaces. **Political:** subjective, strange, unrealizable, powerful. **Religious:** submission to past models, traditional architecture, conservative, post modern.

The following chapter deals with the assessment of the architects' and students' products. The main ideas and concepts of each work will be first exhibited, then the matrix *Values / Components* will be applied to indicate the nature of each product and to determine its profile.

The choice of the products depended on the nomination of the architect himself. Four favorite projects were nominated by **Ali Rafaat** for assessing their nature. They are Demographic Center in Cairo, Egyptian Embassy in New Delhi, Egyptian Embassy in Islamabad, and Hilton International in Luxor. **Gamal Bakry** choose the Ambassador residence in Berlin, Dahab Touristic Village, History of Art Museum in Germany, Syndicate of Engineering in Port Said, and Badran Villa. **Abdel Halim Ibrahim** nominated Imam Mohamed Ibn Saoud Mosque, Qasr El Funoun Art Gallery, and Cultural Park in Sayeda Zeinab. The works of **Tarek Abou El Naga** were Sharm Safari Gate, Marina International Hotel, Science City, and House of Emergent Suspensions. The projects nominated by **Akram El Magdoub** were Khofo Touristic Center, Syndicate of Engineering in Ismailya, Public Resort in Port Said, Egyptian Embassy in Berlin, and Science City. **Ahmed Mito's** favorite projects were A Commercial Center at El Abbassya, A Commercial Center in Maadi, A Mosque at El Ryad, and Hurgada National Museum. **Amani Kamel** nominated three projects namely Edfu National Museum, El Hussein Ventilation Plant, and Saudi Investment Company. The projects nominated by **Ahmed Emam** were a Commercial Center at El Ahly Club, El Hussein Ventilation Plant, Saudi Investment Company, and Touristic Promotion Authority. The project of the **final undergraduate class students** was a Restoration Center in Sakkara or in Old Cairo. Several interviews with each were done to discuss the main ideas in their projects.

In the following pages, each project will be explained according to these interviews, then the chart illustrating the nature (profile) of each will be drawn according to the matrix *Values / Components*.



## **10-1 The Architectural Product of Ali Raafat:**

Four buildings will be investigated, namely Egyptian Embassy Complex in Islamabad, Egyptian Embassy Complex in New Delhi, Hilton International in Luxor, and Cairo Demographic Center.

### **10-1-1 Egyptian Embassy Complex in Islamabad:<sup>1</sup>**

The Egyptian Embassy Complex in Islamabad (fig.61) was erected on an overall area of 14000 m<sup>2</sup>. The complex consists of main building divided into the Embassy building and the consulate building, the Ambassador residence, staff Hats and staff villas.

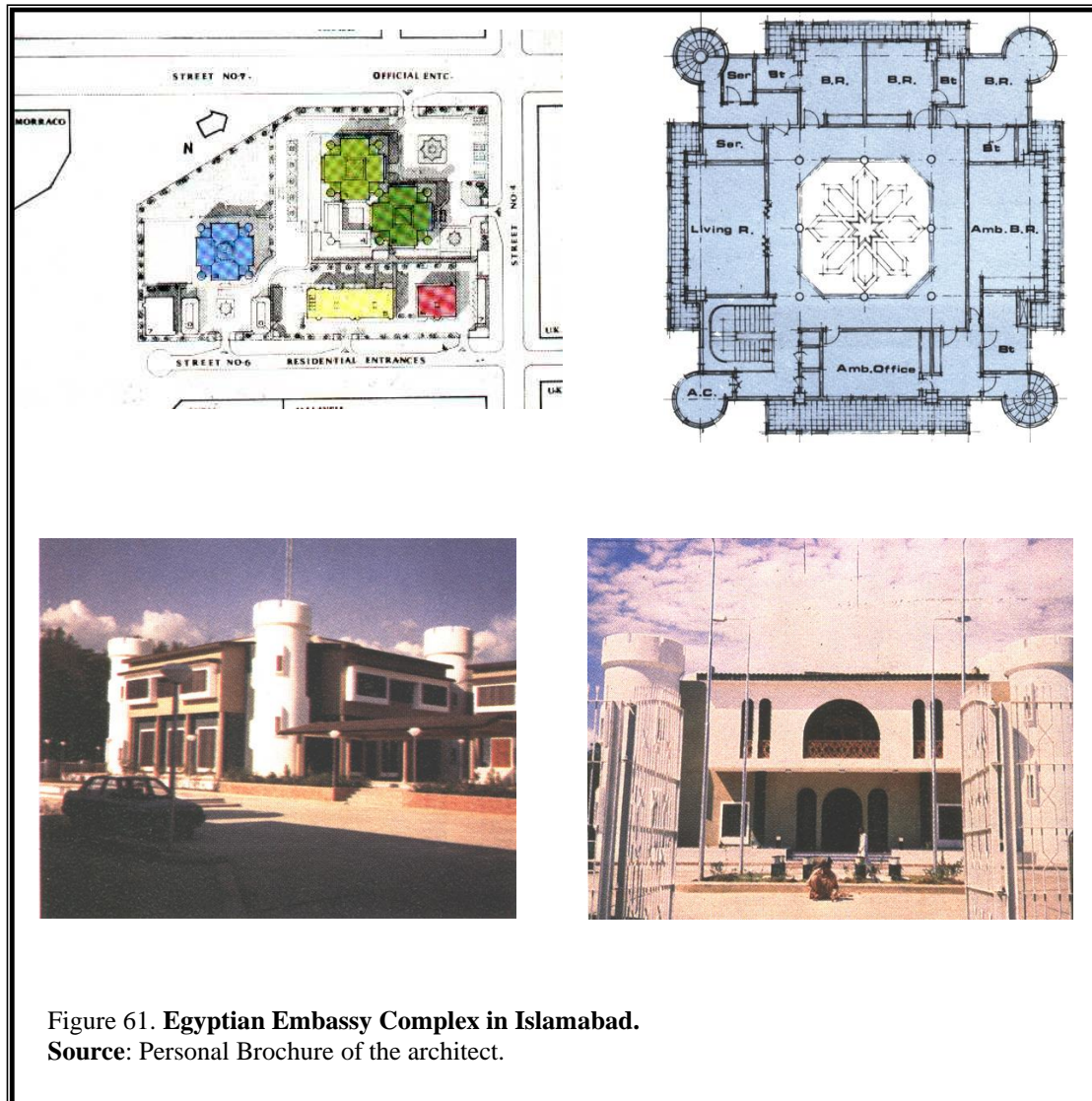
#### **10-1-1-1 Concept:**

- The complex is following the Islamic concept and heritage based on the idea of securing unity and privacy. The Islamic space is a central one surrounded by secondary spaces. The central space is either open or covered, illuminated at the top. A fountain or "Salsabeel" is provided to humidify the surrounding atmosphere.
- This concept was used in designing the complex by using a design unit "Module" in the central patio, two floors high illuminated and ventilated at the top covered with pyramidal roofs with chancellery offices overlooking it. The central patio can be used either as a salon or as multi-purpose hall for receptions and lectures besides being a horizontal and vertical circulation element
- At the Ambassador Residence, the central hall is used as internal covered patio beside being a visual and functional extension of salons, living areas & dining rooms at the ground floor. This expresses space unity by connecting the inside with the outside & extending main space to secondary ones
- Cylindrical towers in corners of square units were used as vertical circulation elements and services

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<sup>1</sup> Interview with Ali Raafat on the 12<sup>th</sup> of November 2001.

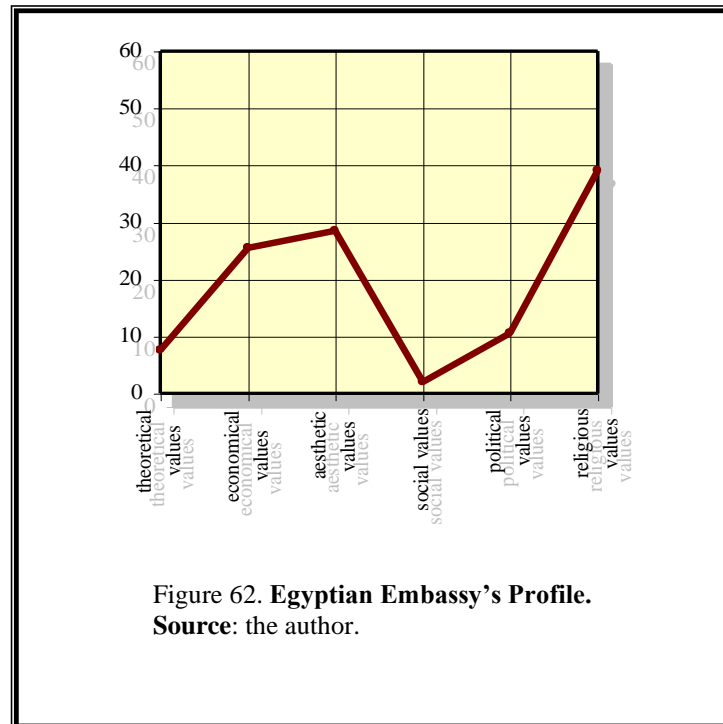
- Islamic decorations and woodworks were used in balustrades, partitions and "Mashrabias" these were used as sun screens and as elements of security and privacy.
- The complex reminds both Egypt and Pakistan of Salah El Din Citadel in Cairo, being a sign of challenge and resistance.



### 10-1-1-2 Egyptian Embassy's Profile:

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social,

political, and religious (traditional) on the product's components, the next graph has been obtained:



### 10-1-2 Egyptian Embassy Complex in New Delhi:<sup>2</sup>

The complex (fig.63) was erected on an overall area of 12000 m<sup>2</sup> within the diplomatic enclave of the Indian Capital. The complex consists of the embassy building, technical offices and consulate section, besides the ambassador's residence and staff villas.

When interviewing Ali Raafat, he declared the following points:

- The complex is designed around a district square, with a multi-level fountain at its center. This arrangement reflects a typical Egyptian district square, with multi-leveled building blocks around it.

<sup>2</sup> Interview with Ali Raafat on the 12<sup>th</sup> of November 2001.

- The buildings form a haphazard vernacular juxtaposition of white terrazzo cubic masses, projecting back and forth on both the horizontal and vertical planes.
  
- The projections on the first and second floors around the square reflect the sporadic projections in Egyptian vernacular housing, casting shadows on lower walls. Further projections of "Mushrabias" extend from the projecting building blocks, a typical treatment of Arabic elevations.
  
- The general composition is of harmonious organic, nearly pyramidal-hierarchy of cubical blocks, whose apex accentuates the main entrance to the chancellery. The whole formation is raised from the ground level by 90 cm concrete stilts to further purify and accentuate its geometry and to protect it from heavy monsoon rains.
- The pyramidal form is further expressed through triangular recesses clad with ceramic murals using arabic calligraphic elements. This pyramidal form is accentuated by the use of triangular "Mushrabias" on the first floor windows, which keeps its function as a sun screen, while still permits through its lower part the view of the cascading fountain and the garden at the ground floor level.
  
- Egyptian leaded glass in bright red, yellow, blue and green Islamic Arabesque pattern is used within small triangular windows which, visually, complete a square with the lower ceramic ones.
  
- The surface treatment is dominated by the textured white terrazzo plaster- a mixture of marble chips, marble powder and white cement which is brushed and washed before final setting. Expansion and control joints in this plaster were designed in an Islamic magna-patterns within the whole blank side of the cubical blocks.
  
- Highly efficient Indian wood craftsmanship was used in external & internal elements: doors, stair balustrades, arches & ceiling paneling in public & private rooms, This, on the other hand, is calmed down by large areas of terrazzo, white marble, and suspended ceilings.

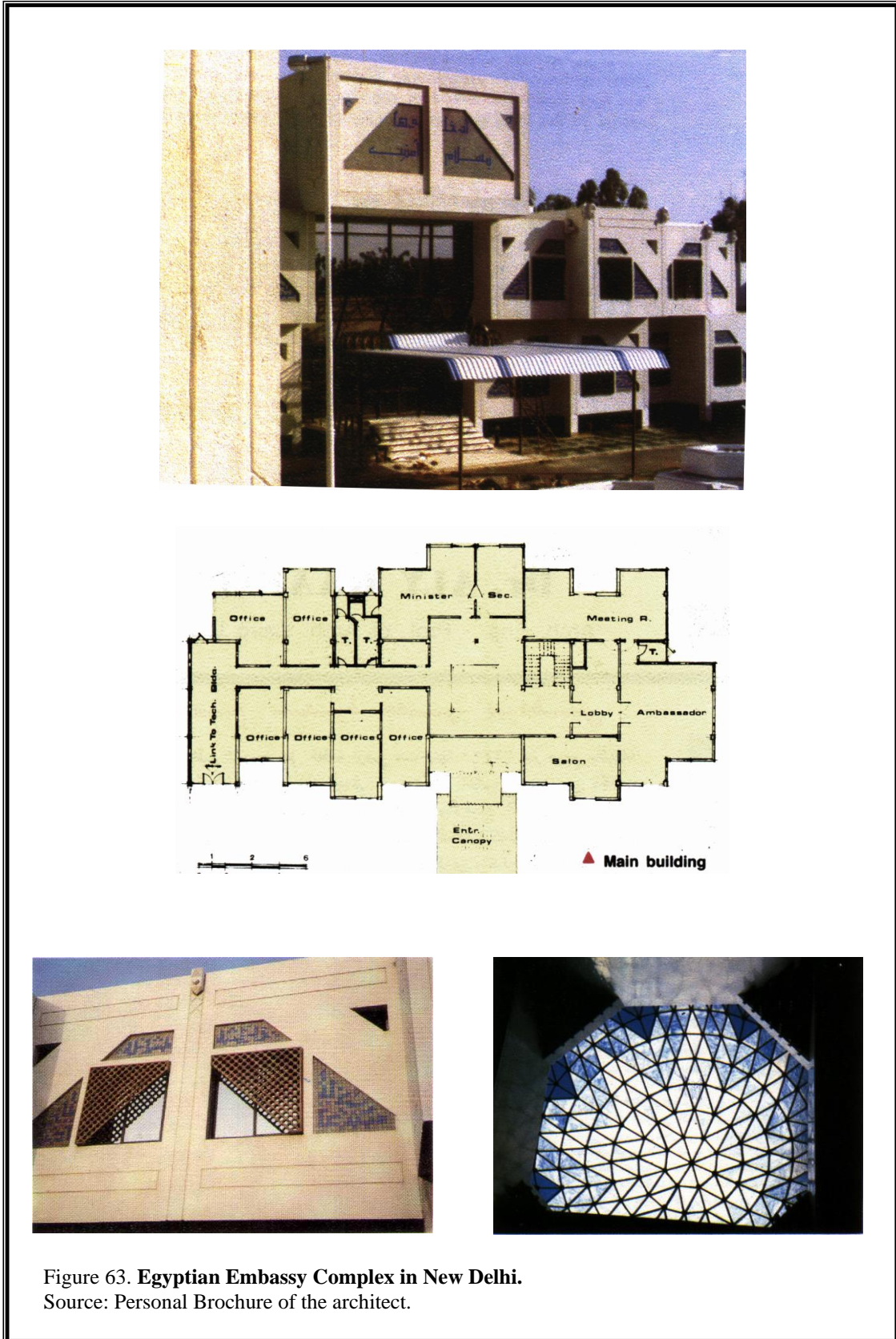
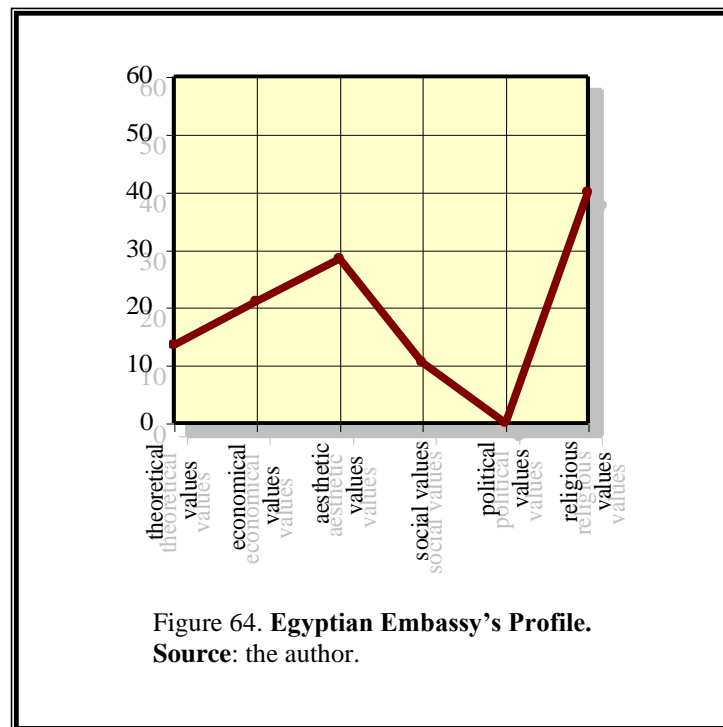


Figure 63. Egyptian Embassy Complex in New Delhi.  
Source: Personal Brochure of the architect.

### **10-1-2-1 Egyptian Embassy's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-1-3 Hilton International, Luxor:<sup>3</sup>**

The hotel site (fig.66) is on the eastern bank of the Nile north of Karnak Temple in a region filled with trees. The designer has chosen the horizontal extension to insure keeping the hotel height within 9 meters i.e. lower than the surrounding trees, thus keeping the structure completely hidden from Karnak temple panoramic view. The design subdivided the 300 guestrooms into quadrants connected to central public units by connecting corridors. Each cluster is square shaped surrounding an

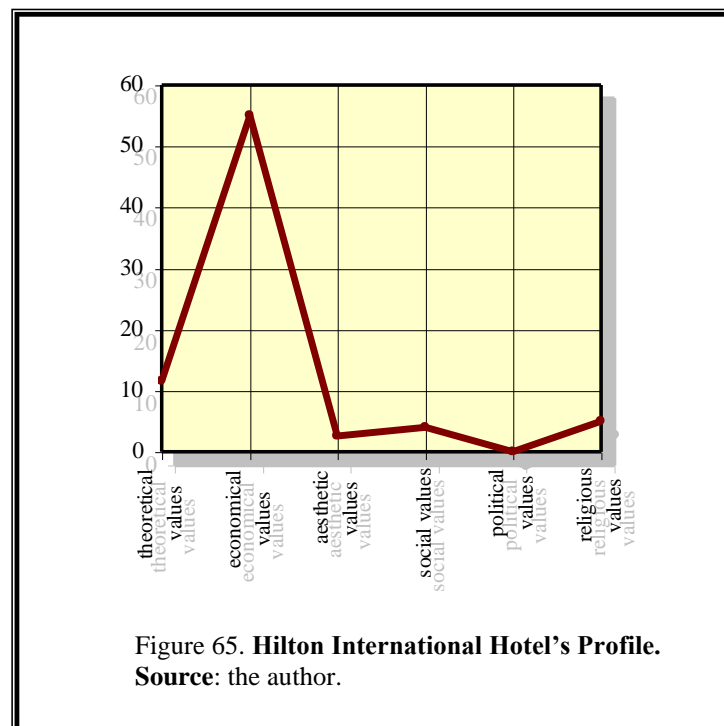
<sup>3</sup> Interview with Ali Raafat on the 12<sup>th</sup> of November 2001.



internal open court. Three quarters of guestrooms enjoy the view of the Nile and its hilly western bank. They also overlook the quiet private garden with its existing trees carefully preserved by the design. The public service section overlooks the garden surrounding the swimming pool terrace and restaurant. Entrance hall overlooks the swimming pool at the level of main access road. The octagonal entrance hall, two floors high, comprises a staircase leading to the level of external garden, swimming pool, restaurant. This entrance leads to hotel facilities: cafeteria, lobby bar and the multi-purpose ballroom. This is designed to allow its division into three separate units. It also leads to casino and health club.

### **10-1-3-1 Hilton International Hotel's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



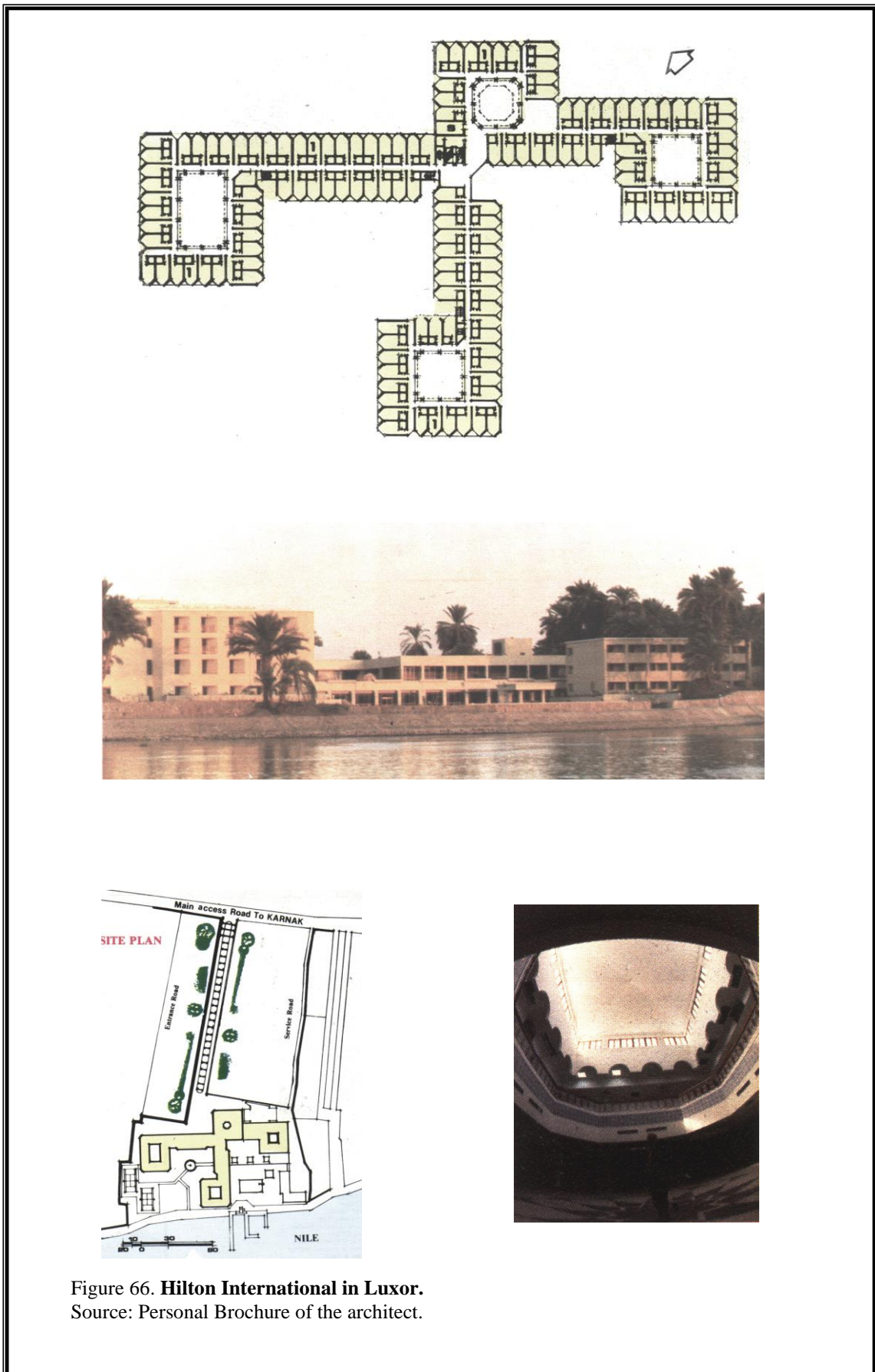


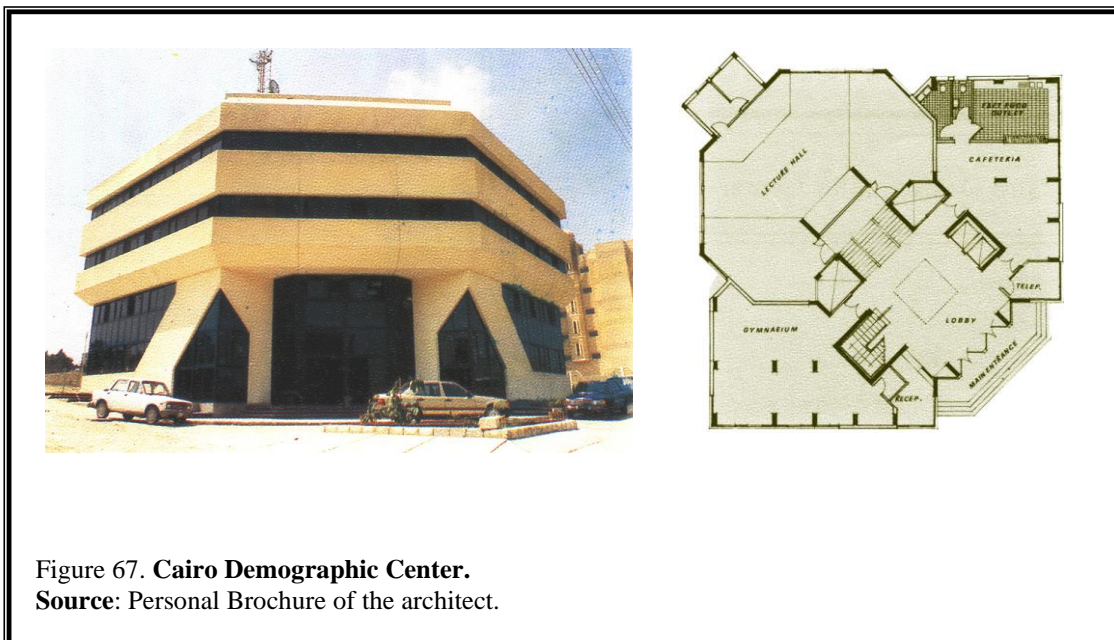
Figure 66. **Hilton International in Luxor.**  
Source: Personal Brochure of the architect.



### 10-1-4 Cairo Demographic Center:<sup>4</sup>

The Cairo Demographic Center (fig.67) was erected on a lot given as grant to the United Nations by the Egyptian government. The center is the permanent residency of an inter-regional training & research center serving developing countries in Asia, Africa & the Arab World. It offers various levels of training programs and researches in population. The center is located on a 900m lot on Mokattam hills overlooking Cairo in a quiet atmosphere necessary for the center to achieve its goals. The building occupies 500m<sup>2</sup> while the rest is allocated to parking and green areas surrounding the center.

The project was designed to satisfy its demands & objectives containing all services necessary for users: employees, staff & students. The center



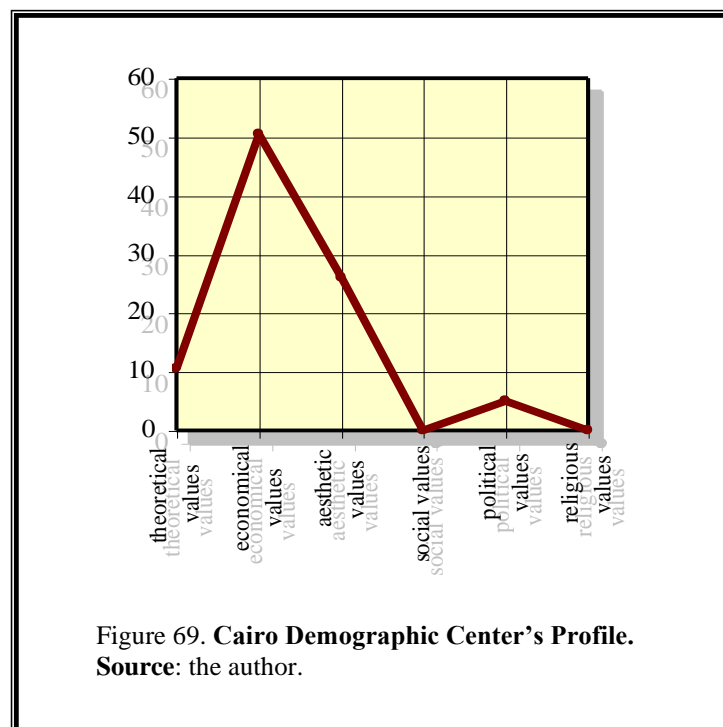
consists of three stories beside the ground & the basement & has the following elements:

<sup>4</sup> Interview with Ali Raafat on the 12<sup>th</sup> of November 2001.

- 1- Conference & lecture hall to accommodate 100 persons.
- 2- Three lecture halls & two meeting rooms.
- 3- Technical support facilities: library and computer center.
- 4- Offices for administration and faculty.
- 5- Student facilities club, gymnasium and fast food outlet.
- 6- An open atrium covered with pyramid shaped plastic roof offers a dynamic looking upward space.

#### **11-1-4-1 Cairo Demographic Center's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



## **10-2 The Architectural Product of Gamal Bakry:**

Five projects nominated by Bakry will be investigated, namely The Egyptian Ambassador's Residence in Berlin, Dahab Touristic Village, History of Art Museum in Germany, Engineers Syndicate in Port Said, and Villa of Badran.

### **10-2-1 Egyptian Ambassador's Residence in Berlin:<sup>1</sup>**

The project is based on three main factors: privacy, climate, and circulation. (Fig. 69)

#### **10-2-1-1 Privacy:**

According to the architect, this factor was influential in generating the form, especially that the site is located on a main street. He suggested a curved veiling wall taking its shape from the street's curvature and extending with it. In addition, he added a circular wall in front of the glazed entrance to insure its privacy.

#### **10-2-1-2 Climate:**

The project is located in Germany where the weather is characterized by its coldness and the absence of sunrays. Therefore, the designer has extended the rooms' wing towards south and has provided in the southeast zone of the site a wide garden. The porosity of the spaces looking towards the garden was high in order to permit the penetration of the sunrays. The porosity of the external spaces, on the contrary, was very low to resist the coldness; it was in the form of some narrow longitudinal openings inspired from the Ancient Egyptian character but applied in an abstract way.

#### **11-2-1-3 Circulation:**

The curved form of the building was simply generated by respecting the path of the car beginning from the street, then passing by the entrance, and finally descending to the basement through the ramp.

According to the architect, form in general is the opposite of space, meaning that form is simply determined by respecting the nature of the enclosed space. He has respected this concept in this project and in all his other works.

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<sup>1</sup>Interview With Gamal Bakry on the 23<sup>rd</sup> of November 2001.

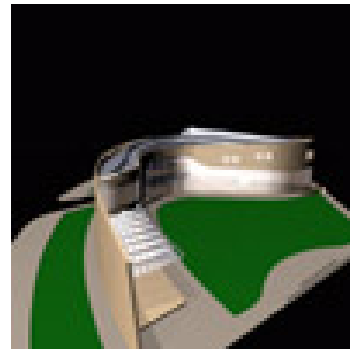
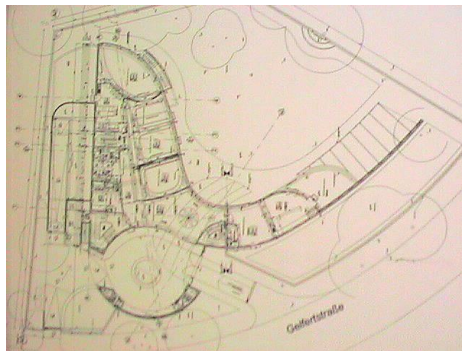
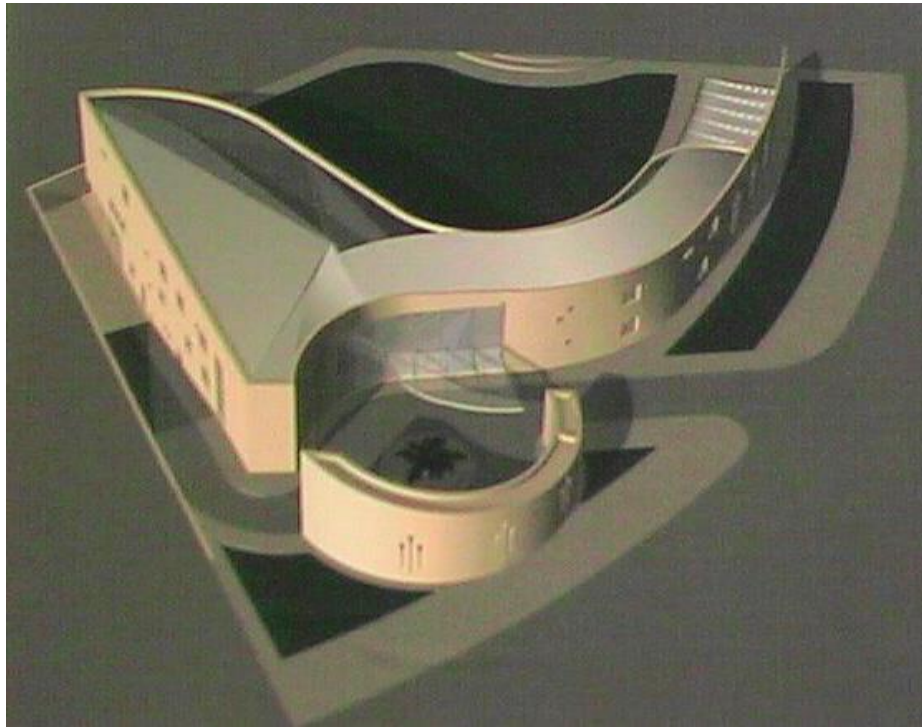
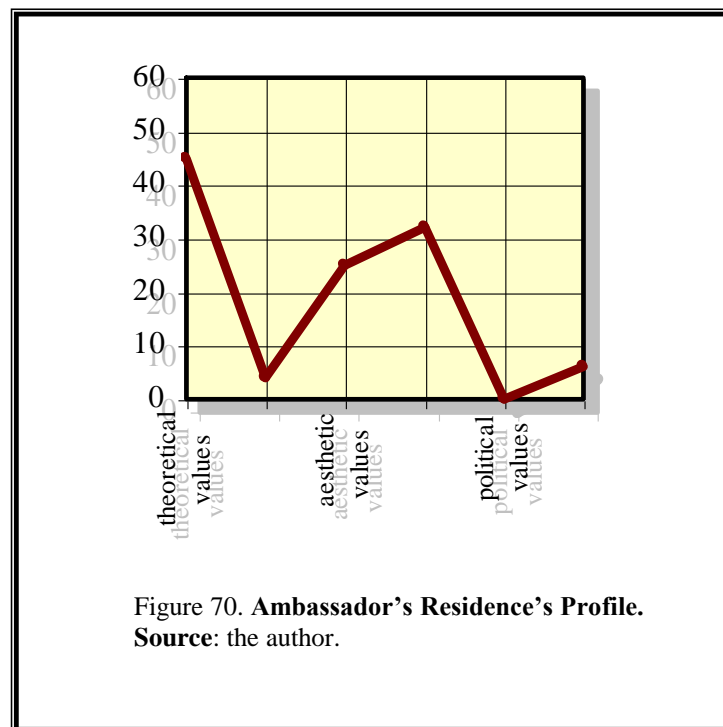


Figure 69. **Egyptian Ambassador's Residence in Berlin.**

**Source:** the Author, visit to Exhibition of Gamal Bakry's works: *Architectural Journey 2001*, from 10-20 December, El Hanager Opera Grounds.

### **10-2-1-4 Ambassador's Residence's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-2-2 Touristic Village in Dahab:<sup>2</sup>**

The mountains of Dahab City are characterized by their high contours beginning from zero level at the sea and ending with +22 m. The site is located among these mountains and the design's dynamic morphology was generated from the shape of the contour lines (fig.72). Each row of touristic units is lifted up 2 m above its precedent in order to provide the view of the seashore for every unit. The public building is

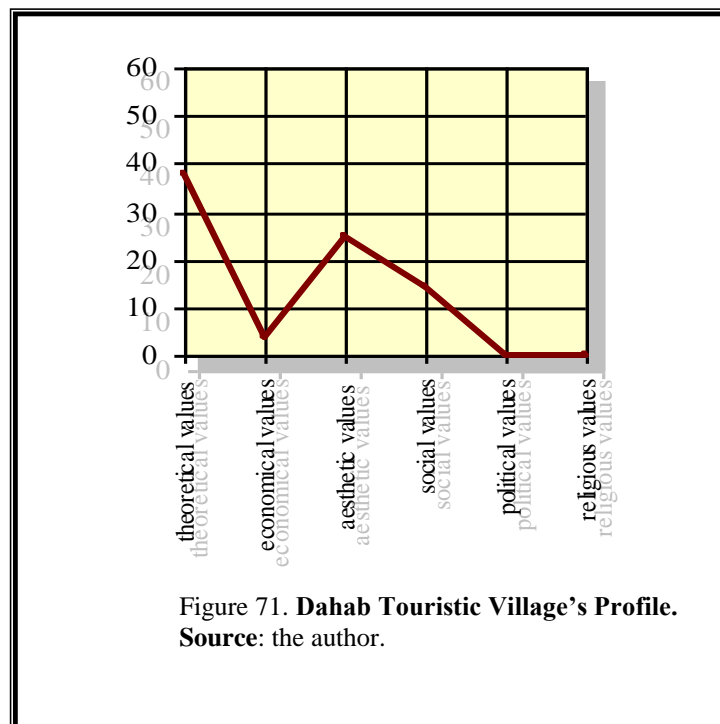
<sup>2</sup>Interview with Gamal Bakry on the 23<sup>rd</sup> of November 2001.

located in the heart of the rows of units creating a space resembling the traditional court but opening towards the sea. The shape of the openings and the colors used in the project insures the contextual mountainy character and its continuity.

When observing the general form of the touristic village, one could notice the diversity in the spaces' melodies and the dynamism and plasticity of the masses and walls.

### **10-2-2-1 Dahab Touristic Village's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



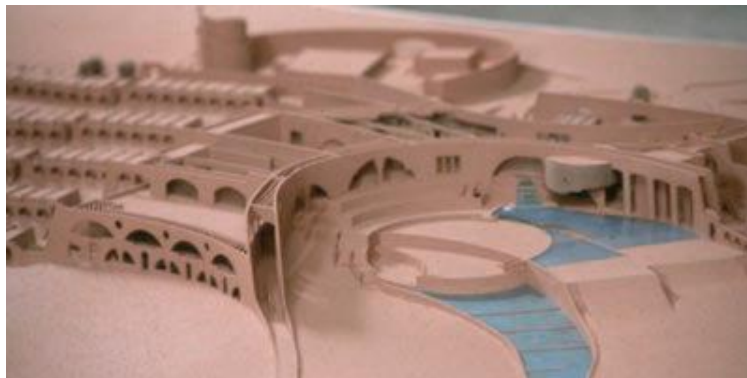
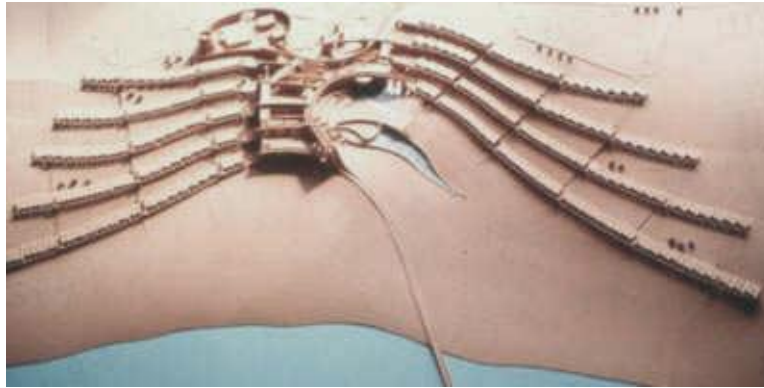


Figure 72. **Dahab Touristic Village.**

**Source:** the Author, visit to Exhibition of Gamal Bakry's works: *Architectural Journey 2001*, from 10-20 December, El Hanager Opera Grounds.



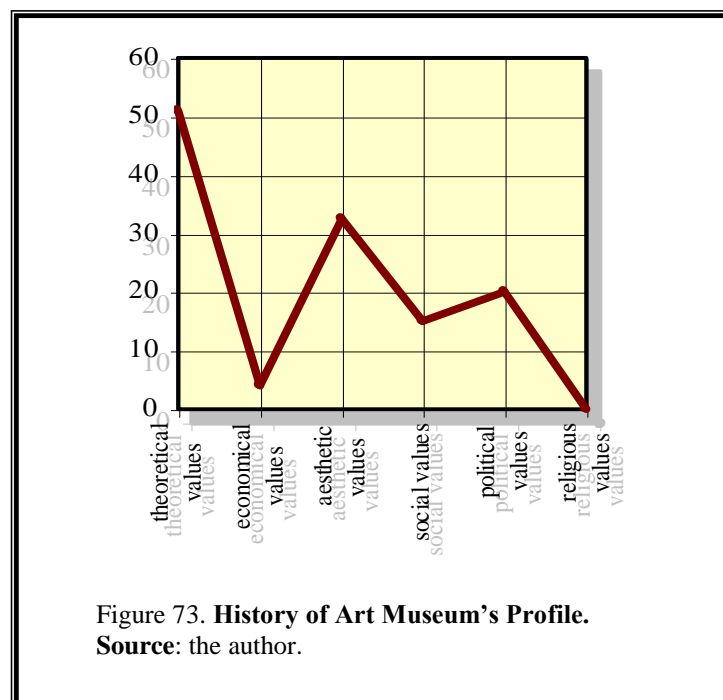
### **10-2-3 History of Art Museum in Germany:<sup>3</sup>**

After a deep study of the German history, the architect realized that German theories were always based on the dialogue between two contradictions whether in philosophy, in legends, in music, etc. This dialogue was the main generator of the building's form (fig.73). He applied a rational rhythm consisting of straight lines in the functional areas of the museum and an emotional rhythm consisting of curved dynamic lines in the social areas. In addition he covered the latter with a dynamic huge ceiling insuring the emotional rhythm.

It could be generally said that the design has a philosophical dimension based on the dialogue between mind and heart, and the architect has placed the exhibition and administrative areas under a rational umbrella, and the social and ceremonial areas under an emotional umbrella.

#### **10-2-3-1 History of Art Museum's Profile:**

By applying the *Matrix Values / Components* and scoring the indices of the six values on the product's components, the next graph has been obtained:



<sup>3</sup>Interview with Gamal Bakry on the 23<sup>rd</sup> of November 2001.



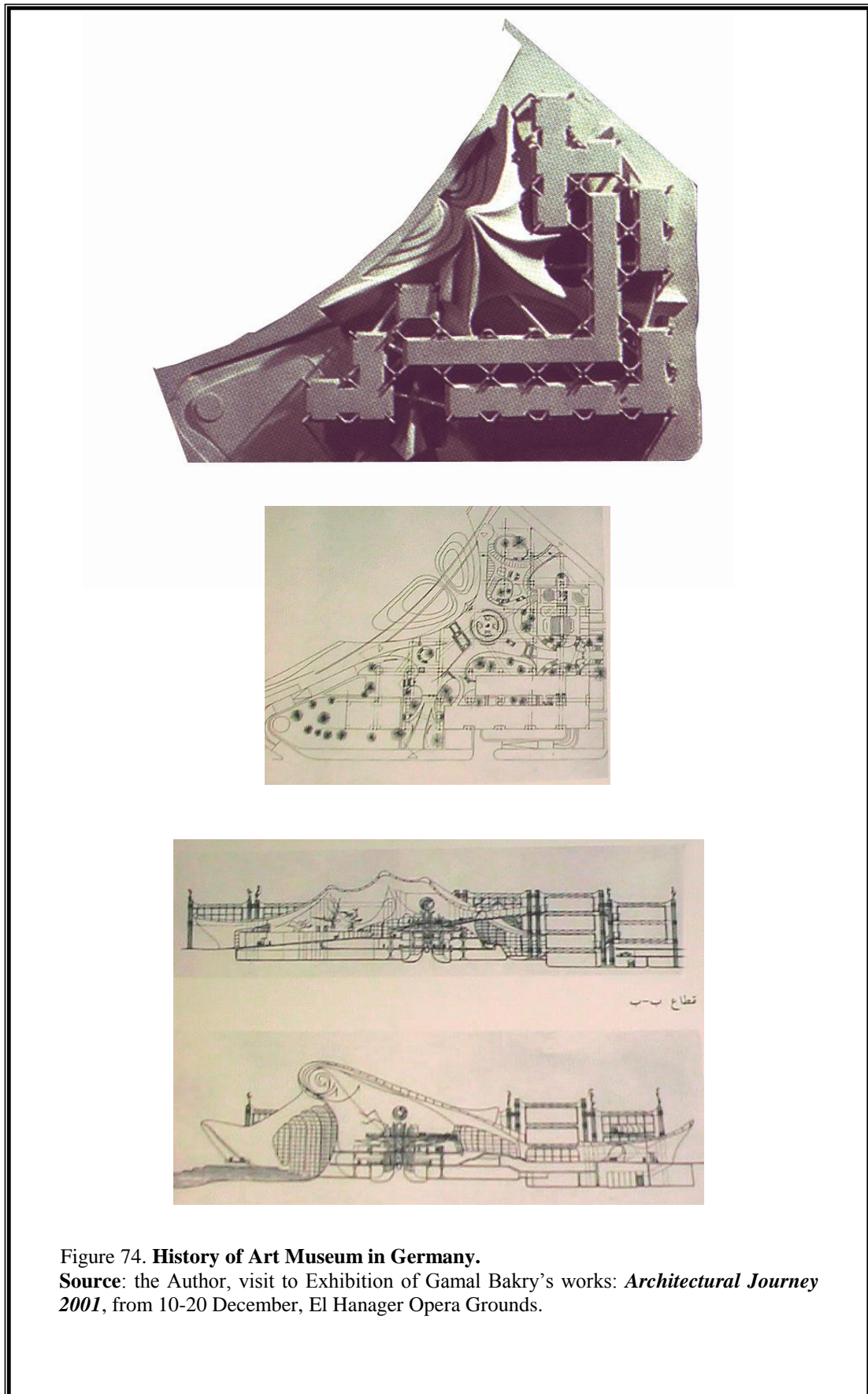


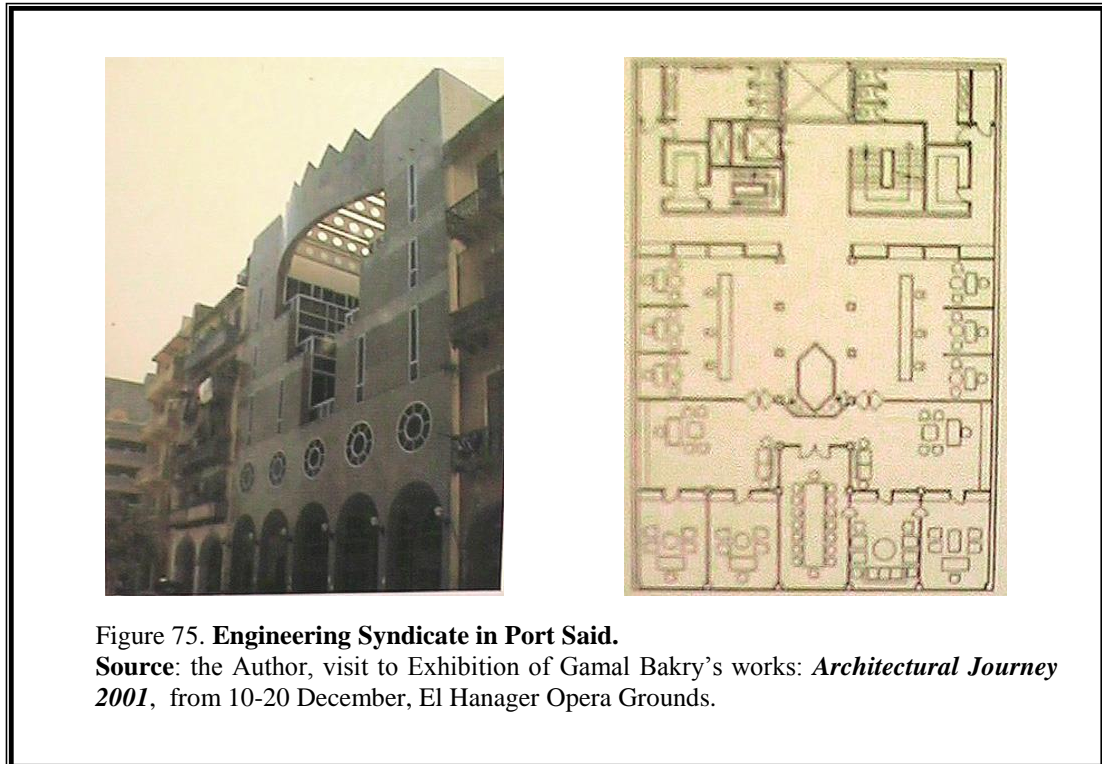
Figure 74. **History of Art Museum in Germany.**

**Source:** the Author, visit to Exhibition of Gamal Bakry's works: *Architectural Journey 2001*, from 10-20 December, El Hanager Opera Grounds.

### 10-2-4 Engineering Syndicate in Port Said:<sup>4</sup>

The site of this project (fig.75) is located between two old traditional buildings in Port Said. In order to respect this important factor when beginning the syndicate design, he kept the same height and scale of these buildings and maintained the continuity of the ground floor arcades. Also, in the treatment of the facades, he used some motives from the surrounding traditional character but with some abstraction and modernity.

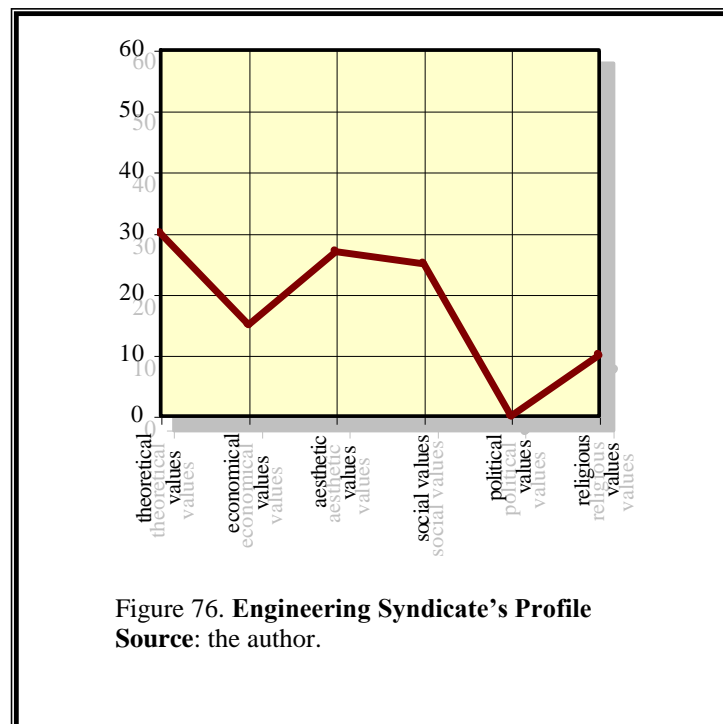
Another influential factor in the building's design was the neighbors. It was surrounded by three neighbors preventing its natural lighting and ventilation. To solve this problem, the architect created a stepped court opening towards the street penetrating into the depth of the building and thus providing light and air for every internal space. This point illustrates the architect's concern with the environmental performance and the user's comfort.



<sup>4</sup>Interview with Gamal Bakry on the 23<sup>rd</sup> of November 2001.

### **10-2-4-1 Engineering Syndicate's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-2-5 Villa of Badran:<sup>5</sup>**

The design concept was a reaction against westernization and modernism in Egypt at that time (1970). The architect has inspired this organic form (fig.77) from the traditional house of the Egyptian Fellah located in the country and in Oasis. Instead of using clay as a construction material, he used concrete because it was the closest modern material to clay in its molding ability.

<sup>5</sup>Interview with Gamal Bakry on the 23<sup>rd</sup> of November 2001.

The architect was very much concerned with the villa's ventilation and natural lighting to the extent that he succeeded in providing both for each room.

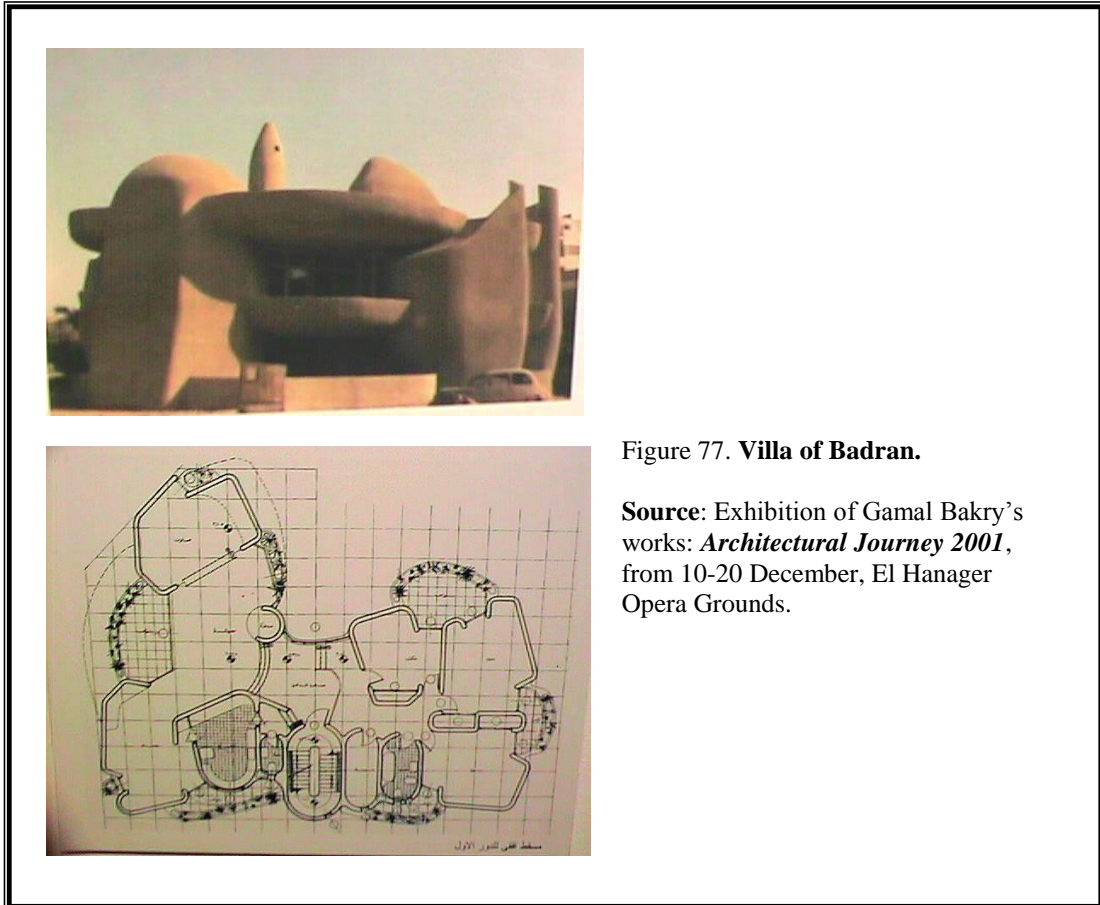
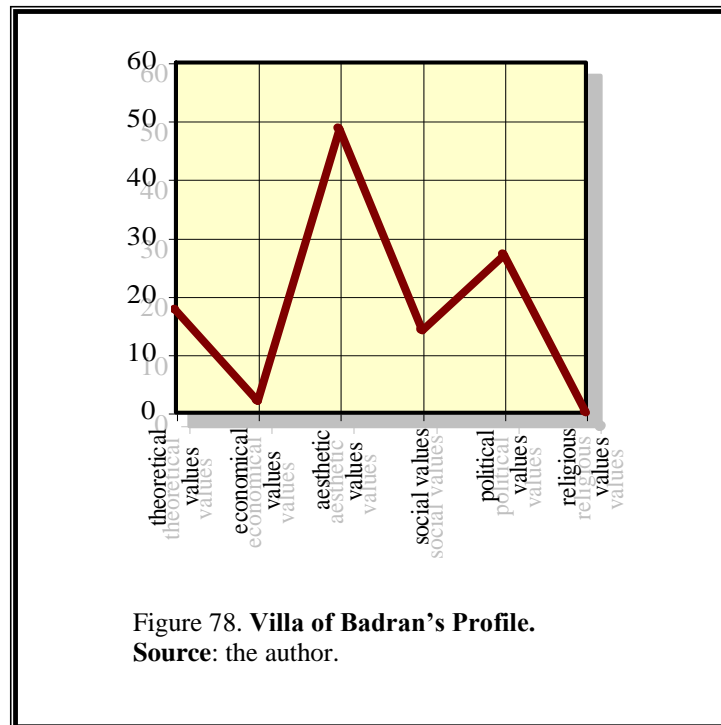


Figure 77. **Villa of Badran.**

**Source:** Exhibition of Gamal Bakry's works: *Architectural Journey 2001*, from 10-20 December, El Hanager Opera Grounds.

#### **10-2-5-1 Villa of Badran's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-3 The Architectural Product of Abdel Halim Ibrahim:**

Three buildings will be investigated, namely The Cultural Park for Children in Cairo, Qasr el-Funoun Gallery in Cairo, and Imam Mohamed Ibn Saoud Mosque.

#### **10-3-1 The Cultural Park for Children in Cairo:<sup>1</sup>**

Abdelhalim Ibrahim won the Aga Khan award for architecture for this project (fig. 79 a&b). Located in Sayyda Zeinab, the park combines architecture and landscape to a degree that is rare in contemporary experience. The site was one of the wealthiest parts of Old Cairo. The Ibn Tulun Mosque, with its famous spiral minaret and clearly organized square plan, lies less than 100 meters away to the south. The organization of the park revolves around four main principles: metaphor, geometry, co-ordinates, and ceremony.

##### **10-3-1-1 Metaphor:**

This principle, relating to the emblematic aspect of the project, relates to the rhythm. According to the architect, there is a similarity between the children who would use the park, and the park itself. He saw growth as one possible theme, and the spiral, which demonstrates the laws of growth in nature, as a metaphorical representation of this idea.

##### **10-3-1-2 Geometry:**

The second principle is geometry, which is related to the formal, built portions of the park. Once again, the spiral seemed to be a logical choice, given its clear visual dominance in the neighborhood and its historical significance. Abdelhalim considered ways in which the three-dimensional spiral of Ibn Tulun Mosque could be transformed into a planar matrix across the site, working on two interlocking grids.

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<sup>1</sup>Steele J. (1992), *Architecture for a Changing World*, the Aga Khan Awards for Architecture, Academy Editions, London, p. 29-32.

The first began with a line of palm trees that were already growing there, and the other with the streets themselves.

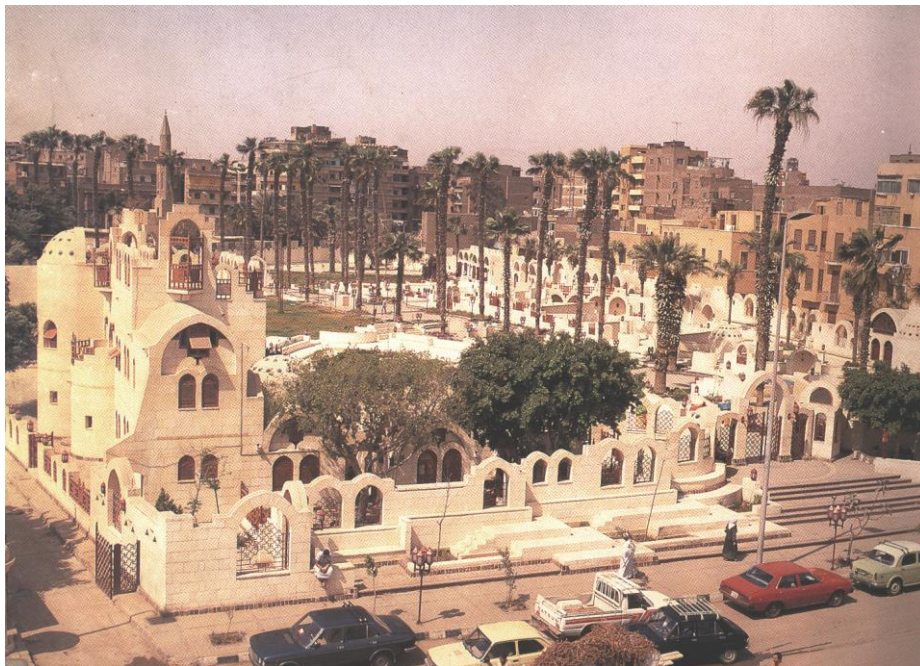
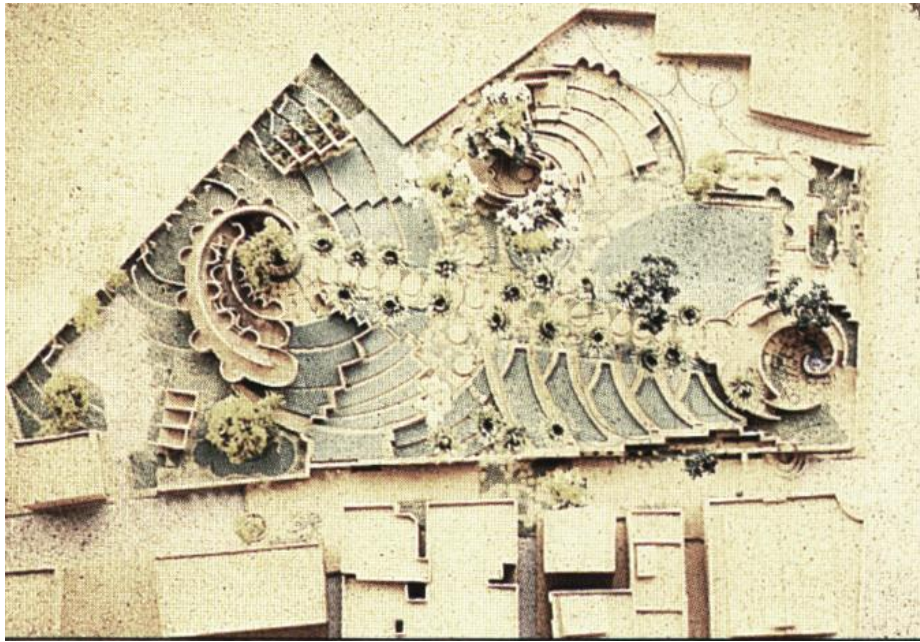
### **10-3-1-3 Co-ordinates:**

This principle evolves from the previous one and relates to its co-ordinates. To extend the meaning of such a geometry, which has been extracted from both the natural and constructed layers of the existing context, as well as the functional requirements, the architect next established a conventional grid that would satisfy all three. The co-ordinate system (or Ihdathyat as it has been called in the traditional architecture) was extracted from the size of the space between each of the palm trees.

### **10-3-1-4 Ceremony:**

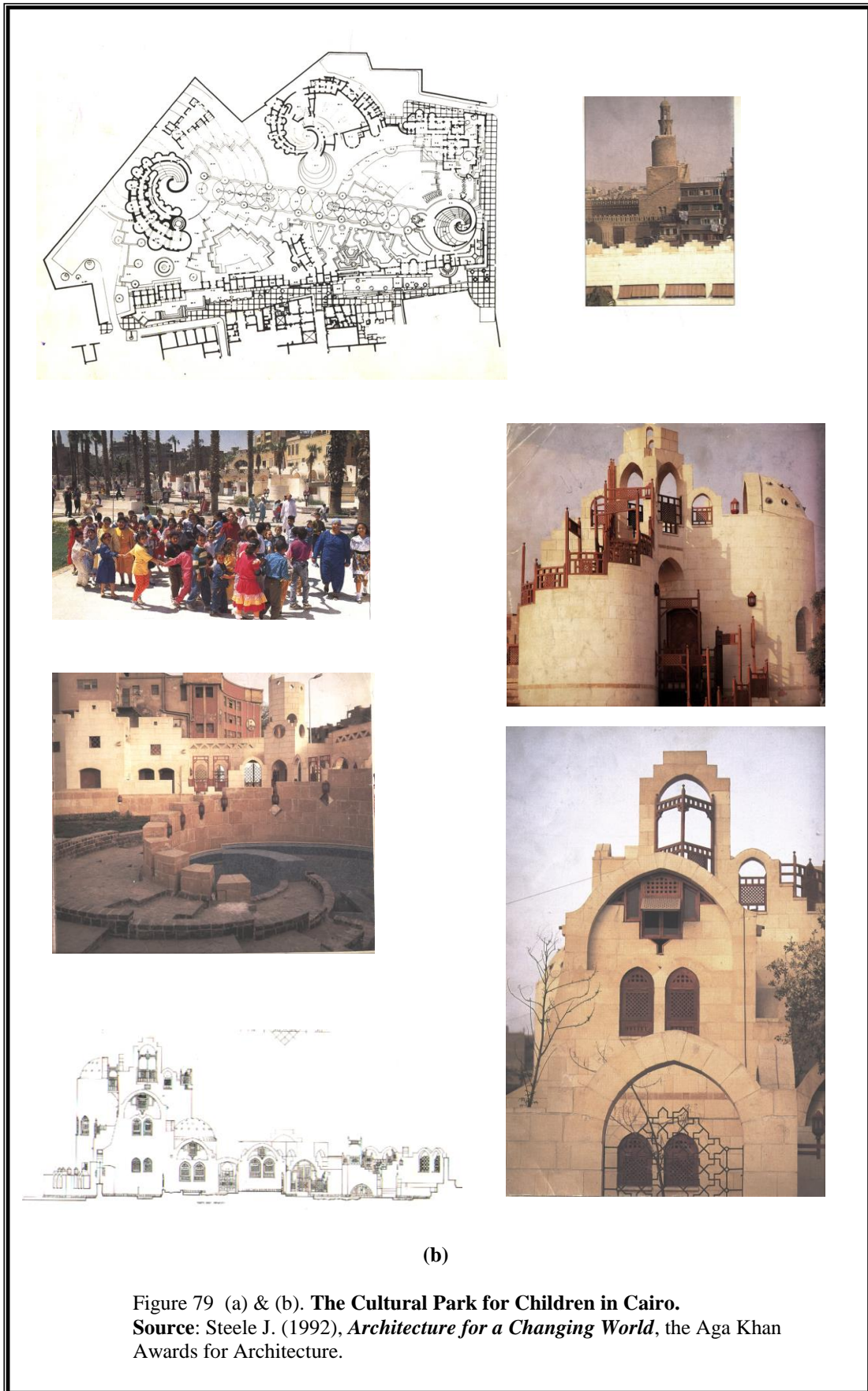
The fourth and final principle is related to the ceremonial aspect of the architecture, and is based on the architect's research into the connections between built form and culture. He is very much concerned with the community participation in the decision making process, so he took the opportunity of the National Festival for Children, and the laying of the corner-stone of the project by the Minister of Culture to apply his principle. The architect proposed to the Minister of Culture that, in place of drawings and working models that were usually displayed in a tent on such occasions, a real life-size model of the scheme could be displayed to give the whole community a glimpse of what the project was to look like. He also suggested inviting artists, musicians, and folklore dancers. At the day of the corner-stone laying, the children began to arrive to rehearse on the temporary stage that had been set up. For three or four days hundreds of them gathered in groups to participate, while a choreographer and the musicians worked out the performance to follow the configuration of the scheme. When they could not, the designer changed the scheme's arrangement, and, instead of the original plan disappearing from sight, it continued to evolve. The action of the community added a sense of wholeness to the plan that rational designing could not have conceived.





(a)



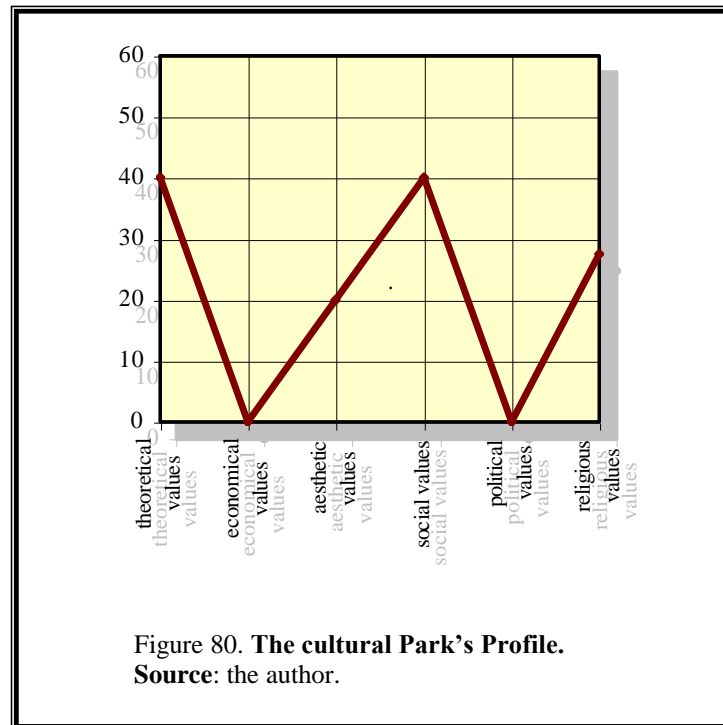


(b)

Figure 79 (a) & (b). **The Cultural Park for Children in Cairo.**  
 Source: Steele J. (1992), *Architecture for a Changing World*, the Aga Khan Awards for Architecture.

### **10-3-1-5 The Cultural Park's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-3-2 Qasr el-Funoun Art Gallery in Cairo:<sup>2</sup>**

The architect has translated the program into four main questions about Light, Society, Art, and Architecture. In his project (fig.81 a&b) he searched for an ordering system creating a dialogue between these questions.

#### **10-3-2-1 Light:**

<sup>2</sup> *Qasr el-Funoun, Medina interviews the architect of Cairo's newest Art Gallery*, Medina Magazine, 1998, No. 4, October-December, p. 40-52.

The old Nile Gallery relied entirely on artificial light and you could never see anything in natural light. According to the architect, art in Egypt is inseparable from light so whether it is ancient art or contemporary art it must depend on natural light. He treated the roof as a perforated surface to allow the light to come in as uniformly and gently as possible. As this umbrella of light comes in, then create a series of identifiable spaces volumetrically and geometrically underneath this umbrella. Each of these volumes reaches out to catch natural light so that it becomes a common denominator. Also, the use of crystals in the towers of the building is the best kind of form picking up light such as prisms.

### **10-3-2-2 Society:**

The second question had to deal with the relationship between art and the Egyptian society, the position of art in the life of Egyptian society in general and to the intellectual elite in particular. Art in the contemporary modern is appreciated by a wider base of artists and community. The architect wanted to design this art gallery as a place that introduces the Egyptian public to that leap. He thus wanted to introduce familiar elements that attract people -a library, cafeteria, bookstore, video, cinema, restaurant, sitting places and gardens - things that one might associate with an art gallery but not related properly to art.

Notice also the Islamic vocabulary such as the use of squares transformed into octagons culminating in a point, also the tower reminding of the minaret. This is a vocabulary that is in harmony with the entire heritage that surrounds us.

Abdel Halim wanted to make a statement in the process of design whereby this publicness or intention to introduce the public to art, should relate to the city at large. He wanted the gallery to be seen from the city. This interface between how the public sees the gallery and how the public retains their publicness inside the gallery created the need for a special emphasis in the point of the tower.

### **10-3-2-3 Art:**

- ***Craftsmanship:***

There is a layer of craftsmanship in the design process. To every material the designer applied a layer of craftsmanship, layer of effort and energy so that the material reveals something of its inherent qualities. The stone is chiseled and organised in certain forms so as to reveal potentials of carving. He used glass and steel in the same way and this is where the relationship between art and architecture comes in, by applying a measure of creativity or artistic effort to each material.

- ***Galleries are sacred places for art:***

In the west, in Abdel Halim's opinion, museums and art galleries are really the new sacred spaces. According to him, some people see a quality of the mosque in his work, they are seeing an aspect of sacredness that is being missed completely in modernism and modern life.

Abdel Halim wanted to design a tower to accentuate the point where the encounter between public and art happens and thus becomes very significant. The tower does this both internally and externally and the metaphor with the minaret does not offend him at all. He did not copy a minaret. Minarets are seen and perceived as objects of transcendence, but, according to Abdel Halim's words, we no longer live in the time where the mosque is a place for that transcendence -even the most religious of us. We relate to the mosque as a place for prayer and that is all, and the place of religion in contemporary society is not the same as traditional society. He sees that art does play a role in that process of transcendence.

**10-3-2-4 Architecture:**

The architect started to investigate what he could keep in the old gallery, and he decided to keep the skeleton. Contemplating the bones showed a purely symmetrical structure and he wanted to introduce a more complex geometry that would express how we feel about architecture today. In that skeleton was hidden some proportional relationships which were interesting. The spans of the frames are reduced gradually as we come towards Saad Zaghloul Square. He picked up on some geometrical properties that were there, and started a whole process of investigation to develop a scheme keeping the skeleton, perforating the entire structure and then restructuring new relationships within it. He broke the large hall into compartments

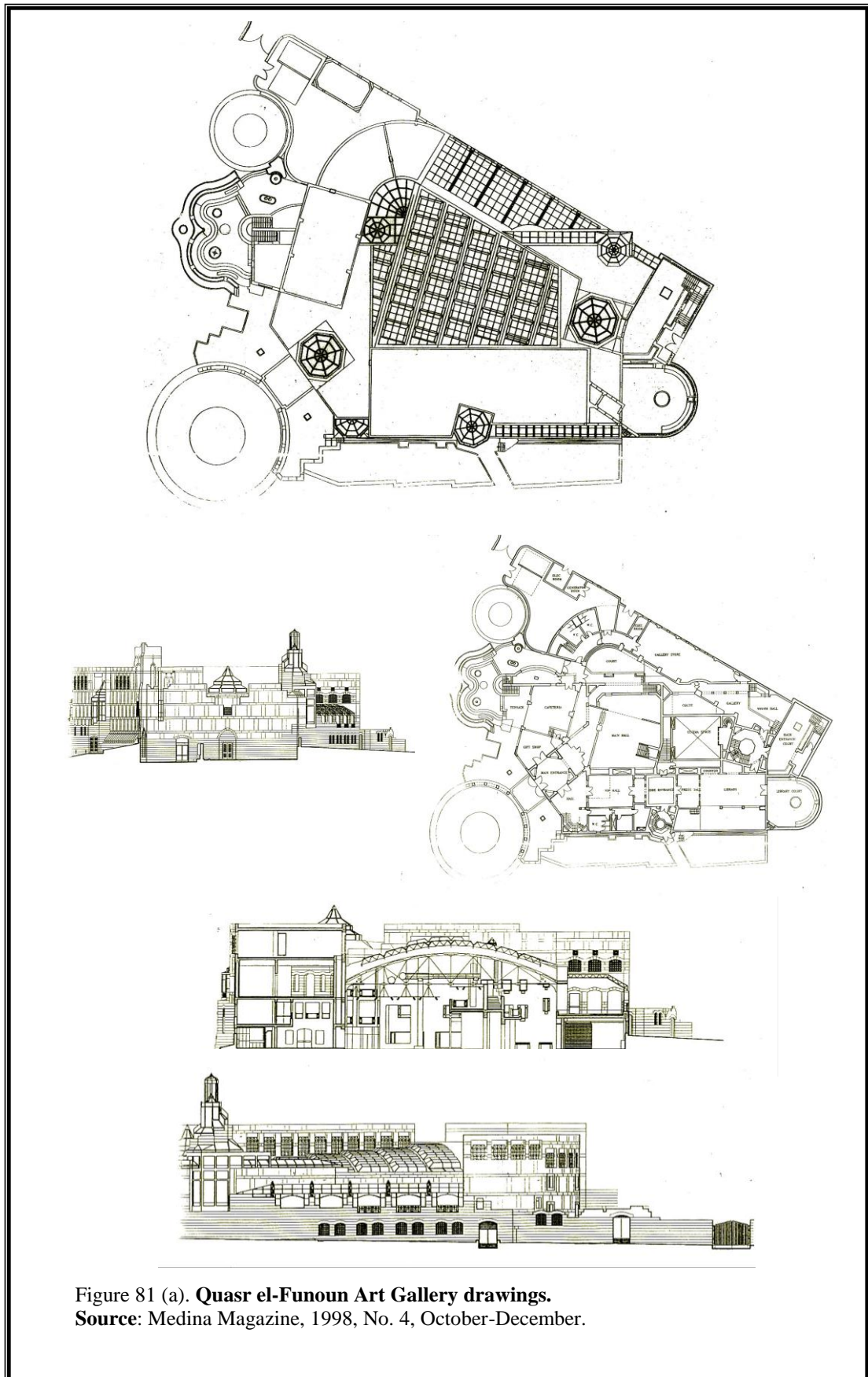


Figure 81 (a). Quasr el-Funoun Art Gallery drawings.  
Source: Medina Magazine, 1998, No. 4, October-December.



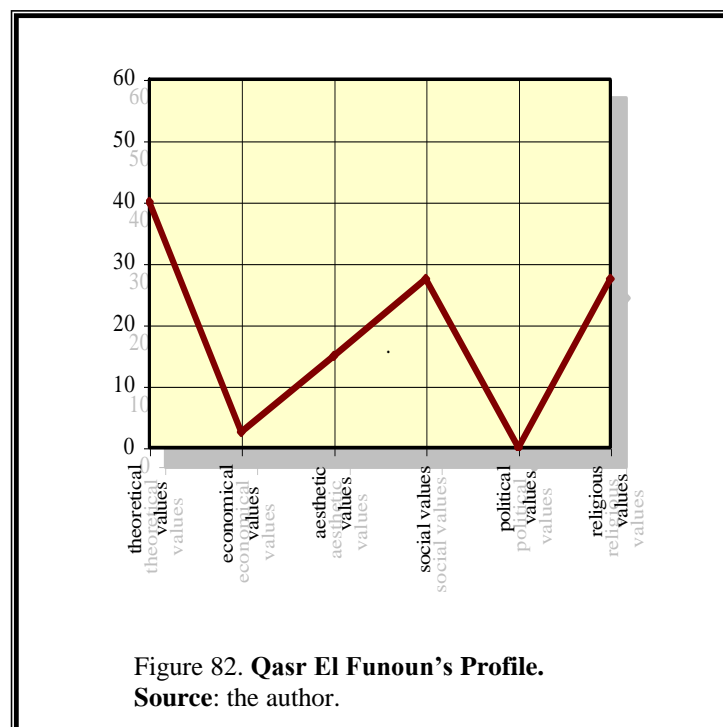


Figure 81 (b). **Quasr el-Funoun Art Gallery views.**  
**Source:** The architect's personal CD.

and a sequence of volumes, so that the visitor upon entering is not introduced to the kind of symmetrical space that was once there. You are instead introduced to a series of spaces that are centered, and each holds a volume and directs its energy to the inside and so on. He stitched together these small spaces to form a journey as if you are coming to the old gallery designed by Mustafa Pacha Fahmi to find that it is transformed into three basic volumes. In doing so, he left out and created residual spaces that needed to be reintroduced. And out of that residual or periphery, the main galleries were established. There is a dialogue between the core elements and the peripheries because this is what establishes the order.

### **10-3-2-5 Qasr El Funoun's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-3-3 Imam Mohamed Ibn Saoud Mosque:<sup>3</sup>**

Imam Mohamed Ibn Saoud Mosque (fig.83 a&b), and Gardens, is one of the major urban projects launched by the Saudi Government to commemorate the 100th birthday of their kingdom. The significance of the project is due to its context and its design philosophy and approach.

Direya, where the Mosque and Gardens are located, is the traditional urban setting from which the founding fathers of the Kingdom began their crusade to unify and modernize their country. The building acknowledges the importance of the traditional reference and setting, while establishing the necessity for offering contemporary services and amenities.

In Direyae, like elsewhere in Saudi Arabia, prayer and "El Barr", the local term for going out to the desert are two basic features of life and culture for all different communities. Prayer is the rhythmic ritual for contemplation precede by ritual ablation, while "El Barr", the picnicking in the desert, forms the most basic recreational event performed by families and groups of all backgrounds. The interplay between prayer and "El Barr" forms the core idea for the design.

The design philosophy centered around two questions, the first is epistemological inquiring about the content and meaning of the relation between prayer and leisure, while the second is morphological investigating the formal aspects of that relationship. Two sites, one within the walls and gardens of the old Direya, and the other outside the walls but overlooking the Wadi and lush gardens, offered ample and diverse setting for this design investigation.

#### **10-3-3-1 Site**

Two sites were suggested for constructing the mosque.

##### **a- The First Site:**

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<sup>3</sup>Interview with Abdel Halim Ibrahim on the 19<sup>th</sup> of October 2001 with a personal CD.



The first site was selected in an old, but deteriorated palm grove at the entrance of old Deriya. The scheme for this site examined the relation between prayer and leisure in terms of two geometries; the first is defined by lines of prayer oriented to the Kebla, and the second geometry is shaped on the site by the lines of palm trees.

The interrelation between the two geometries, and the co-ordination between the two spaces, the space for prayer and the space for leisure, was realized through a series of curved walls, emanating from a water well founded on the site, and establishing the epistemological grounds, which gives meaning to the spaces in both realms. The form, curvature, and configuration of each wall define the basic morphologies, which help setting the spatial parameters of the different elements located around each wall.

The Mosque, the Sarha and the library take place in relation to the first wall, while the housing, recreational and social elements relate to the second wall, embody the bulk of the palm green and form a link and continuity with neighboring fabric. Hence the point of water mediated the relation between the two geometries and established the meaning of both.

### **b- The Second Site:**

Community leaders objected to the first site claiming that the bulk of the community lives outside the walls of the old city, a new site had to be selected on the basis of the original principles, and philosophy maintained for the first site. The new site, though close to the first, was radically different from the latter which was defined by the historic walls of the old Deriya. The site itself is a bare plateau, overlooking the lush oasis of Deriya. The surrounding urban fabric contains new and fairly modern residential and institutional buildings.

### **10-3-3-2 Design Process**

The design process consists of the following:

#### **a- Cosmogenic Definitions (Program/Leisure):**

The first act was establishing the relation between the space for prayer and the space for leisure as follows:

- The approach to the site was treated as a formal planted area, forming a geometrical palm green as a site entrance and a main gate to Deriya.
- An entrance plaza was introduced linking the palm green promenade to the site and forming a dramatic gateway to Wadi Hanifa.
- A series of walls creates a visual orientation and a link between the space inside the walls, i.e. space for prayer, and that outside, i.e. space for leisure.

The private housing of the Imam and Moazen of the Mosque was based on the traditional archetype of the old Arabian house modified to suit local Saudi costumes. The houses were located to form an extension to the walls and to relate to the space for leisure.

**b- Operation and Activity:**

In addition to the main activity of prayer, which is more apparent in Friday prayer as well as the collective prayer in Ramadan, a number of other activities take place in the project including the leisurely activities that take place in the gardens and promenade as well as the local and cultural events in the festival plaza.

**c- The Library, a Link with the Street:**

The geometry of the library was introduced in the program to form a link with the surrounding community of Deriya.

Mosque is mainly defined by the geometry of prayer. A system of skylights introduced natural lighting into the space of prayer thus strengthening the relationship with the sky. The space of the Sarha was treated as an extension to the Mosque and following the same module.

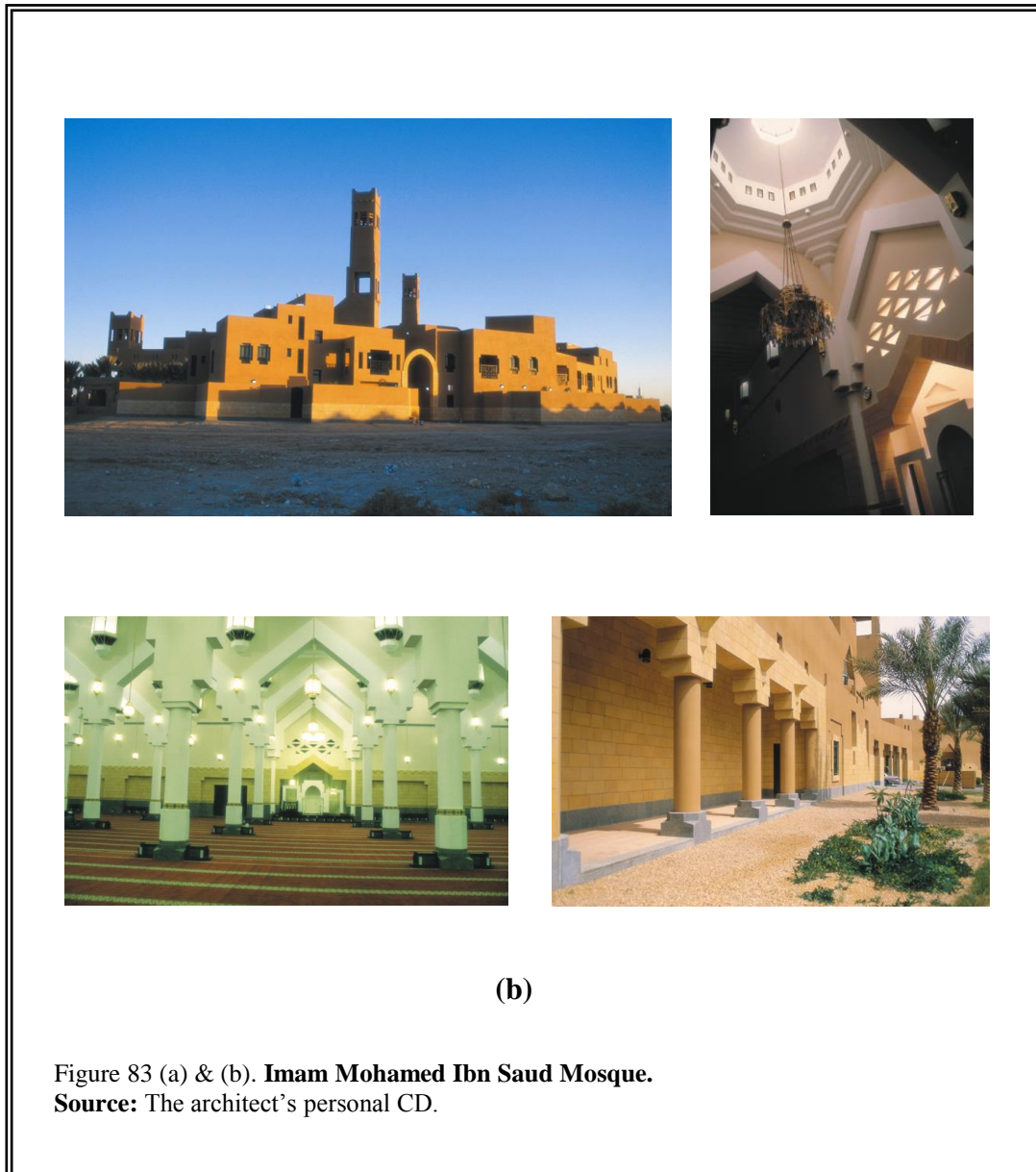
**d- Expression and Imagery:**

Two complementary design activities coincide to finalize the design process and form the expression of the building. These are:

- An internal design activity where all the forces affecting the design are all combined and resolved to form the geometrical order of the building.
- Gradual and incremental modifications of volumes and spaces take place during the design and construction process, the participation of other designers, builders, client, operators and community is sought and integrated into the design.

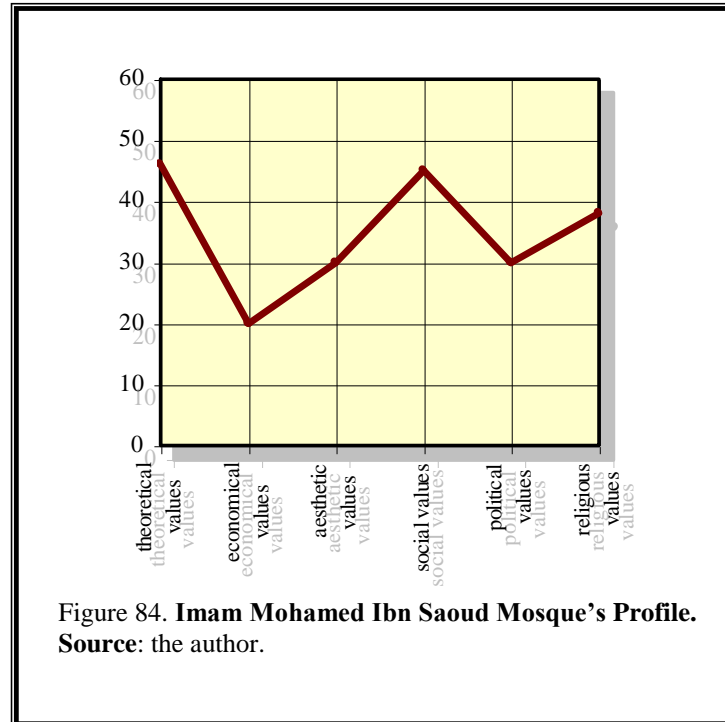


(a)



### **10-3-3-3 Imam Mohamed Ibn Saoud Mosque's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



## **10-4 The Architectural Product of Tarek Abou El Naga:**

Four projects will be investigated, namely House of Emergent Suspension, Marina international Hotel in Los Angeles, National Center for Science and Technology in 6<sup>th</sup> October, and Sharm Safari Gate.

### **10-4-1 House of Emergent Suspensions:<sup>1</sup>**

According to the architect, three states of **suspension**, defining aspects of the client's life, constitute and define the morphologies and spatial behavior of the house (fig.86).

First, as a **Filmmaker** (*creating suspensions of disbelief*).

Secondly, as a **Satellite Engineer** (*observing the mechanics of bodies in gravitational suspensions*).

Thirdly, as a **Water Polo Player** (*physical suspensions in water*).

Metaphorically, these are states of suspension in *Ontological*, *Cosmological*, and *Primordial* conditions.

Layered hierarchies of overlapping membranes encapsulate instances of space in an evolving and emerging cinematic sequencing. Solid and light membranes emerge in space, morphing, deforming, and bending in a “*state of becoming*” from planar to curled folds to self contained enclosures. The trajectories of the vectors of emergence revolve around an “*Axis of Ascent*” in an upward motion penetrating the three states of suspension. The main domestic spaces are floating around an “*Axis of Descent*”, overlapping, but not intersecting, with the axis of ascent. It is a descending arc connecting the sleeping quarters with the living area pointing towards the lower plateau of the land.

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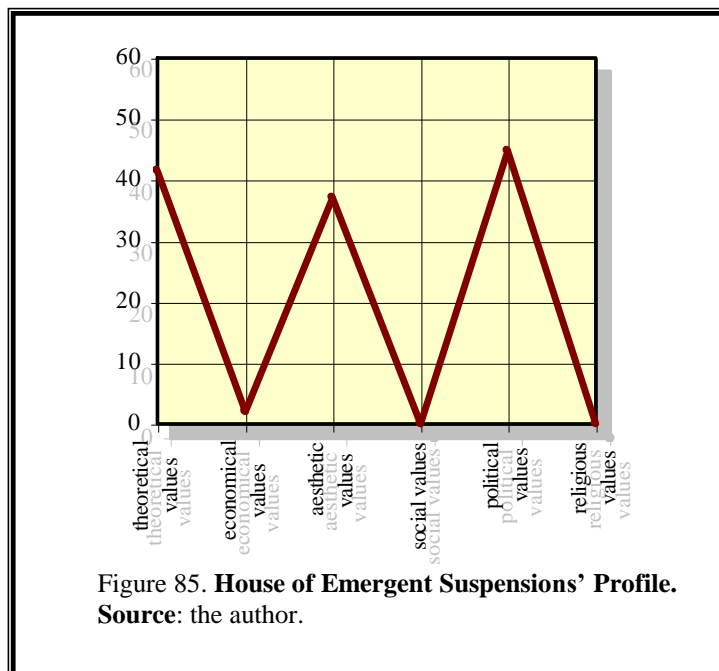
<sup>1</sup> Interview with Tarek Abou El Naga on the 10<sup>th</sup> of January 2002 and a personal CD.

The solid membrane is suspended on the hillside to provoke a sense of instability and uncertainty from one side, while it is cradled by the continuous contours, on the other end, to evoke a sense of comfort and stability. The space *in-between* is a place of tension and apprehension. It's traversed by a matrix of connectors and feeders (of life support systems) which also acts as a de-facto structural system. The resultant weave of layered morphologies creates a condition of blurred boundaries: Physical, and metaphysical *suspensions* interact with, and challenge, static notions of domesticity...Ephemeral film projections intersect with a static volume of water to simultaneously animate and annihilate it's mass...Gazing into celestial bodies originates at a primordial point of symbolic "emergence out of water" along an axis of ascent.

In essence, this "state of emergent suspensions" is a manifestation of the laws of physics, metaphysics and quantum physics.

#### **10-4-1-1 House of Emergent Suspensions' Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



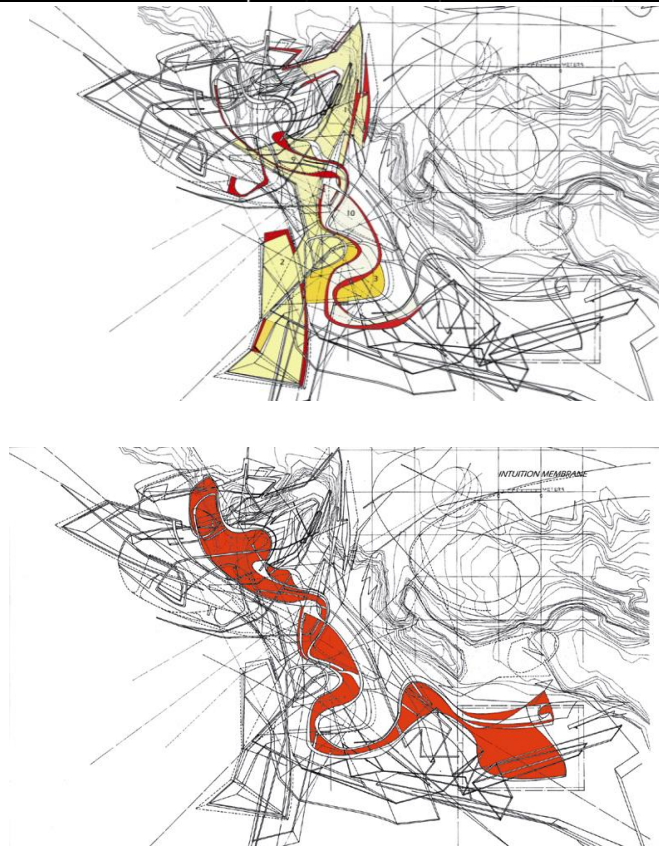
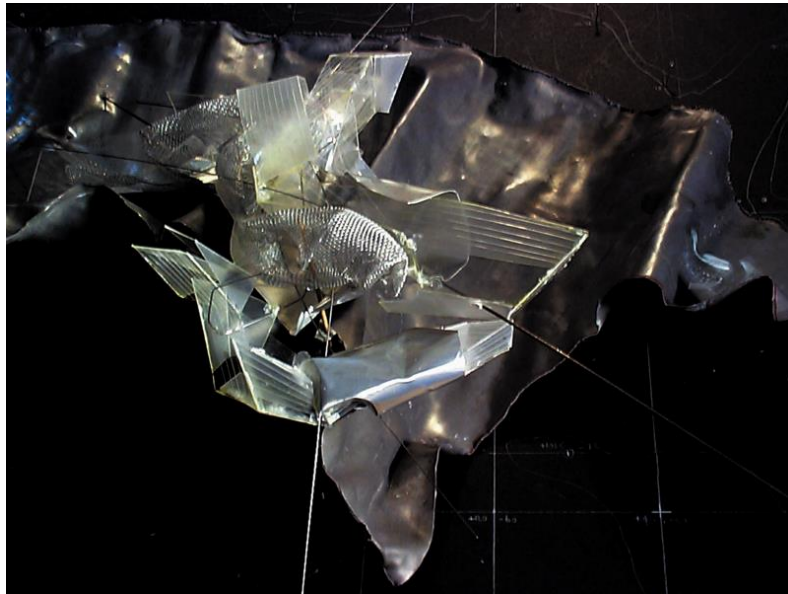


Figure 86. **House of Emergent Suspensions.**  
Source: The architect's personal CD.



## **10-4-2 National Center for Science and Technology in 6 October City, Science City: The Architecture of Becoming:<sup>2</sup>**

The design concept, according to the architect, stems out from the analysis of the scientific epistemology. Three main elements of the concept are outlined. These are *The Receptacle*, *The Trajectories*, *The Cocoons*, and *The Orbe* (fig.87 a&b). The essence lies at the heart of the building as an amorphous space symbolizing the fundamental question of science in particular and humanity in general: *what is truth?*

**10-4-2-1 The Receptacle** (the way we understand the world): The scientific thinking is considered the boundary and the container of all scientific theories. As much as scientific thinking is systematic and well ordered it must be transparent and clear to anyone. There are no secrets in scientific thinking, nor there are tricks of the trade. Scientific method is pure and value free, it does not reflect cultural heritage, political norm, ideological stand, or aesthetic values. Accordingly, the receptacle of the building is composed of two boxes, which represent the two methods of scientific thinking- the rational and the empirical. The outer boundaries of the building are made of pure and neutral screen walls that are transparent and clear. The accessibility to the receptacle can be reached from any point and any direction, since there are neither starting nor ending points to the journey of scientific evolution.

**10-4-2-2 The Trajectories** (the structure of knowledge): Within the structure there are diverse spaces and levels which house the scientific theories and discoveries. In this sense all spaces within are integrated and intersecting on many levels forming a tapestry of human knowledge in the fourth dimension. The structure of knowledge, is divided to three branches: **Cosmological Trajectory** that considers the universe as basis of investigation, **Geological Trajectory** that analyzes all objects and materials on the planet

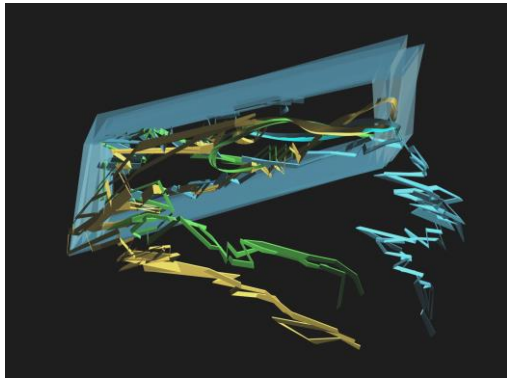
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<sup>2</sup> Interview with Tarek Abou El Naga on the 15<sup>th</sup> of January 2002 and a personal CD.

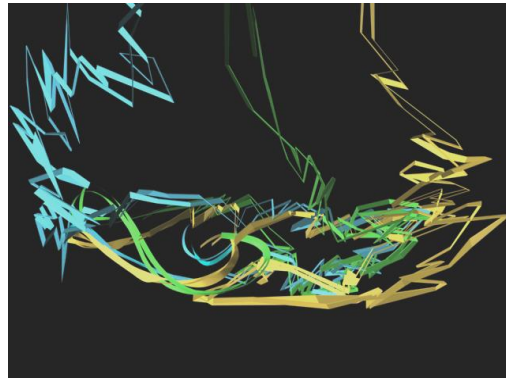
we inhabit, and **Ontological Trajectory** that explores and dissects all living organisms and entities including humans. Such categorization of scientific branches are well accommodated in the design concept by means of forming a labyrinth of three main paths that ultimately lead to the **Cocoons**.

**10-4-2-3 The Cocoons** (Depositories of Knowledge): Those in essence are the depositories where scientific knowledge is stored. The Cocoons are, simultaneously, the nerve ends and the brain cells of the structure. They are made of double layers of transparent and translucent membranes. On the outer layer, digital displays of scientific theories are projected, and within the inner cocoons a final manifestation of science in the form of technological applications are exhibited (as objects and/or simulacra). The 29 outer cocoons represent the different branches of science (some of the containing one, two, or three inner cocoons). They are also grouped in three zones corresponding to the cosmological, geological, and ontological trajectories.

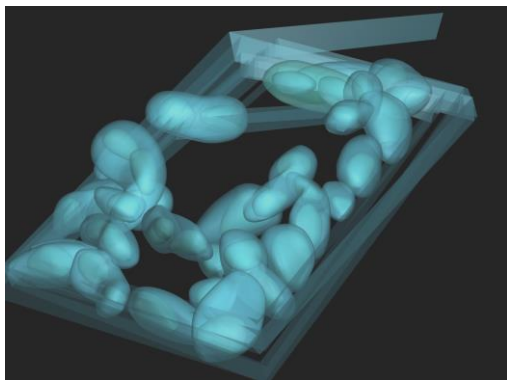
**10-4-2-4 The Orbe** (the search for Truth): As much as scientific theory attempts to explain truth in specific terms, the scientific knowledge in its totality is far from reaching the ‘Truth’ of *existence*. The design concept considers this issue to be the essence of any scientific investigation, thus at the very center of the structure lies an amorphous space “the Orbe” representing the perpetual search for truth. The inner and outer folds of the orbe are further obscured (and fuzzed) through the projections of “scientific images” overlapping with a stream of live feed backs of the visitors (fusing them together). The Orbe, in essence, is the representation of human knowledge; past, present and the potentiality of the future.



(1)



(2)

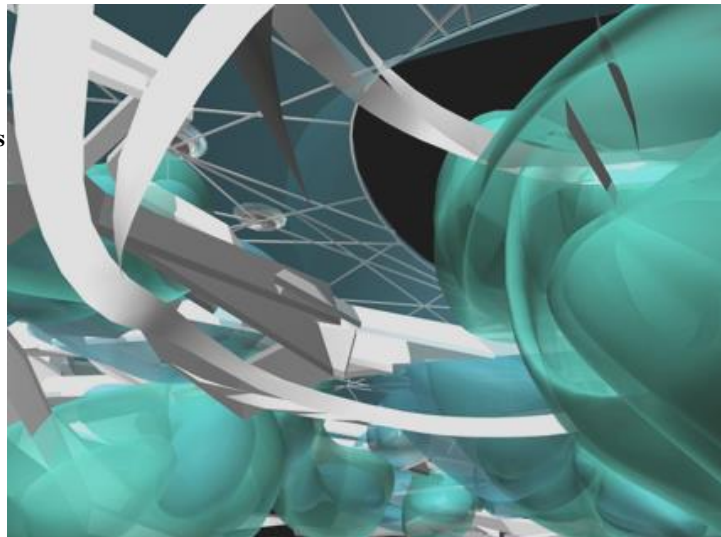


(3)



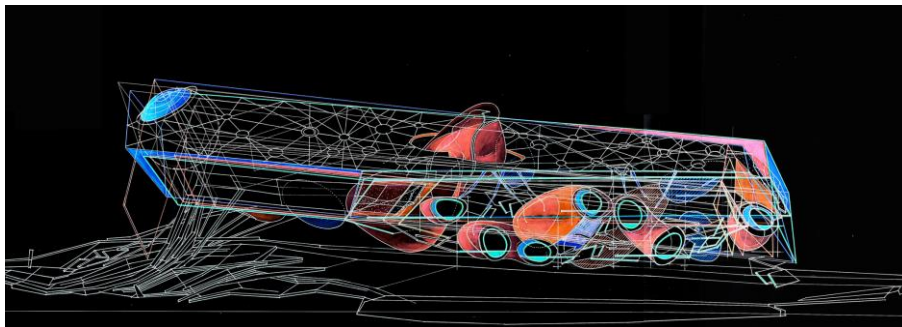
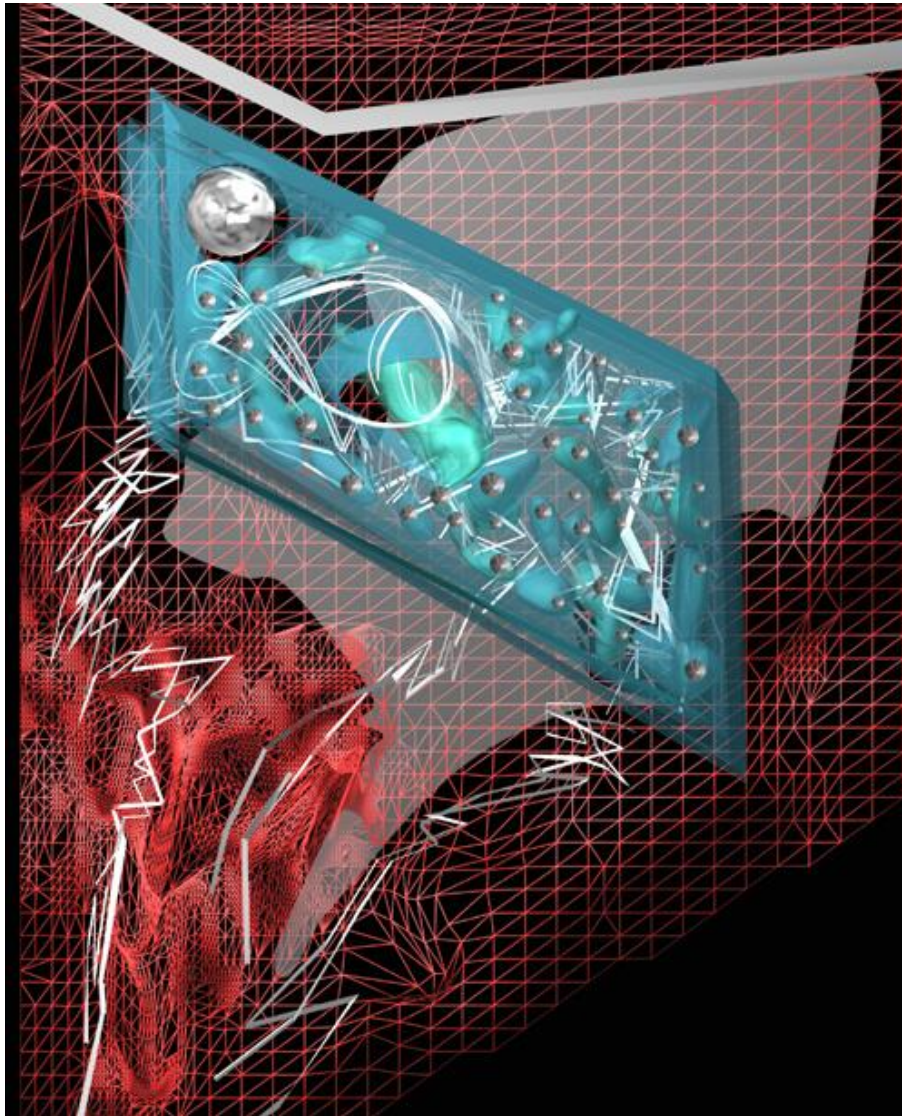
(4)

- (1) Receptacle & Trajectories
- (2) Trajectories
- (3) Cocoons & receptacle
- (4) Orbe
- (5) Internal space



(5)

(a)

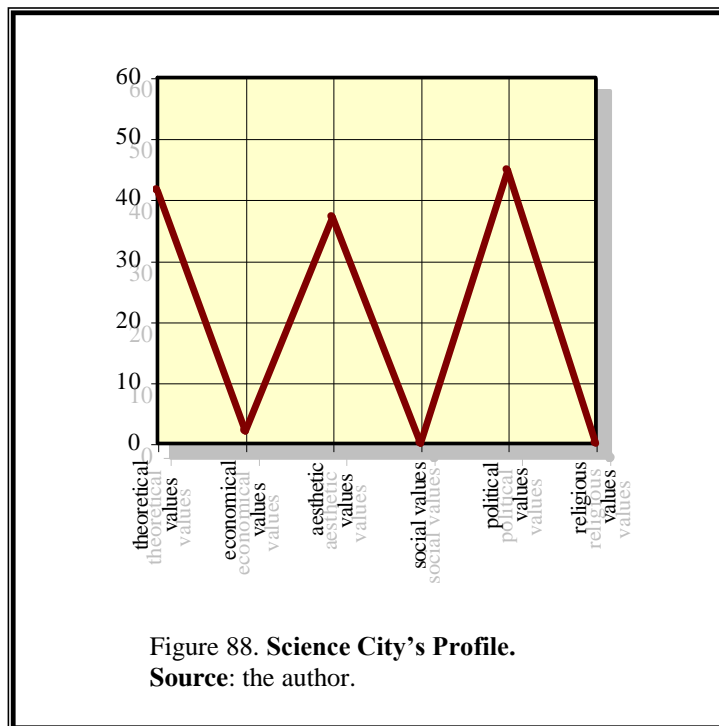


(b)

Figure 87 (a) & (b). **Science City Competition in 6<sup>th</sup> of October.**  
**Source:** The architect's personal CD.

### **10-4-2-5 Science City's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-4-3 Marina International Hotel, Marina Del Rey, Los Angeles, California:<sup>3</sup>**

Marina International Hotel (fig.89 a&b) is an existing modest sixties hotel and bungalows that consist of seven independent buildings. The new development aims at upgrading the hotel into a five-star category and creating a unique landmark for the Marina.

<sup>3</sup> Interview with Tarek Abou El Naga on the 10<sup>th</sup> of January 2002 and a personal CD.

The design of the new tower is both introverted and extroverted taking advantage of the spectacular views of the pacific coast, the Santa Monica mountains and the vast expanse of the Los Angeles metropolitan area.

The inner courtyard allows for a quite and cool environment surrounded by the hotel's restaurant, bar and the second level banquet hall. That typical California central court is the heart of the public functions of the hotel and is directly accessible from the main lobby and is bracketed by the two existing buildings, A and B. Another diagonal public access from the corner of Palawan Way and Washington boulevard activates the connection with the area surrounding the Marina that has been traditionally cut off from it.

The hotel tower is mainly made of two vertical slabs, one facing the marina side and the other facing the ocean and city sides. The south corner of the tower is a vertical "mast" that functions as an axis of rotation for several elements that climb the tower from the base to the roof-garden level, culminating in a swirling structure that houses the rooftop bar. From the west side of that same corner a folded slab, that defines the intersection of the two main tower slabs, also climbs all the way to the rooftop overlapping the bar and providing a shed for the roof garden and the rooftop pool. The corner glass "mast" reaches the highest point of the hotel with an observation "beacon" at the top. At the bottom end, it inverts itself in a hollow glass "shard" that points towards and hovers above the special side entry of the restaurant and bars. The animated vertical edge of the tower is intersected by the horizontal axis of the floating elongated oval banquet hall. At that intersection of the two axes, a vortex of voids and tectonic solids defines an outdoor terrace jutting out of the lounges' area at the mezzanine level of the lobby.

The top three levels of the tower are the special executive floors that are connected diagonally by the terraced roof garden defining the sloped curvilinear curtain



wall that hangs over the inner courtyard and turns upward towards the cantilevered thrusting roof top bar.

The dramatic landmark quality of the hotel tower is intended to become a focal point of attraction for the entire Marina Del Rey area while creating an exciting and active inner life for the hotel and its public functions. The new Marina International Hotel is intended to cater to a growing demand for hi-end eating and drinking establishments while, at the same time, creating complete privacy for its guests.



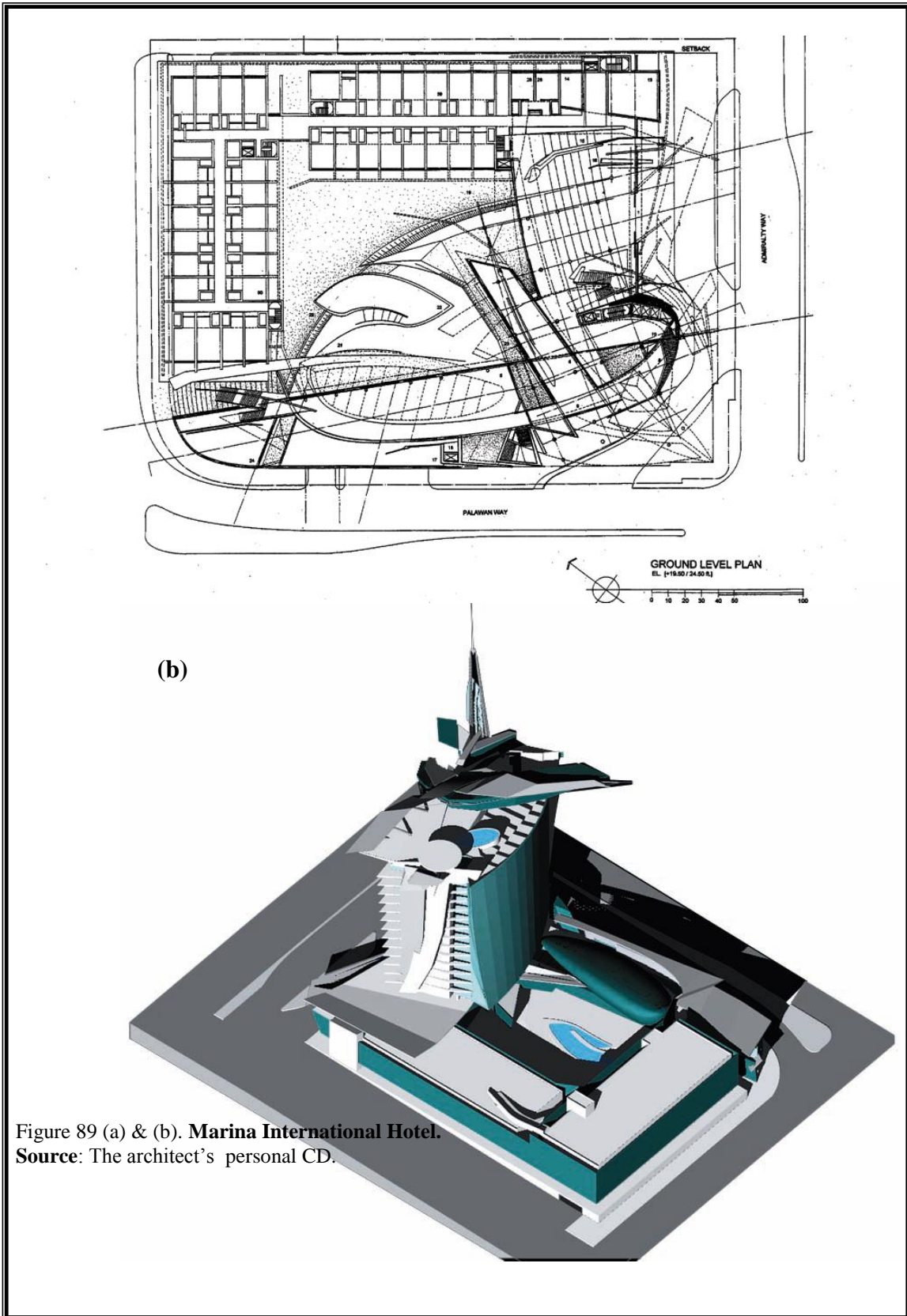
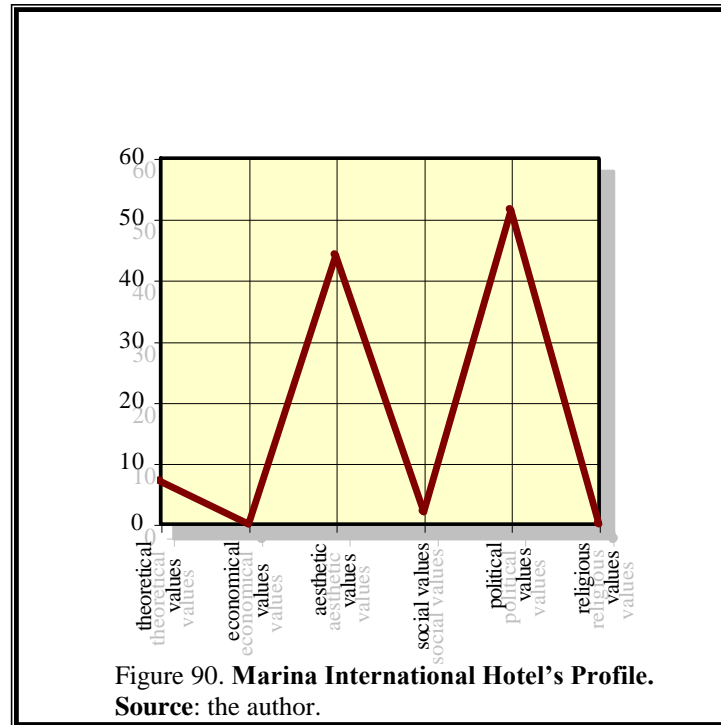


Figure 89 (a) & (b). **Marina International Hotel.**  
Source: The architect's personal CD.



### **10-4-3-1 Marina International Hotel's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-4-4 Sharm Safari Gate, Sharm El Sheikh, Sinai, Egypt** **An Exploration Facility for the Sinai Desert<sup>4</sup>**

In Egyptian history and mythology, the Sinai desert is the quintessential condition of wilderness and nomadism. In Naga's opinion, a facility that is designed for the

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<sup>4</sup>Interview with Tarek Abou El Naga on the 2<sup>nd</sup> of January 2002 and a personal CD of the architect.

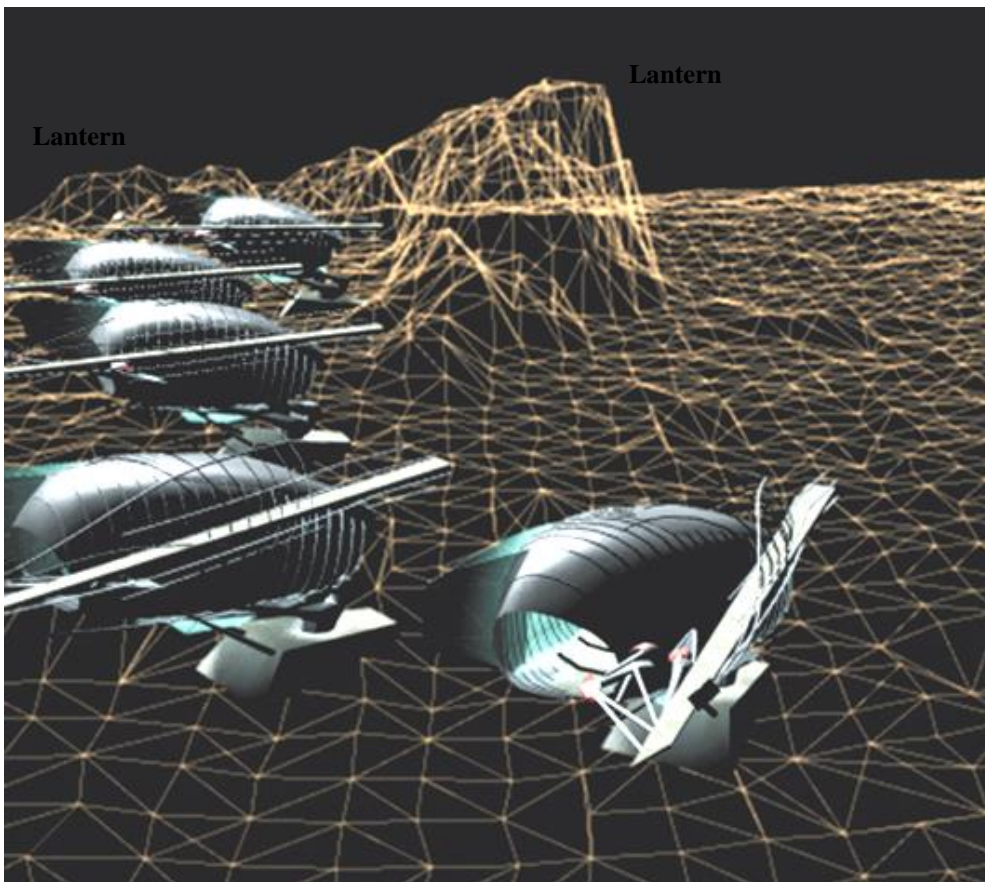
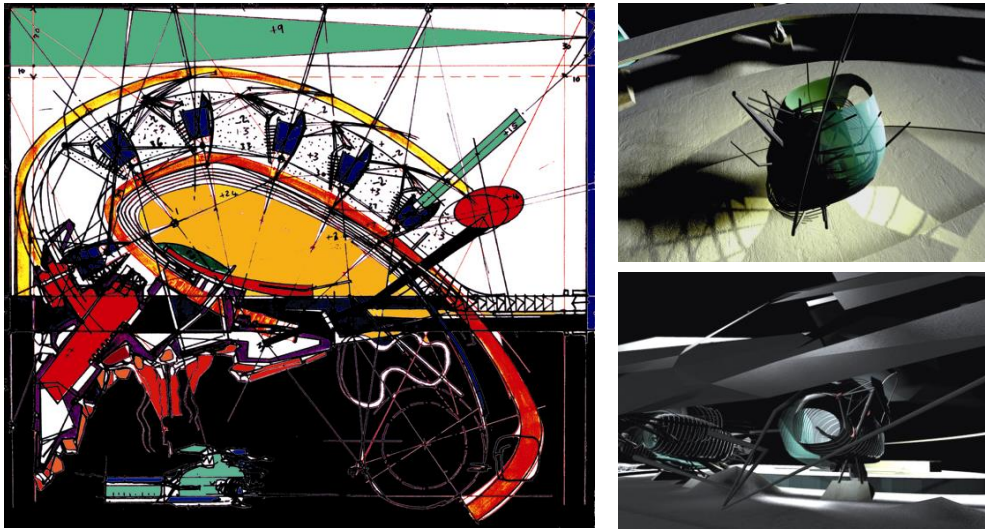
exploration (fig 91) of such a rich locale has to take its clues from its natural and symbolic complexity.

Mentally and physically, the Sinai explorers cross from the realities and trappings of this century, onto an unknown world of the primordial wilderness of biblical historical time. According to the architect, this became the basis for a narrative of five pods that, metaphorically, are themselves wanderers. In a search for the mystery of the place, they group and regroup, evolve and morph into different entities. One of the pods metamorphosed into an "evolved" entity that became their guide (the lantern). A mysterious force in their path gravitationally pulled them into the terrain at the base of the mountain. Their guide assumes a ritualistic position at the center. It becomes their beacon. A membrane that hovered above now shielded them. Extended tentacles tenuously attached down. In an act of defiance, the "pod of flight" penetrates the shield and nestles above the folded plates. It so desired to witness flight, the very act of its *raison d'être*.

From the architect's point of view, a place for nomadic explorers is itself conceived by a nomadic myth. The architecture is imbued by the very function that it is assumed to perform.

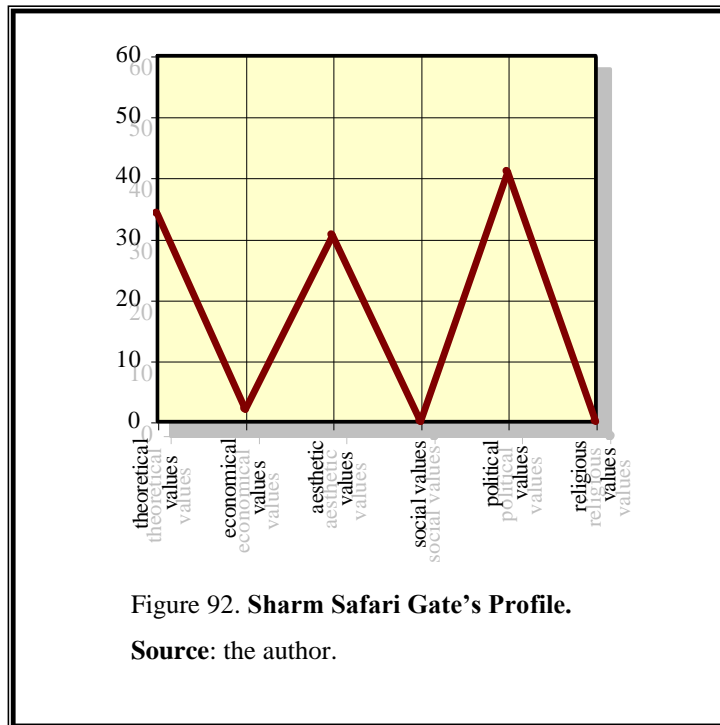
#### **10-4-4-1 Sharm Safari Gate's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



Pods

Figure 91. Sharm Safari Gate.  
Source: A personal CD of the architect.



## **10-5 The Architectural Product of Akram El Magdoub:**

Five projects nominated by El Magdoub will be investigated, namely Egyptian Embassy in Berlin, National Center for Science and Technology in 6<sup>th</sup> October, Port Said Public Resort, Engineers Syndicate in Ismailya, and Khofo Touristic Center in Giza.

### **10-5-1 Egyptian Embassy in Berlin:<sup>1</sup>**

The architect was confronted during this competition by a dilemma which has generated the whole design concept. It was the building type. The embassy is a type of buildings representing the culture, civilization, environment, etc., of one country but which is built at the same time in another country, different in culture, civilization, and environment.

The architect wondered how to solve this crux without copying superficially and naively the elements of the Egyptian civilization. Two ideas were suggested:

- 1- Bringing a traditional Egyptian material from Egypt's land which is the Red Granite of Aswan, and using it in the external surfaces of the building. Another thing belonging to Egypt was brought: the Egyptian sunny sky. The architect created an open court in the heart of the building permitting the penetration and concentration of the sunrays and thus transforming the weak sun of Berlin into a bright warm one. He increased its shyness by using goldy glass in covering the internal spaces. Besides its role in reflecting the sunrays, this type of glass reminds of the Ancient Egyptian Civilization.
- 2- Searching for an Egyptian value characterizing most of the Egyptian work of art and architecture. After a deep research, the architect noticed that there always exists an internal energy in every thing. This energy cannot be seen directly on the

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<sup>1</sup>Interview with Akram El Magdoub on the 25<sup>th</sup> of September 2001.

surface, but after a deep observation, one may recognize and feel an internal motion lying behind the external stability. For instance, in sculpture, the old Egyptian statue is very static, solid, and inert, but after a deep look anyone could feel an internal emotion and energy. In architecture, this energy is seen in the design of the Islamic house where the facades look very solid and static, while all the internal facades are opened overlooking the court and the social activities are exerted in the internal spaces. But these activities can never be felt from the outside of the house.

The architect has expressed this internal motion or energy in the building design (fig.93) through four points:

- Creating an internal open space in the heart of the building representing the concept of enclosure in the Islamic architecture (besides its environmental role mentioned earlier).
- Including another building inside the main building mass located in the open court. The design is thus composed of a main building, then a court, then another small building enclosing the meeting hall and symbolizing the internal energy.
- When observing the external composition, a motion, which has no specific origin or direction, could be felt. This motion is the reflection of the internal energy on the building mass.
- The firmness and stability of the building on the ground although its obvious motion insures the idea of the internal energy lying behind the external inertia.

#### **10-5-1-1 Egyptian Embassy's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:

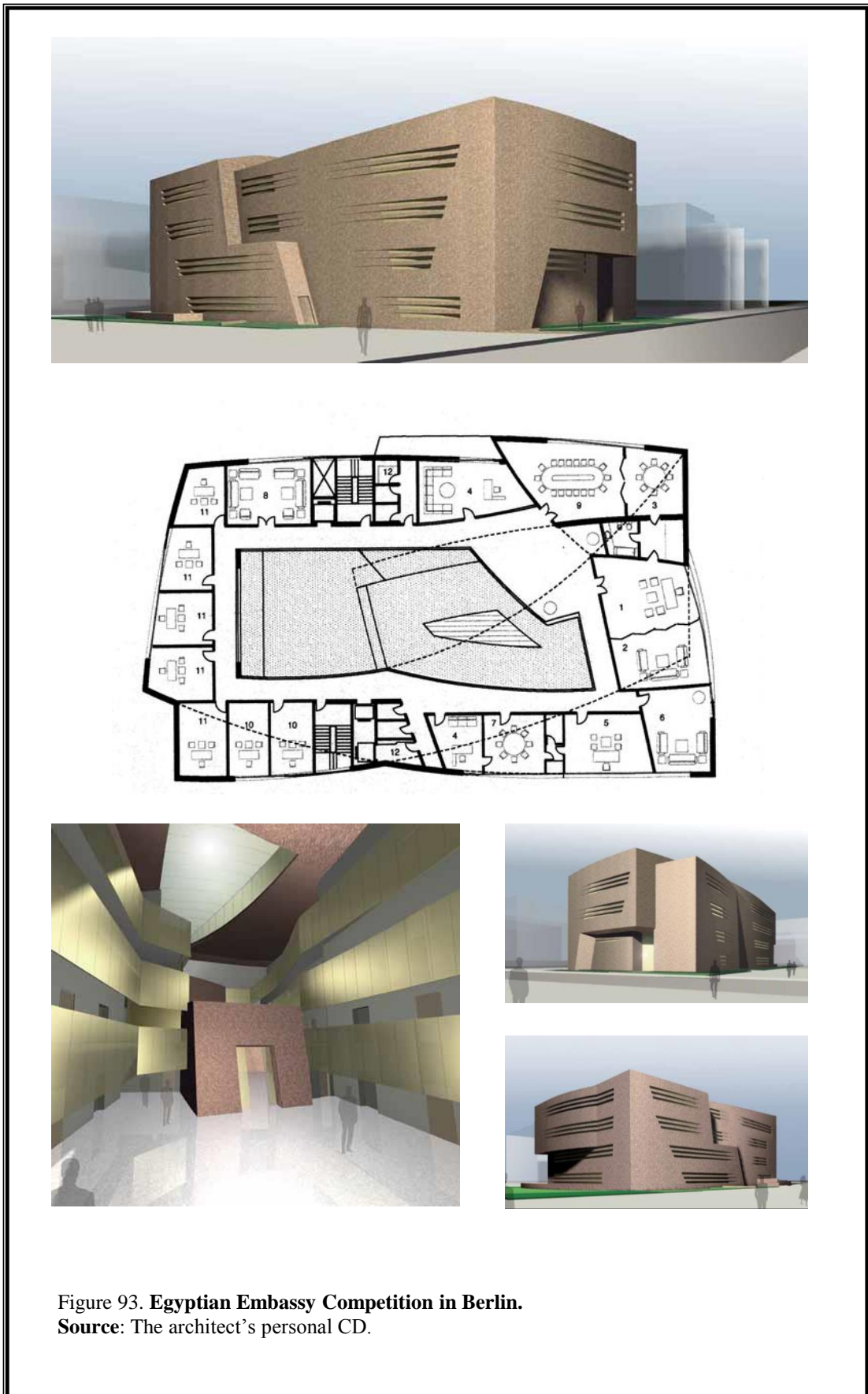
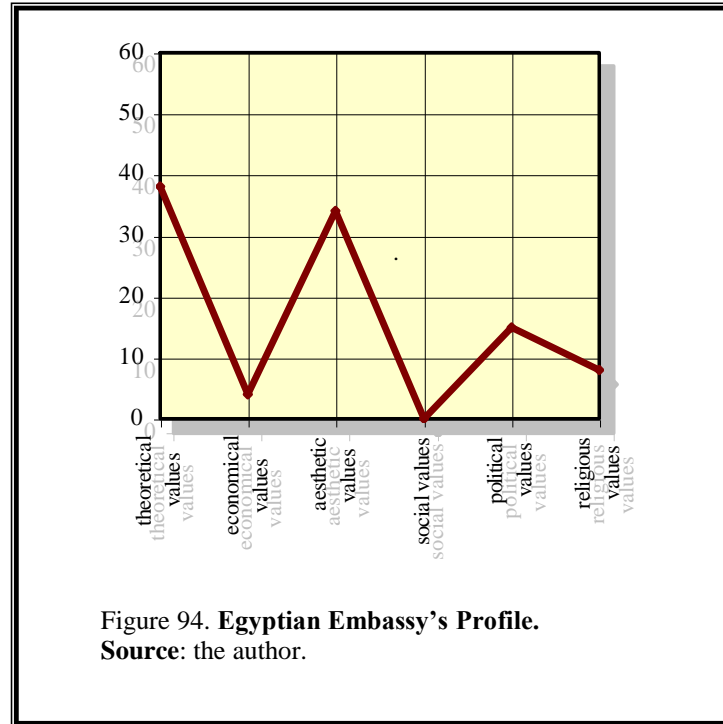


Figure 93. **Egyptian Embassy Competition in Berlin.**  
Source: The architect's personal CD.



### **10-5-2 National Center for Science and Technology in 6 October City (Science City):<sup>2</sup>**

The architect participated by this project in the competition of the National Center for Science and Technology in 6 October City.

The design (fig. 95 a&b) revolves around three main principles: the relationship between man and universe, the abstract relation between the nature and the manmade, the exhibition.

#### **10-5-2-1 The Relationship between Man and Universe:**

Science has played the principal role in exploiting the universe and in formulating its relationship with man on earth. The architect emphasized the interaction between man and universe through some points: the interaction with the main four meridians; it is realized when the mass gets up to face the sunrise, then inclines all the way to the west-south to collect the rays for energy generating. In addition, he generated the

<sup>2</sup> [www.geocities.akram22eg](http://www.geocities.akram22eg)



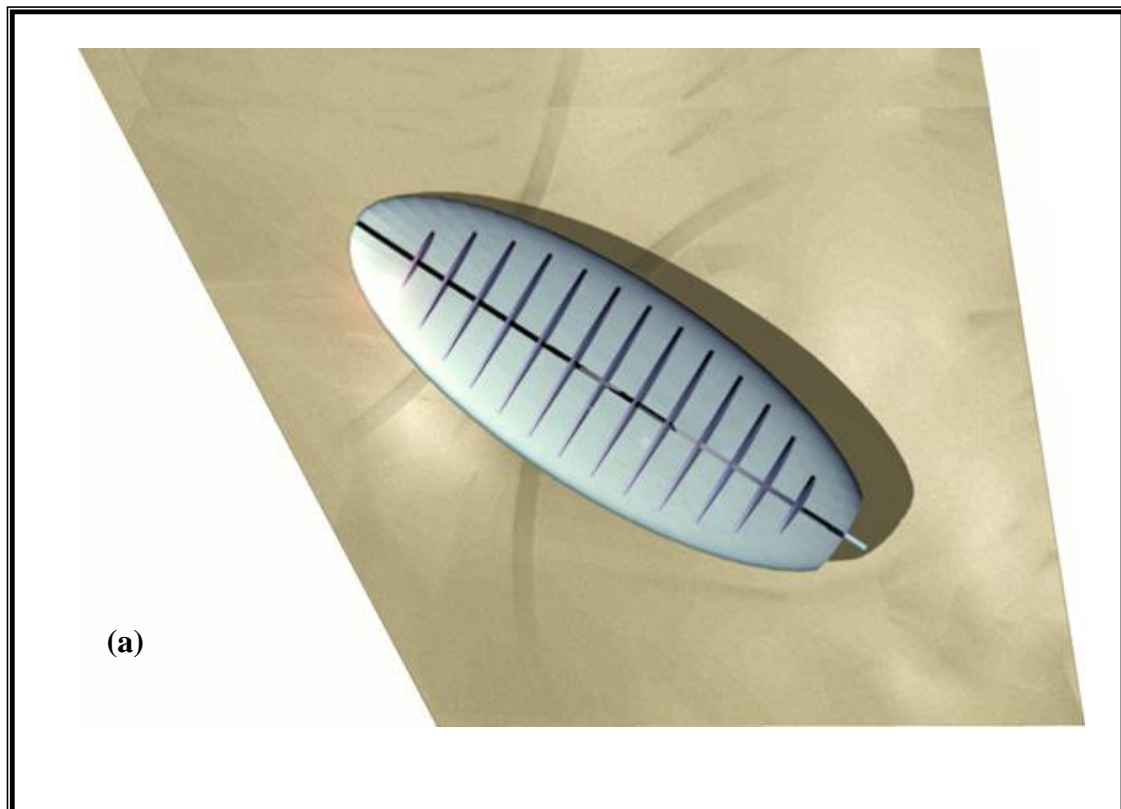
entire geometry according to the main four meridians. In order to let the daily light reigns the internal space, the mass is cracked at the east west axis.

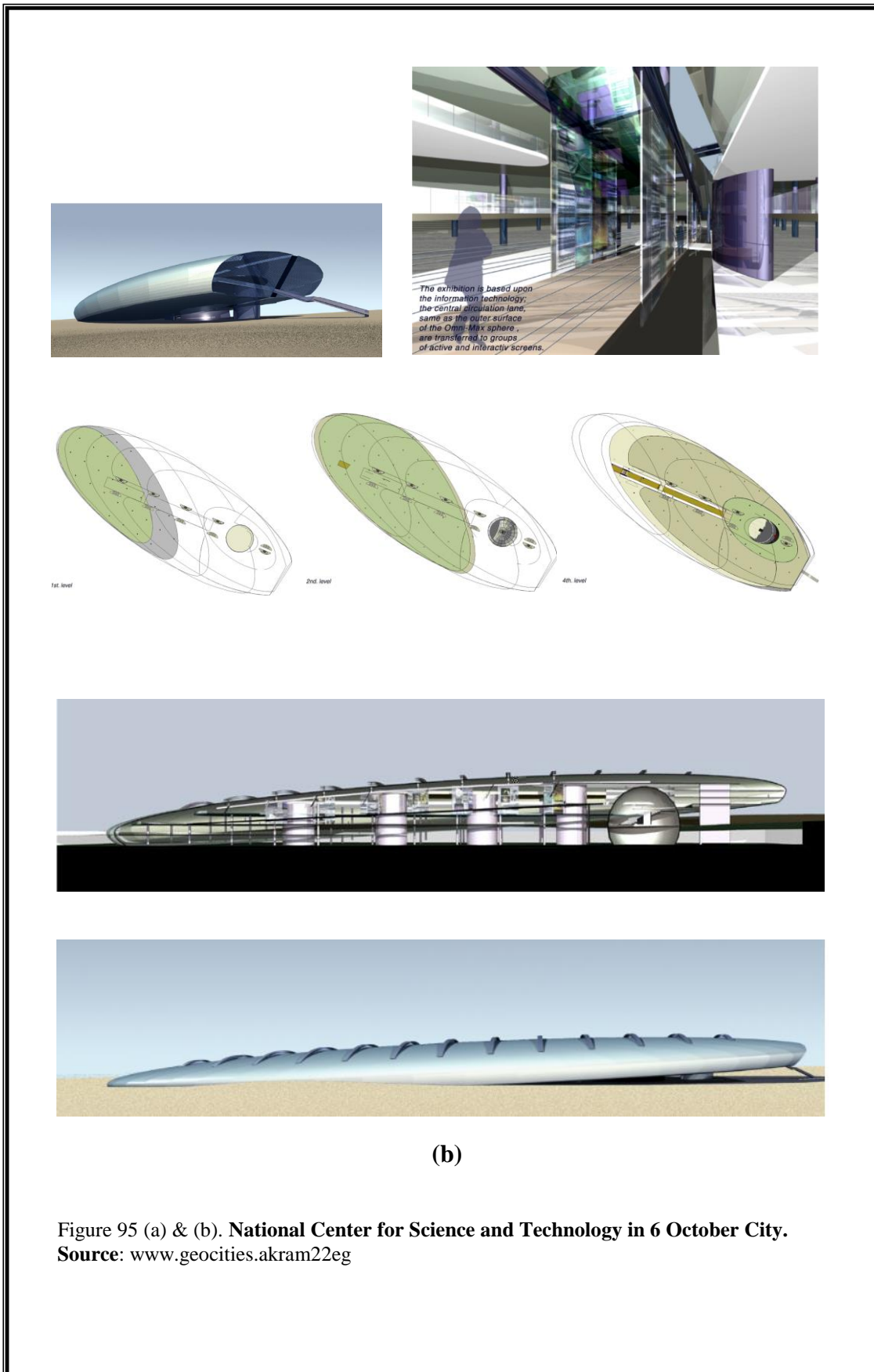
### 10-5-2-2 **The Abstract Relation between the Nature and the Manmade:**

The main concept is based upon this relationship and all the interactions in between. This interaction starts, at the very beginning, when the manmade mass meets the earth and then follows its natural slope. The natural contour is highly influencing the form of the unitary firm mass: the building surface becomes partially covered by the earth when the contours are high, then, when they are lower the building is totally uncovered. The inclination in mass was the main reason in the difference between the floors' shapes and centers of gravity. Its elliptic shape decreases within 1.5m every level. The line passing through all the centers of gravity represents the main spine of circulation and exhibition.

### 10-5-2-3 **The Exhibition:**

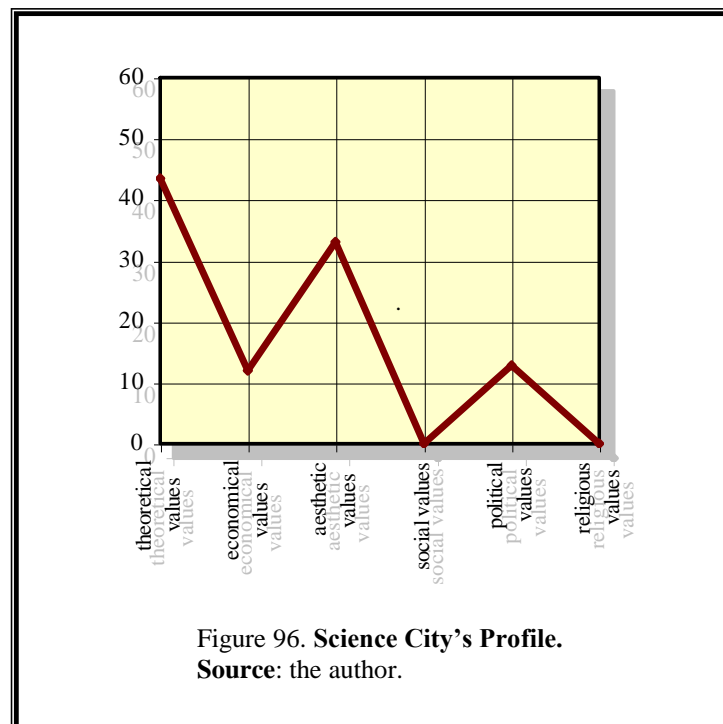
The exhibition is based upon the information technology. The central circulation lane, same as the outer surface of the Omni-Max sphere, is transformed into a group of active and interactive digital screens.





### **10-5-2-4 Science City's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-5-3 Port Said Public Resort:<sup>3</sup>**

The design of this project (fig.98) was generated from three main constraints: function, environment, and site.

#### **10-5-3-1 Function:**

The site is located between two private resorts and its side looking towards the street is 300m in length. The main goal of building this project is to provide a public

<sup>3</sup>Interview with Akram El Magdoub on the 10<sup>th</sup> of October 2001.

resort—not a private one- consisted of a group of renting units and villas profited by all Port Said inhabitants. Therefore, the main concept was based on the seashore's publicness, and this concept was reflected on the resort's design as follows:

- Elimination of edges and barriers which always separate between community and shore by creating dynamic circular masses attracting the eyes of pedestrians into the inside and directing them towards the sea.
- Creating intermediate axes of views between masses beginning from the street and ending at the shore. These axes have permitted the pedestrians to see the view from the street all along the site's length.

#### **10-5-3-2 Environment:**

The architect was concerned with the north direction, sunrays, and providing the view of the sea for all the units.

##### ***North direction and sunrays:***

One of the architect's intentions, according to him, was to create an appropriate shape permitting the maximum collection of north wind. He suggested the circular shapes opening towards north. To provide natural lighting for the northern units and protecting the southern ones from direct sunrays, he increased the porosity of the north facades and decreased it in the south. In addition, he transformed the south passages between units into sun-breaks. To provide wind and sun for most of the units, he decreased the built area in front of the seashore.

##### ***View of the sea:***

For providing the view for a maximum number of units, the architect suggested the circular shape of the units' composition. Also, he differentiated between the number of stories. The units in front of the sea are distributed in one story and the backward units in two stories so that the upper one may entirely see the sea. The ground floor units were treated by creating some voids in the masses lying in front of them. 75% of the units, by this composition, can see the view.

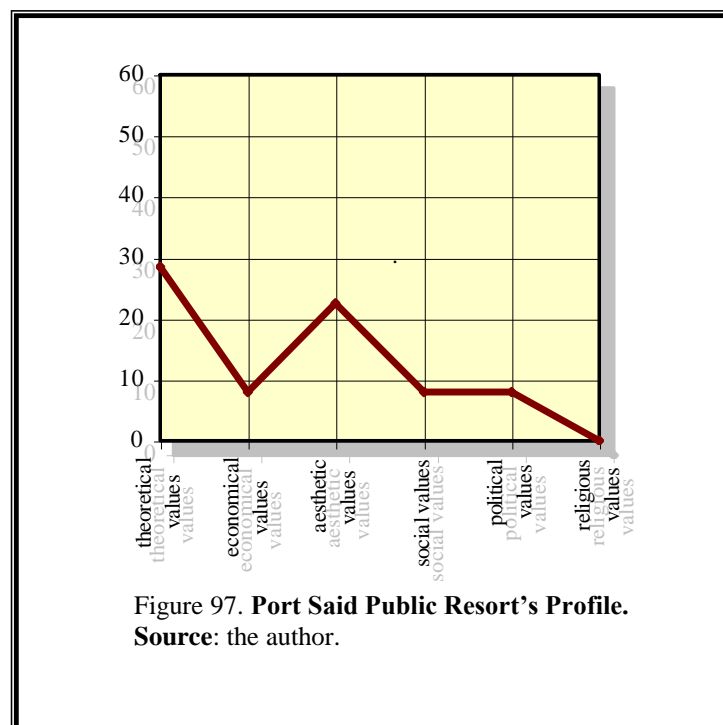
**10-5-3-3 Site:**

The site was very flat with no differences in levels, and the architect found, when designing the resort's landscape, that this was very static and boring. He thought of creating differences between levels within 1m, adding thus some dynamism in the project's landscaping.

The project in general consists of slabs and continuous walls, arising always from the ground, designed in a very dynamic and plastic way.

**10-5-3-4 Port Said Public Resort's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



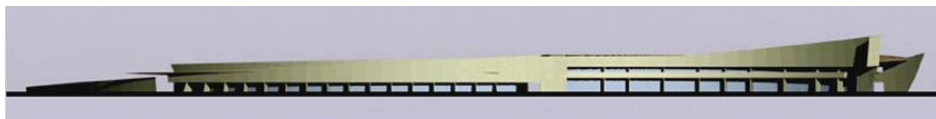
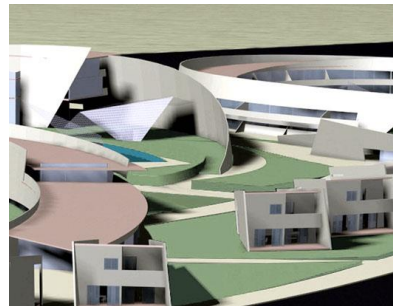


Figure 98. **Port Said Public Resort.**  
Source: the architect's personal CD.

### **10-5-4 Engineering Syndicate in Ismailya:<sup>4</sup>**

Three main factors have generated the design concept of the syndicate (fig. 99): function, building type, and environment.

#### **10-5-4-1 Function:**

The project as a club and as a syndicate has two functions: first, a communal public function related to the community, second, a private function related to the category of engineers. The former is represented by a glazed transparent cube enclosing the public activities such as cinema, exhibition, and library. The cube acquires its daily light from the external environment, and omits light at night as a kind of interaction with the community. The second function, on the other hand, is represented by a solid mass containing the private activities such as the residential units, gymnasium center, and administration.

#### **10-5-4-2 Building Type:**

The building type as a syndicate represents a specific category in the community, and, according to the architect, the category of engineers has played and still plays an influential role in the community's development, beginning from the ancient Egyptian civilization till present. We could say that it has two roles: ancient and modern. The former is represented by the solid mass with its few narrow openings, and the latter by the transparent cube constructed with space trusses and glass.

#### **10-5-4-3 Environment:**

The building is located in the southwestern area of the site in order to leave the northeastern one as a wind collector acquiring its shading from the building itself. To increase this shaded area, the architect added a squared shed which plays, besides its environmental role, a spatial role in connecting the public communal zone

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<sup>4</sup>Interview with Akram El Magdoub on the 25<sup>th</sup> of September 2001.



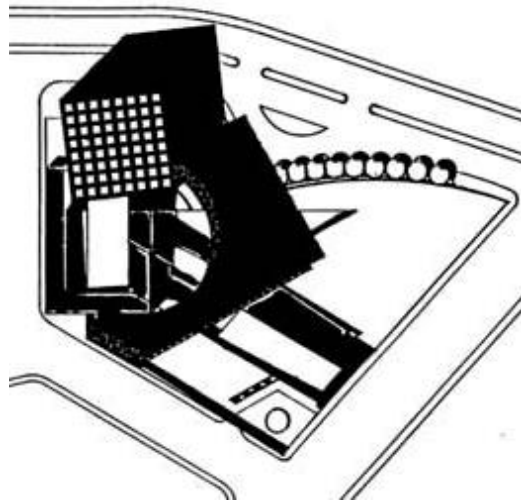
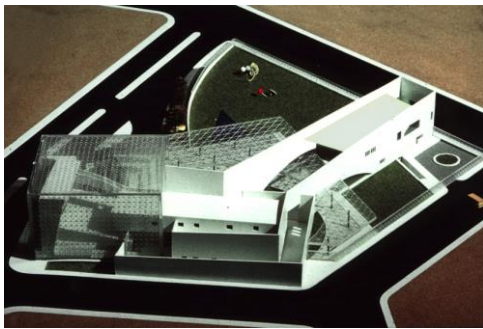
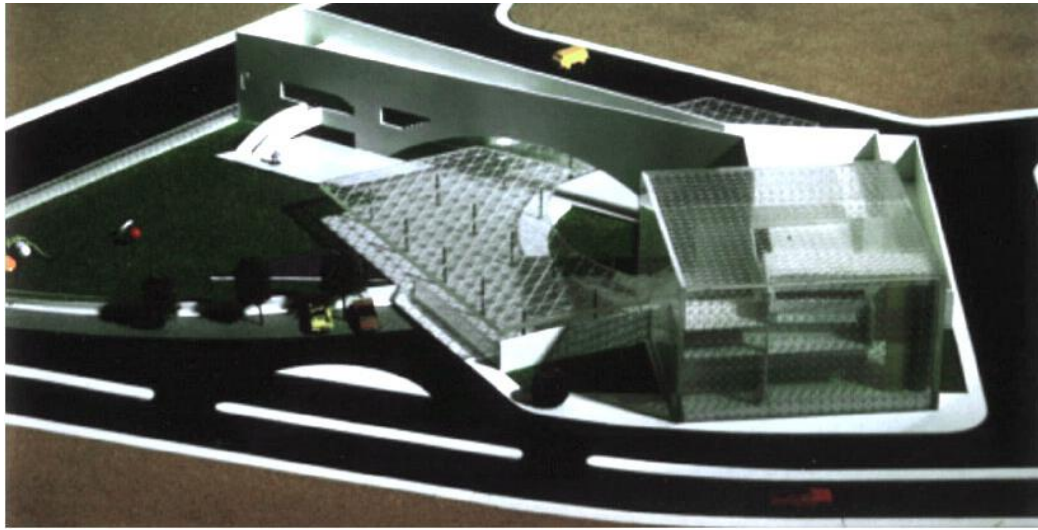


Figure 99. **Engineering Syndicate in Ismailya.**  
Source: The architect's personal CD.

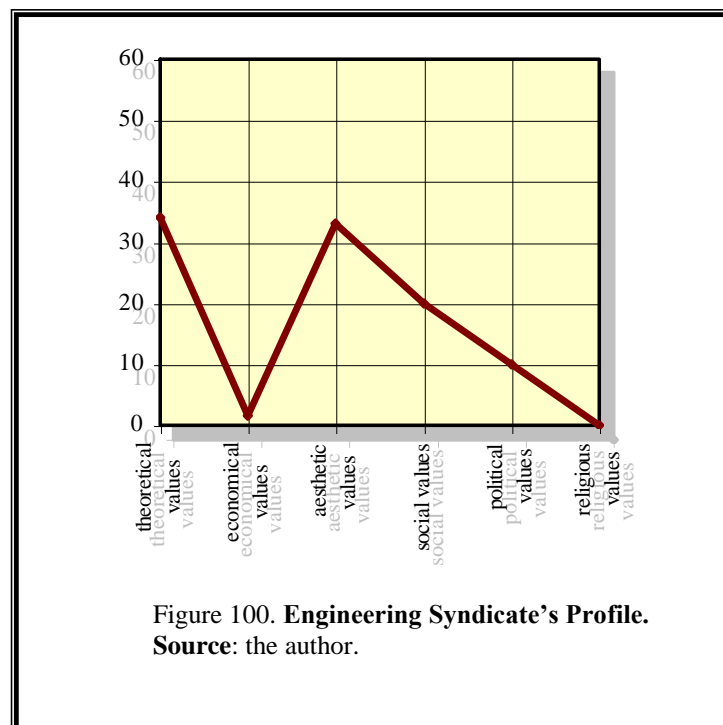


(transparent cube) with the social private zone (solid mass) as a kind of mutual interaction.

The whole composition is generated from a single continuous wall which begins from the northeast corner and arises formulating the cube, then going out of the cube and formulating the solid mass, and finally penetrating again into the cube and breaking inside of it forming the internal masses.

#### **10-5-4-4 Engineering Syndicate's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-5-5 Khofo Touristic Center:<sup>5</sup>**

The site is located in the intersection between El Haram street and Mansouria Lake street. The project (fig.101) has a touristic nature and consists of renting and daily use units, besides the shops, exhibitions, MPUs, cinema, restaurant, swimming pools, playgrounds, supermarkets...etc.

The design concept revolves around two main goals expected to be satisfied in the project. First, the need for a high ability of expansion and of construction on several phases. The second goal was the need for a great number of units. The architect tried to achieve these goals in his design as follows:

- The designer thought of the project's structure as a group of units consisting of columns and slabs to facilitate the process of integration or separation between spaces, and the ability of expansion and construction on several phases.
- To provide a great number of units, whether for renting or for daily use, he suggested a 4mx4m unit which could be organised besides each other forming a longitudinal ribbon of several 4mx4m units in such a manner that the chalet may consist of one, two, or three units.

The sides of the site have played an influential role in determining the form's lines whether of the main spine or of the ribbons of units. These latter intersect in a dynamic way creating intermediate plastic spaces, and each space contains a source of water to provide beauty and units' privacy.

The architect took advantage of the difference between El Haram street and El Mansouria Lake street by installing the parking and service areas in between, and entering the touristic center from the higher level.

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<sup>5</sup> Interview with Akram el-Magdoub on the 25<sup>th</sup> of September 2001.

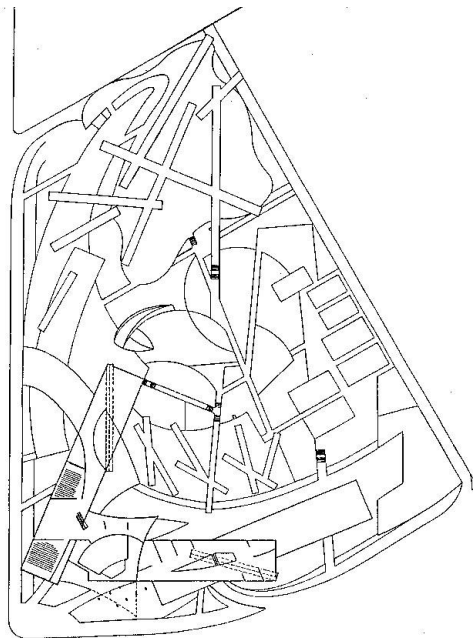
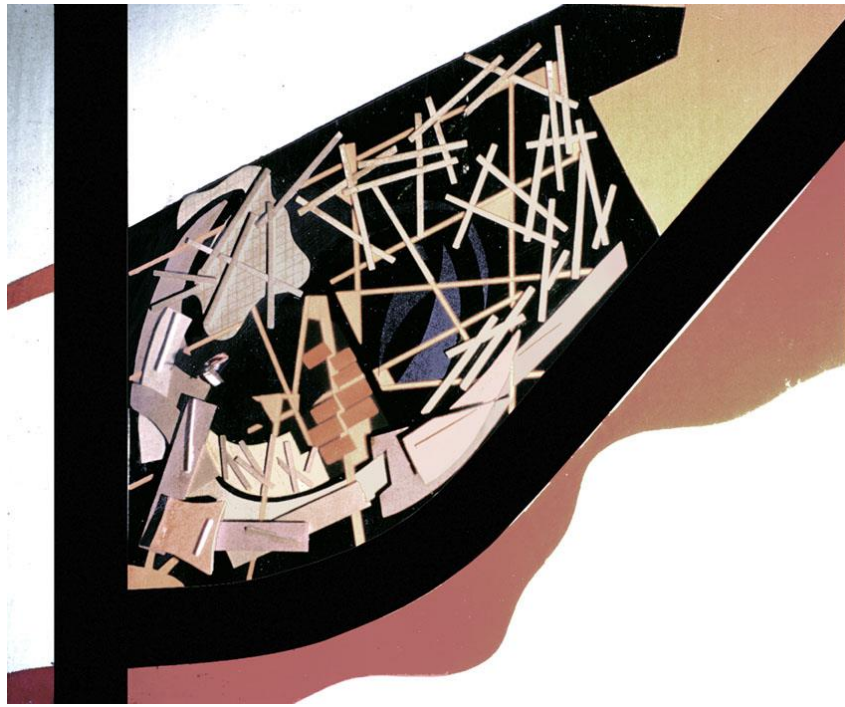
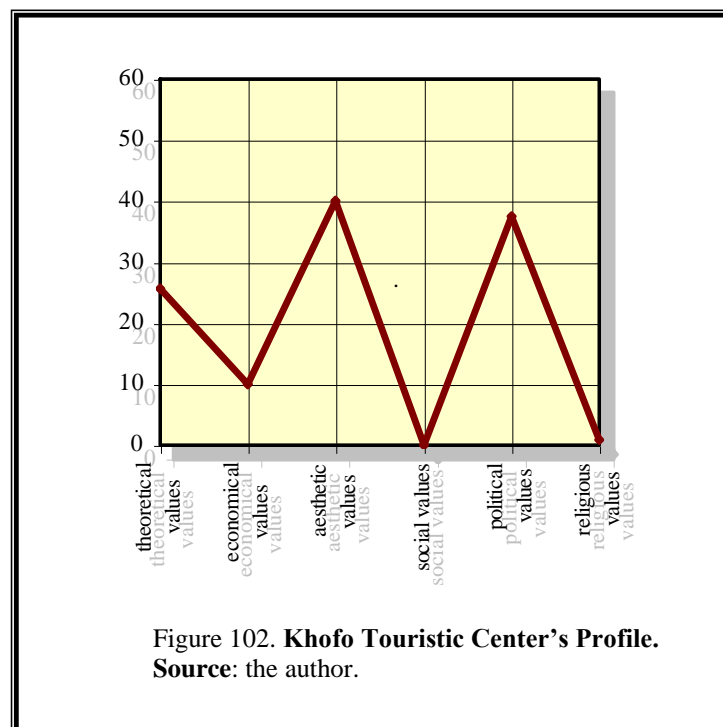


Figure 101. **Khofo Touristic Center in Cairo.** Above, the conception of the whole design. Below, proposed plan of the first phase of construction.

**Source:** the architect's personal CD.

### **10-5-5-1 Khofo Touristic Center's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



## **10-6 The Architectural Product of Ahmed Mito:**

Four buildings will be investigated, namely Abbassya Trade Center in Cairo, Maadi Trade Center in Cairo, Hurgada National Museum, and a Mosque at El Ryad.

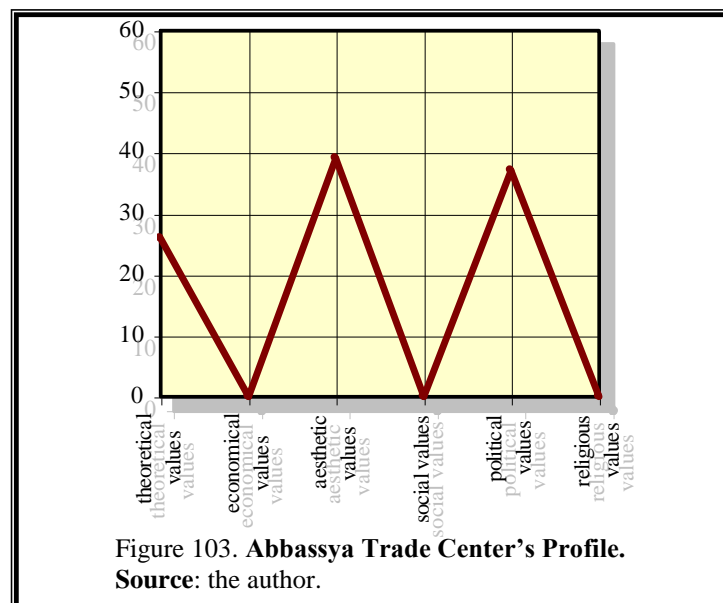
### **10-6-1 Abbassya Trade Center:<sup>1</sup>**

The project (fig.104 a&b) is located at El Abbassya square and was deeply influenced by the surrounding site conditions. The architect dealt with the building mass as if it was a piece of clay affected by the negative and positives external charges, such as pollution, noise, violence, crowd, bridges, and contrasting heights of the nearby buildings. They are reflected on the form as follows:

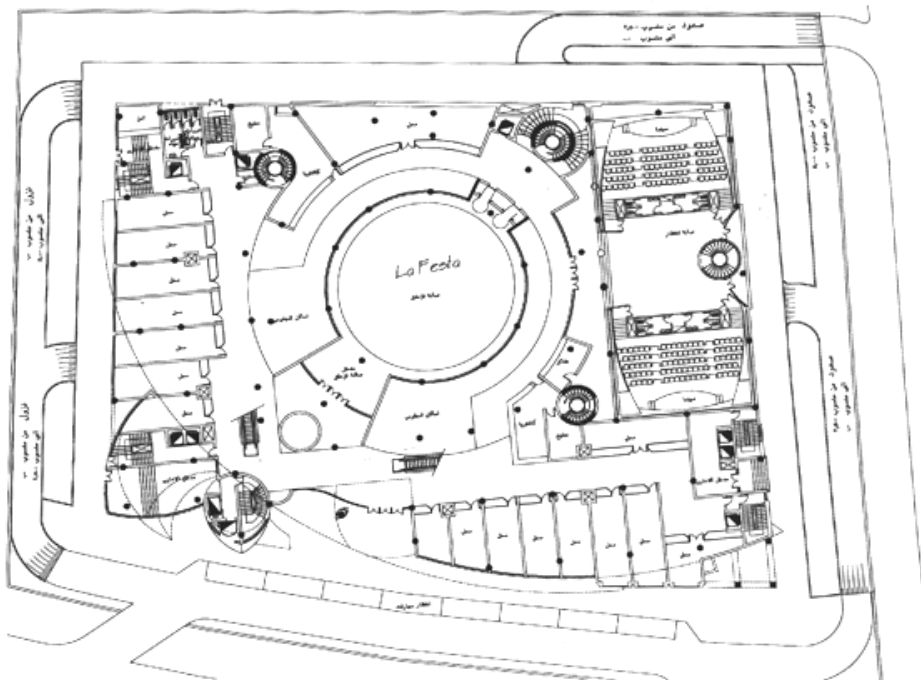
- The architect considered El Abbassya Bridge a negative charge affecting the project; therefore the side of the mass overlooking it was overblown. Also, the corner overlooking El Abbassya square was overblown.
- A negative space was created in the entrance zone since it is the zone meeting the entrants, and was insured by a ten-story mass covered with curtain wall.

#### **10-6-1-1 Abbassya Trade Center's Profile:**

By applying the *Matrix Values / Components* and scoring the indices of the six values on the product's components, the next graph has been obtained:

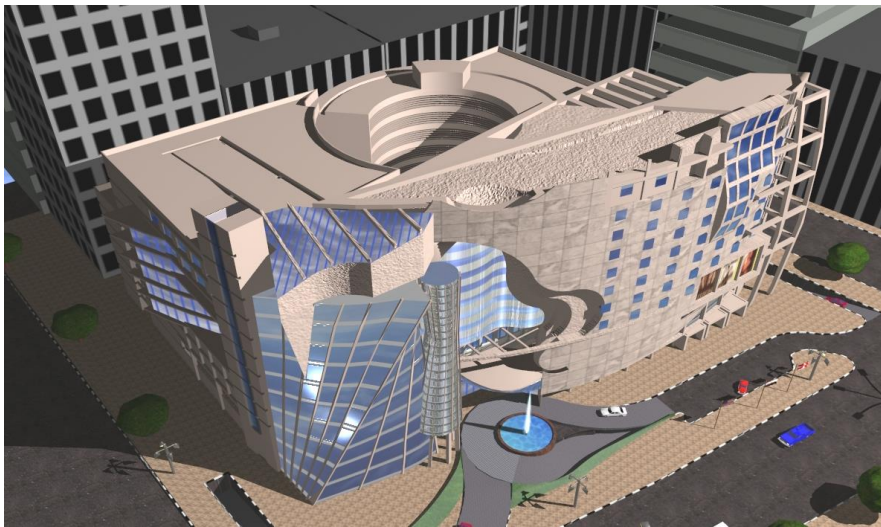


<sup>1</sup>Albenaa Magazine, (2002), Vol. 20, No. 110, June.



(a)





(b)

Figure 104 (a) & (b). **Abbassya Trade Center.**

**Source:** The architect's personal CD and Albenaa Magazine June (2002) No. 119.

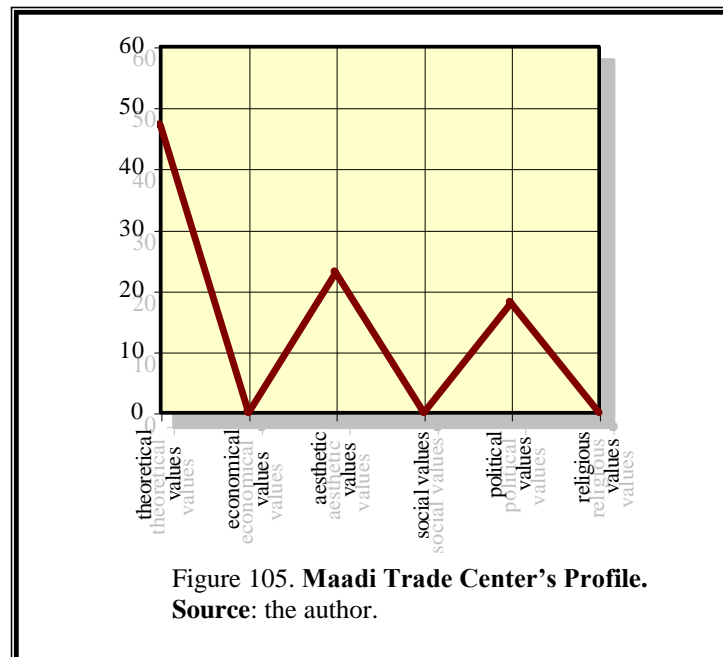
## 10-6-2 Maadi Trade Center:<sup>2</sup>

One of the main constraints of this project (fig. 106) was that it must be built on two opposite lands separated by a street. The owner bought them together to construct a commercial center.

The designer suggested an upper connection in the form of a ring, providing thus a continuous path beginning from the ground floor of the first land, then arising till its fifth floor, then crossing the ring and descending from the fifth floor of the other land till its ground floor. The project represents a unique experience in crossing the street and overlooking it through the center. In addition, this circular bridge created a central space where the architect used its walls as a display and advertising screens. The architect designed the vertical cores in the form of high towers used as the project's landmarks.

### 10-6-2-1 Maadi Trade Center's Profile:

By applying the *Matrix Values / Components* and scoring the indices of the six values on the product's components, the next graph has been obtained:



<sup>2</sup>Albena Magazine

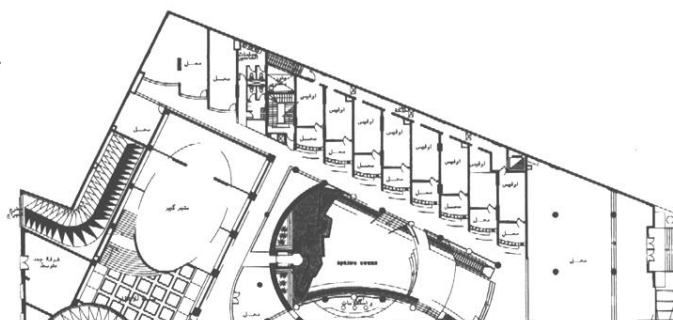






Figure 106. **Maadi Trade Center.**

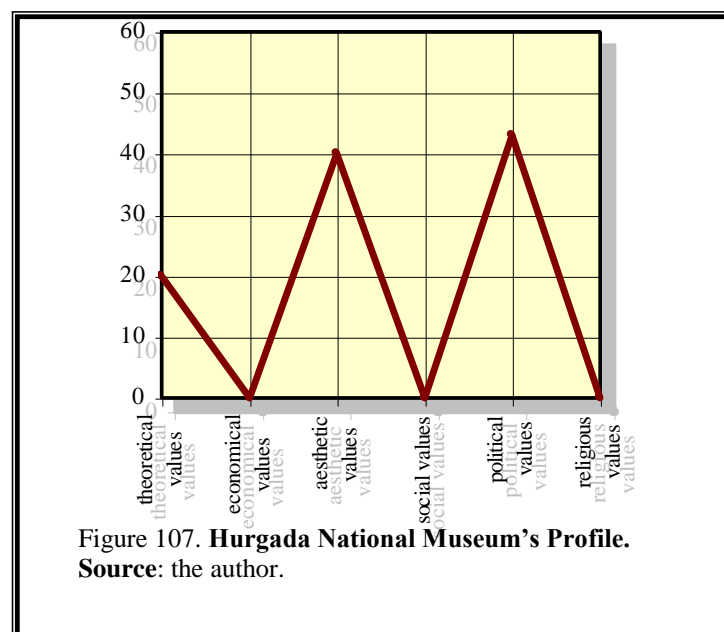
**Source:** The architect's personal CD, and Albenaa Magazine June (2002), no. 119.

### **10-6-3 Hurgada National Museum:<sup>3</sup>**

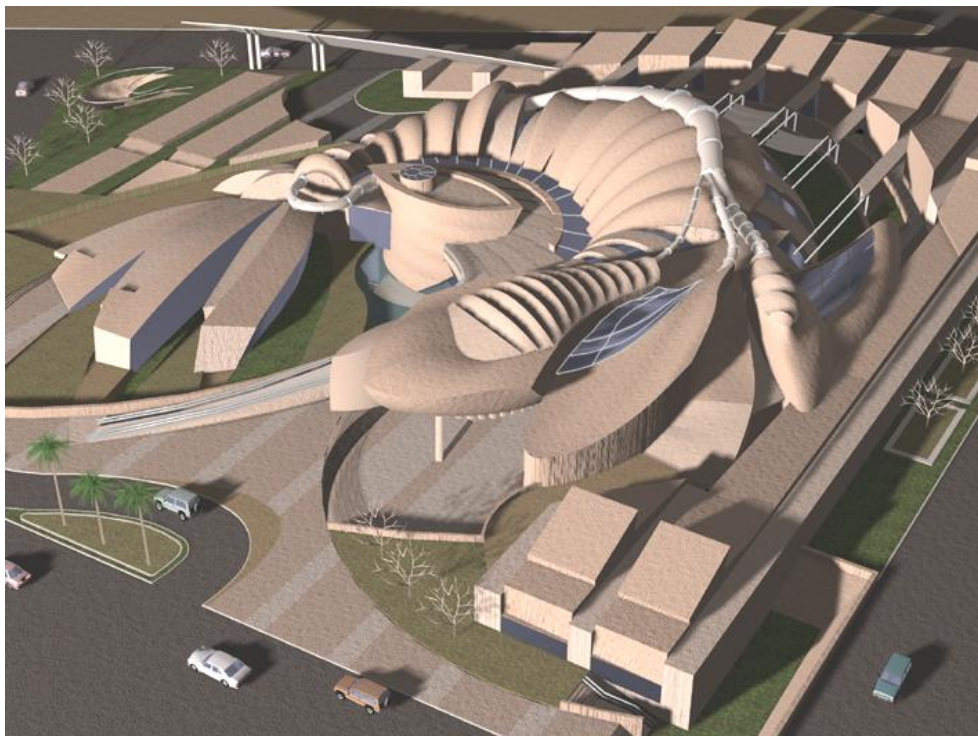
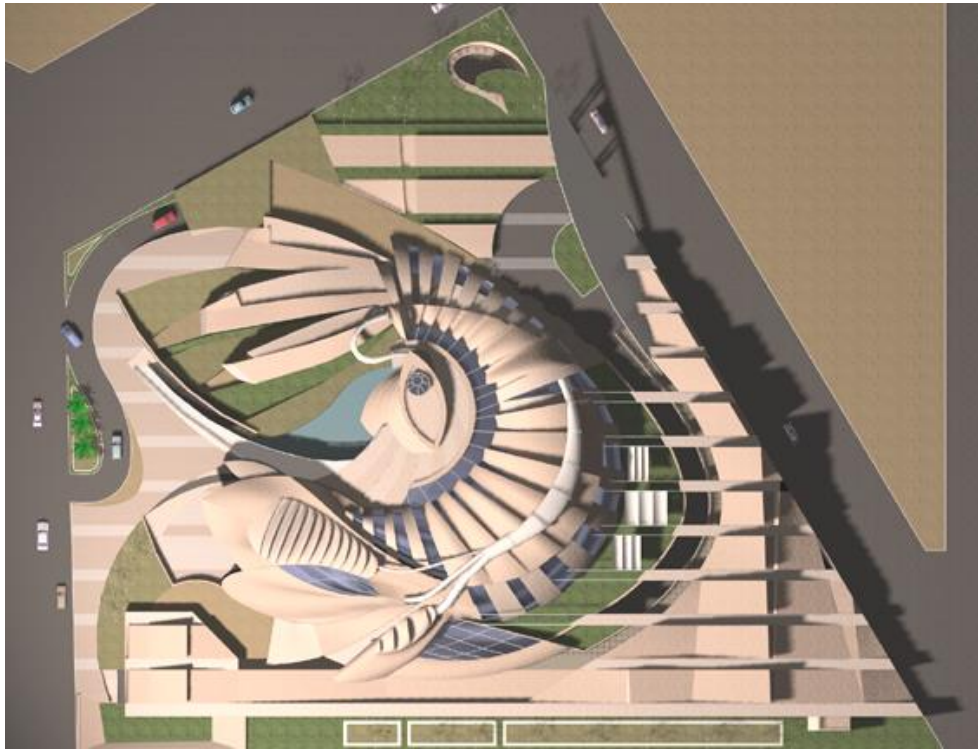
This project (fig.108 a&b) won the first price in the competition held for constructing a group of national museums in Egypt. The main concept was based upon the integration between the human scale existing in the building's functional requirements, and the symbolic scale, which must not be forgotten in such an important attractive point representing Hurgada. The functional requirements were organized within a symbolic form based on the biological analogy from Hurgada's sea creatures, fossils, rocks, dunes...etc. The mass in general is in the form of an aquatic creature. Libraries, the source of knowledge, were located at the same place of its head; the central space of circulation at the same place of its heart; all the museum's survival sources meaning the electro-mechanic systems were located at the same place of the vertebra, which was expanded to add another axis at the same place of the lymphatic channels, representing the circulation of services and maintenance employees.

#### **10-6-3-1 Hurgada National Museum's Profile:**

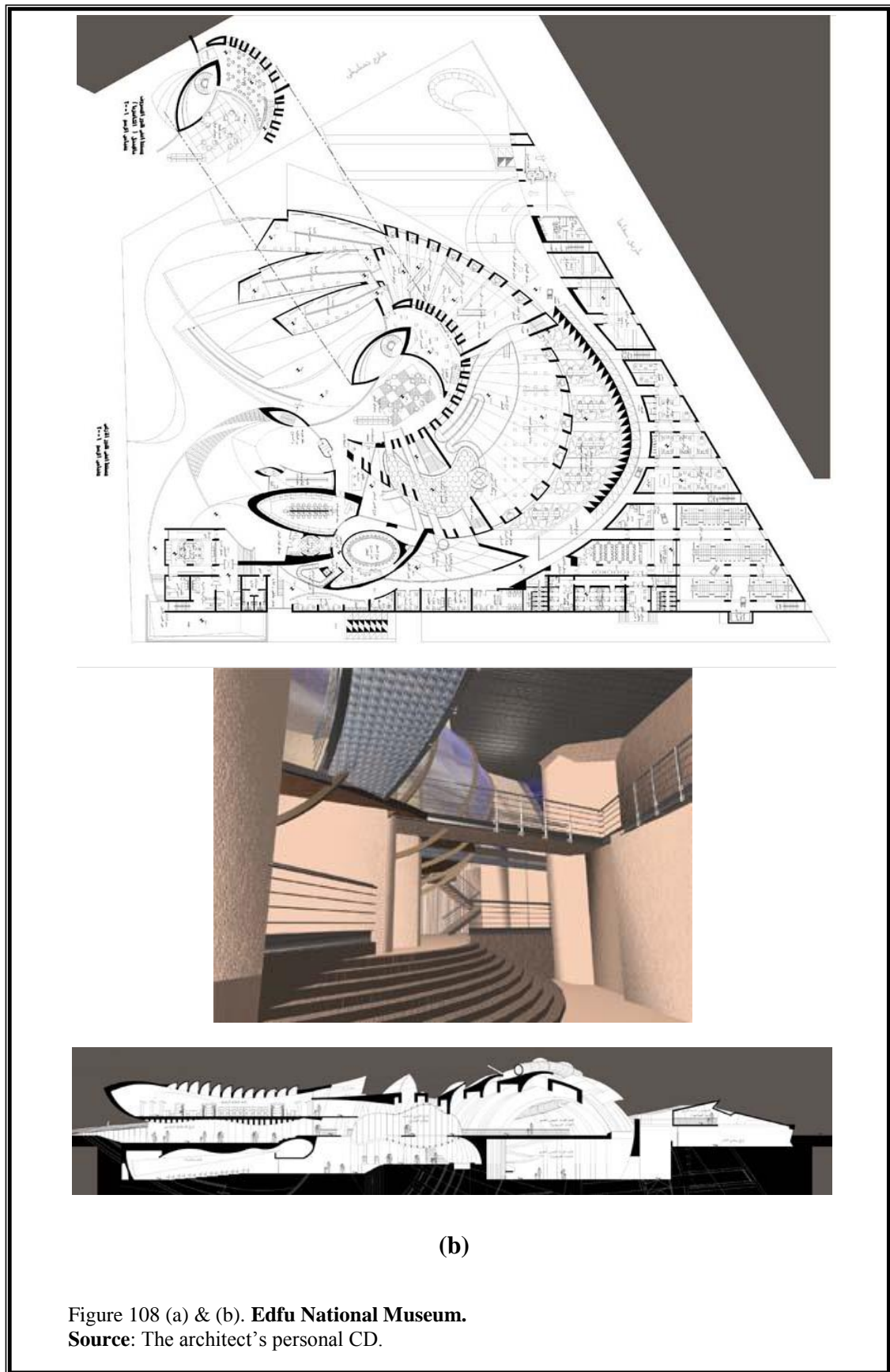
By applying the *Matrix Values / Components* and scoring the indices of the six values on the product's components, the next graph has been obtained:



<sup>3</sup> Albenaa Magazine, (2000), Vol. 19, No. 116, March.



(a)





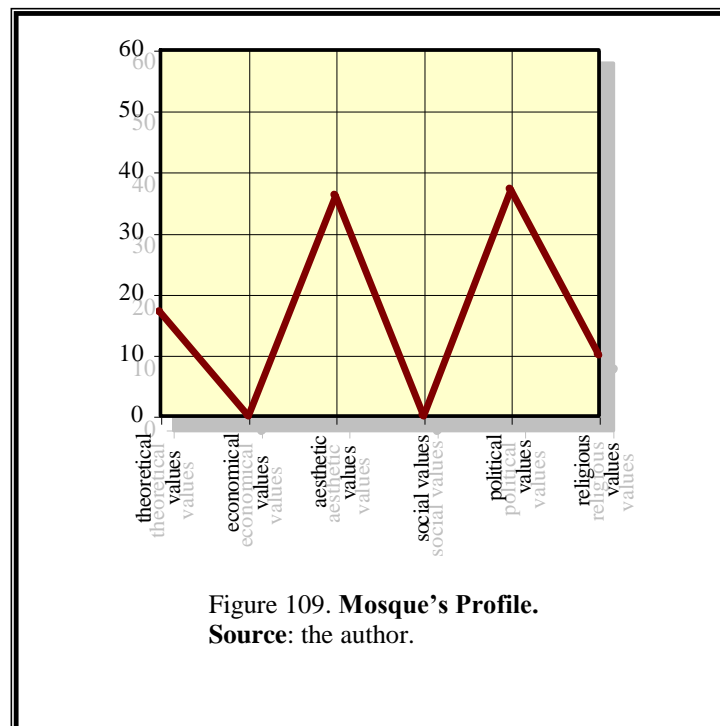
### **10-6-4 A Mosque at El Ryad:<sup>4</sup>**

This project (fig.110) was presented within an architectural competition at El Ryad. The architect's main approach was highly metaphoric. The design was in the form of a man praying to God taking the position of prostration, representing thus the closest relationship between man and God during prayer. The head of the man represents the Mosque's "Kibla" or the point where all the praying men must look at to be oriented towards Mecca.

The whole internal space is spread by natural light penetrating from the ceiling's structural units.

#### **10-6-4-1 Mosque's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



<sup>4</sup>Albena Magazine, (2002), Vol. 20, No. 119, June.

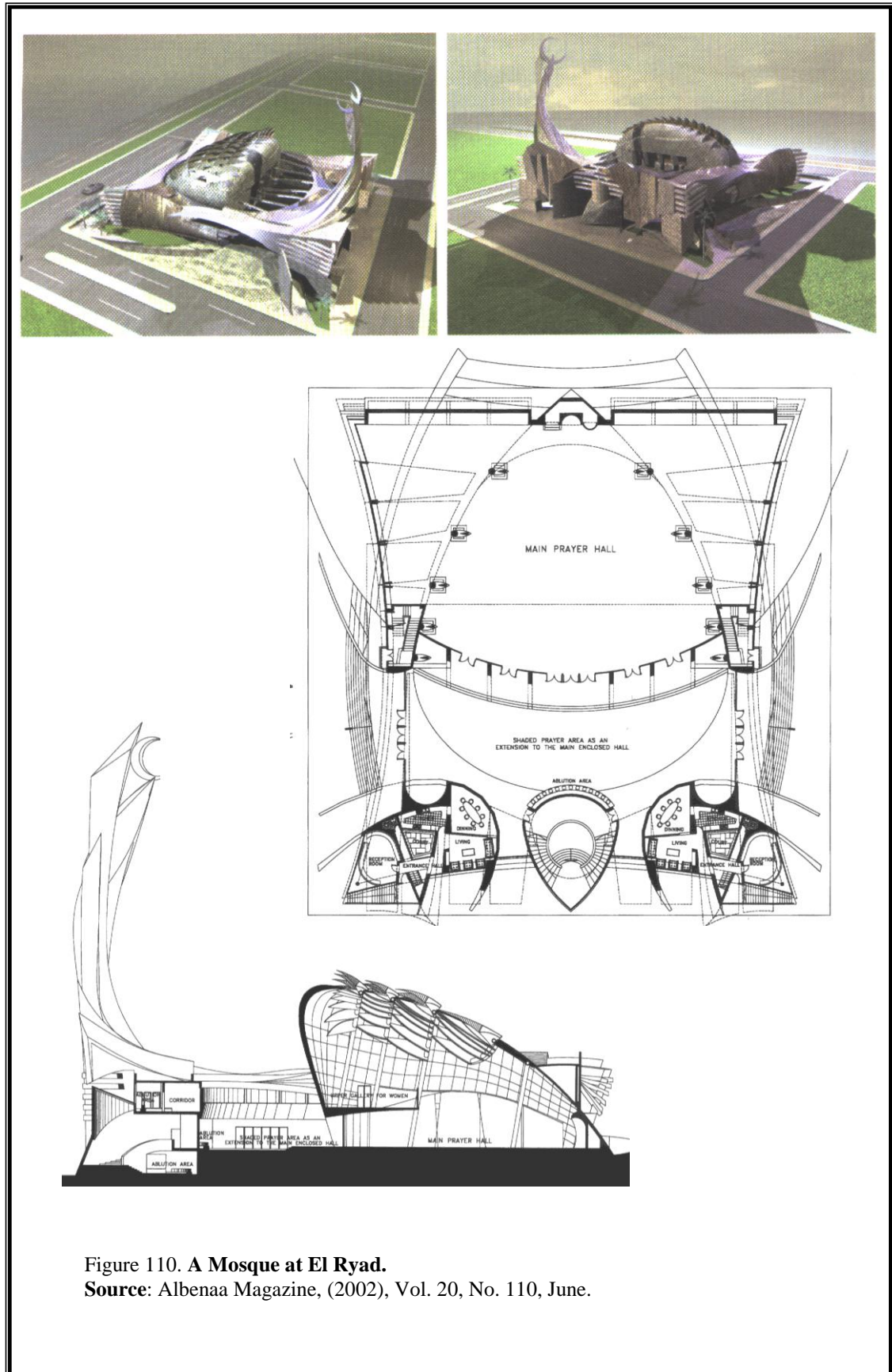


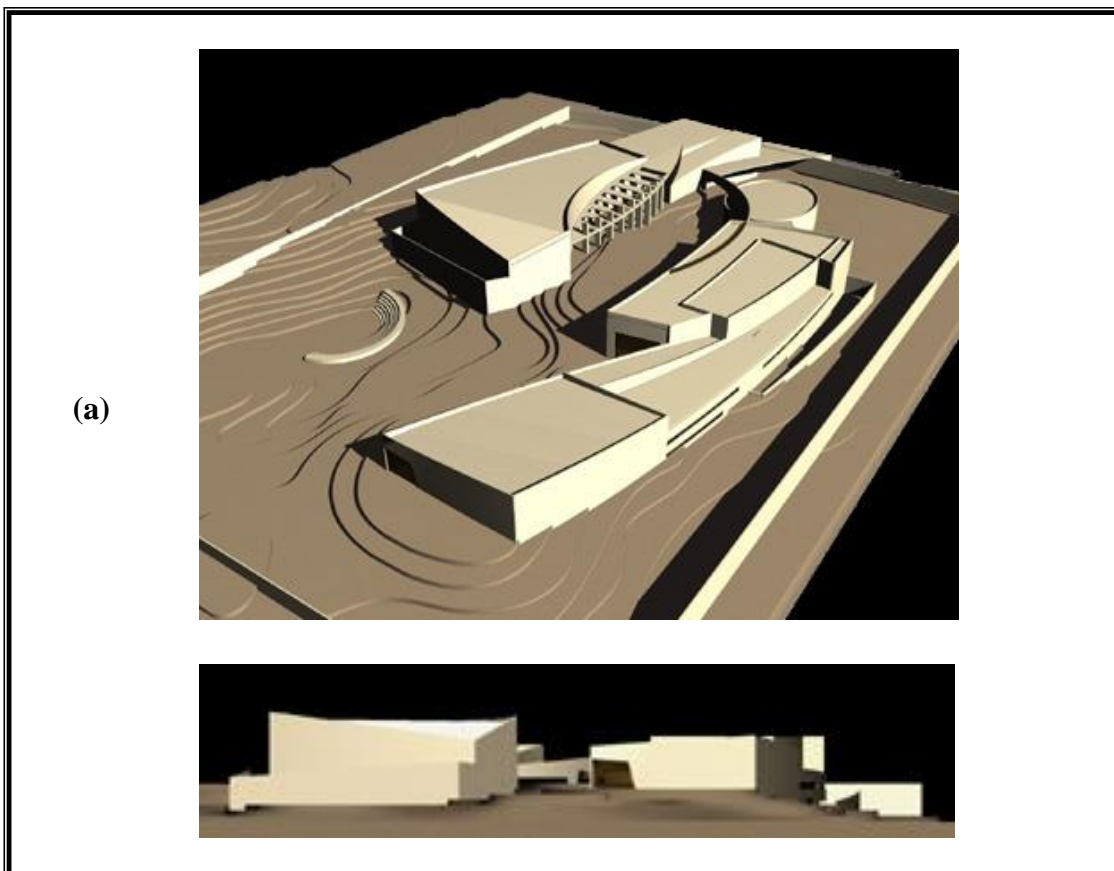
Figure 110. A Mosque at El Ryad.  
Source: Albenaa Magazine, (2002), Vol. 20, No. 110, June.

## **10-7 The Architectural Product of Amani Kamel:**

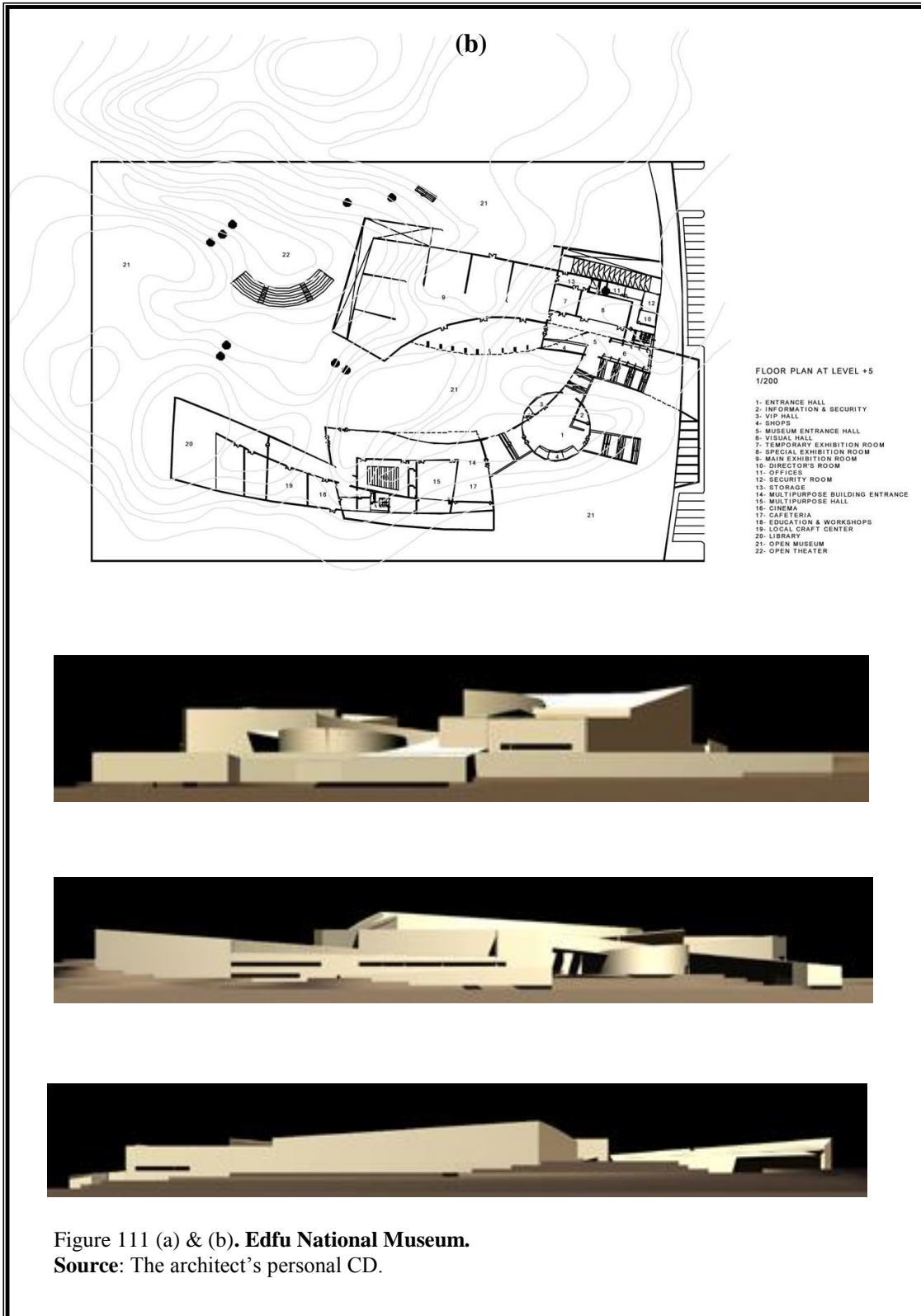
Three buildings will be investigated, namely Edfu National Museum, El Hussein Ventilation Plant in Cairo, and Saoudi Investment Company in 6<sup>th</sup> October.

### **10-7-1 Edfu National Museum:<sup>1</sup>**

The design concept of Edfu National Museum (fig111 a&b) is based on using the layers of the natural contours of the site to create other layers which form the building and differ in highs from the very low (service area) to the very high (the main exhibition area, the multipurpose hall...) each according to its function. The public buildings were placed on the high levels of the contour to provide an over view of the site and the central axis continuos from the entrance building to the end of land towards the Nile.



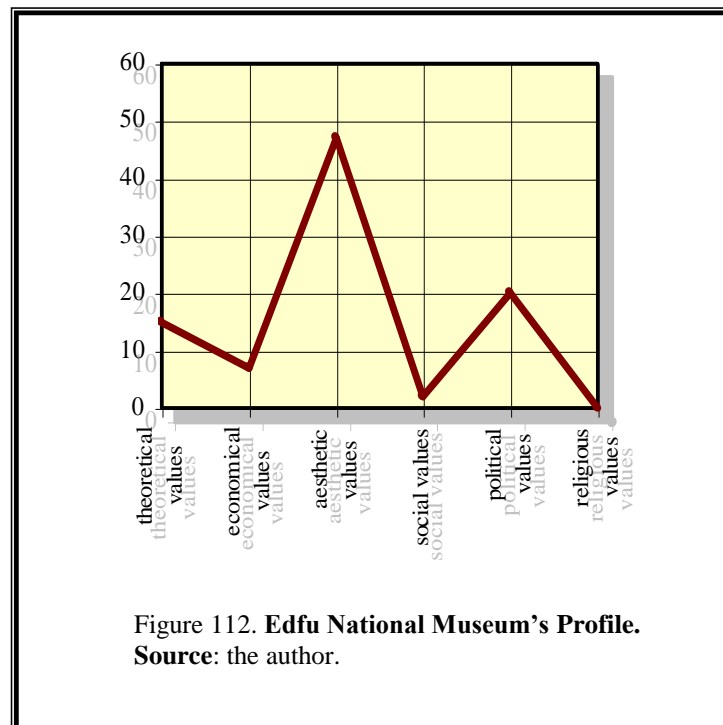
<sup>1</sup>Interview with Amani Kamel on the 20<sup>th</sup> of November 2001.





### **10-7-1-1 Edfu National Museum's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### **10-7-2 El Hussein Ventilation Plant:<sup>2</sup>**

The ventilation plant (fig. 113) is placed in the middle of the Islamic monuments in El Azhar district. The main idea was to create a viewpoint which provides a great overview of the area. Also to make out of this plant an information center about the Islamic monuments around. The form of the ventilation plant was

<sup>2</sup> Interview with Amani Kamel on the 20<sup>th</sup> of November 2001.

inspired from the individual minaret of El Azhar mosque which is consisted of four heads.

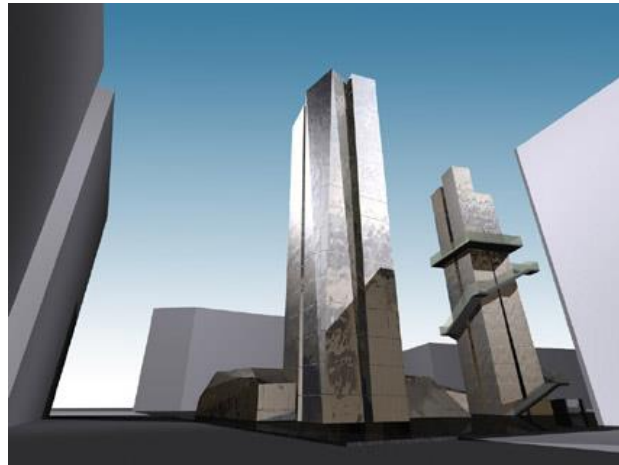
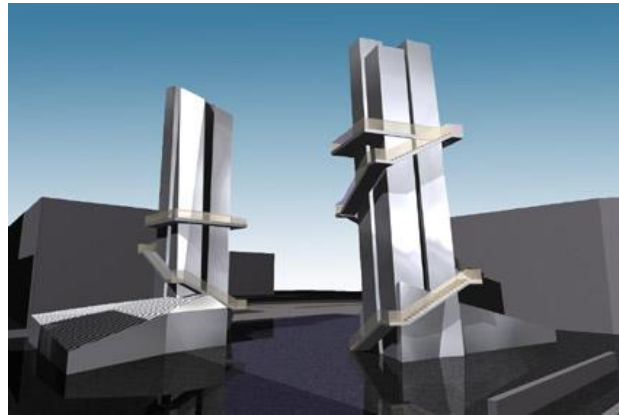
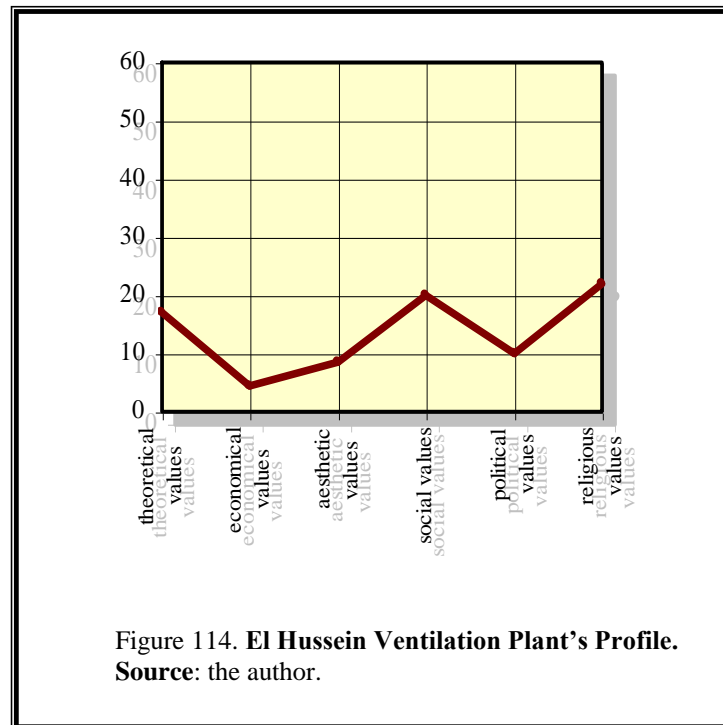


Figure 113. **El Hussein Ventilation Plant.**  
**Source:** The architect's personal CD.

#### **10-7-2-1 El Hussein Ventilation Plant's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



### 10-7-3 Saudi Investment Company in 6<sup>th</sup> of October:<sup>3</sup>

By interviewing the architect and asking about the main ideas in this project (fig. 115 a&b) , she declared the following points:

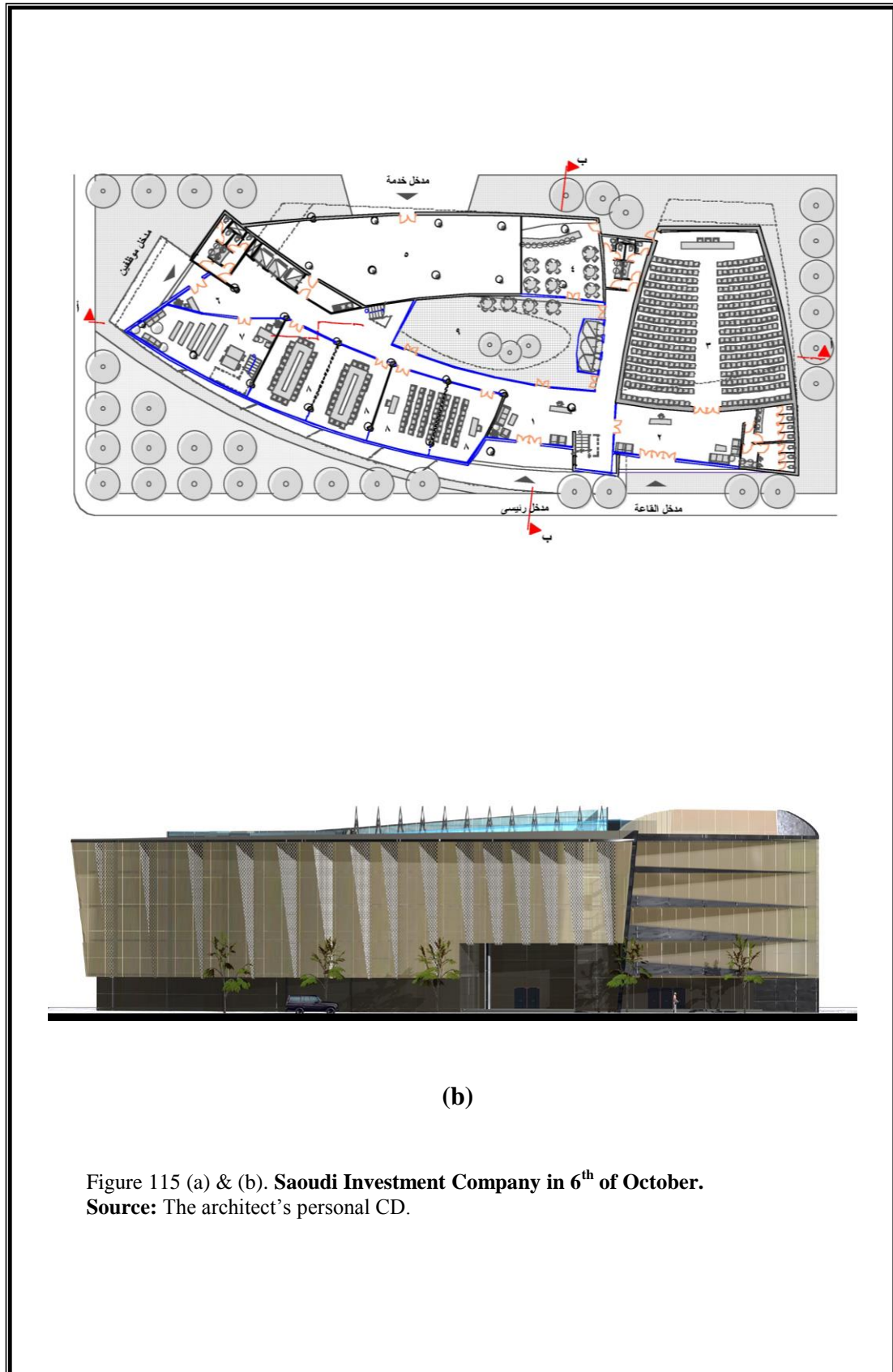
- The project is consisted of one building with three combined zones: the permanent residency of the company, an office building with large areas for renting, an office building with small areas for renting.
- Free plan, light partitions between offices.
- Two separate entrances, one for the employees and the other for the multi purpose unit.
- The public services are located in the ground floor for the facility in reaching them.
- Internal court inspired from the traditional Islamic houses for natural lighting and ventilation.
- Louvers on the south and west facades for protection from direct sunrays.

<sup>3</sup>Interview with Amani Kamel on the 15<sup>th</sup> of October 2001.

- The southeast part is higher than the other parts of the building for providing the penetration of the air into the court and for using this height in placing the machines and tanks behind it so as not to be seen from the street.

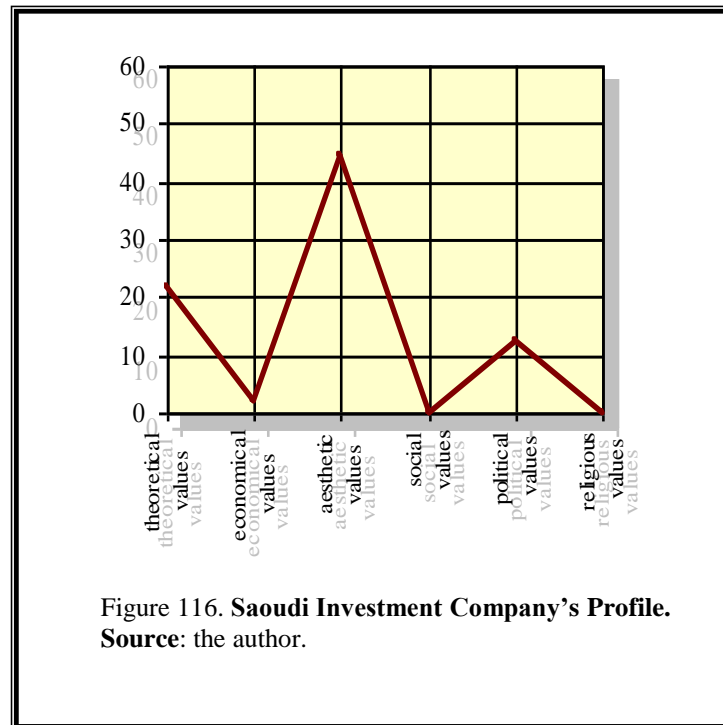


(a)



### **10-7-3-1 Saudi Investment Company's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



## **10-8 The Architectural Product of Ahmed Emam:**

Four buildings nominated by the architect will be investigated, namely Commercial Center at El Ahly Club, Saoudi Investment Company in 6<sup>th</sup> October, Touristic Promotion Authority in Cairo, and El Azhar Ventilation Plant.

### **10-8-1 Commercial Center at El-Ahly Club:<sup>1</sup>**

The site morphology has played a principal role in determining the project's main lines and grids generating the form (fig.117). The architect has switched between two main modules to formulate the circulation and commercial areas. This switching has created dynamic and plastic intermediate spaces. In addition, the entrance and cinema zone was treated separately by a spiral wall beginning from the street and penetrating into the project. This treatment has created a circular welcoming space insuring the entrance zone.

Furthermore, when observing the form, a sculptural and plastic potentiality may be noticed. And when observing the final expression, one could notice the use of modern materials and structures such as aluminum and space trusses, the use of strong and bright colors like the red continuous wall, blue beams, and silver columns. This palette insures the artistic and modern character the architect wanted to illustrate in his project.

#### **10-8-1-1 Commercial Center's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:

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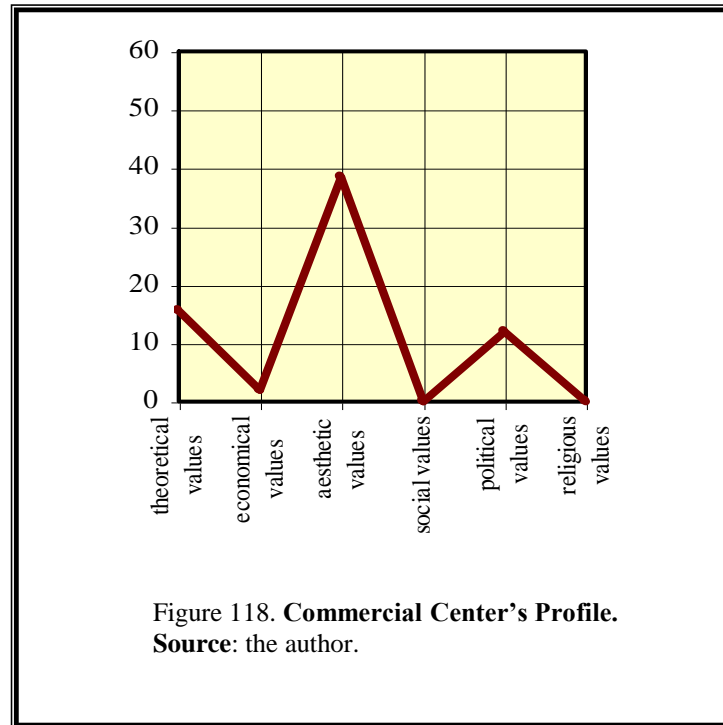
<sup>1</sup>Interview with Ahmed Emam on the 12<sup>th</sup> of October 2001.





Figure 117. **Commercial Center, El Ahly Club.**  
 Source: The architect's personal CD.





### 10-8-2 Saudi Investment Company in 6th of October:<sup>2</sup>

The architect declares that one of his main intentions in this project (fig. 119) was to create a strong image giving life to the ordinary architectural context and representing a new approach shaping the surrounding character and individualizing the company's building in the new city.

According to him, the main problem in this project –although its administrative nature- does not rely only on finding a functional and well organized solution, but also on the integration between four main factors:

- **A new city:** the project is located in a new city, which represents a dream to reach a dynamic, vital, and ideal composition.
- **A new nature:** the project's nature is original and unique. It is an announcement to accept or refuse the actual ordinary architectural status.

<sup>2</sup>Interview with Ahmed Emam on the 12<sup>th</sup> of October 2001.

- **A new century:** the project's timing is at the beginning of the 21<sup>st</sup> century where everything is unexpected, changing, and vital; and where every rational prediction based on conventional ideas may fail.
- **A new generation:** The designer belongs to a new generation observing, thinking, and announcing for a different original architectural approach.

The dilemma of this project, from his point of view, is the conflict between the above four factors on the one hand, and dealing practically with a project in the 21<sup>st</sup> century on the other hand, taking into consideration three main points: the functional requirements, the human dimension, the environmental dimension of the new city, and the quick technological development.

The functional requirements were realized by providing spaces for the needed activities, the facility of separation or combination between spaces specially offices. The human dimension was realized by creating a group of gardens and courts overlooked by most of the building's spaces. The environmental dimension is obvious in the treatment of facades. West and south ones were treated with metallic curtains preventing direct solar rays and decreasing heat while permitting the penetration of light and the view. In addition, the architect has created courts for decreasing the internal degree of temperature and permitting the building's good ventilation. The technological dimension is realized by providing conditioning systems, fire-rating systems, and the use of modern structural systems such as steel frames and covering aluminium sheets.

#### **10-8-2-1 Saudi Investment Company's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:

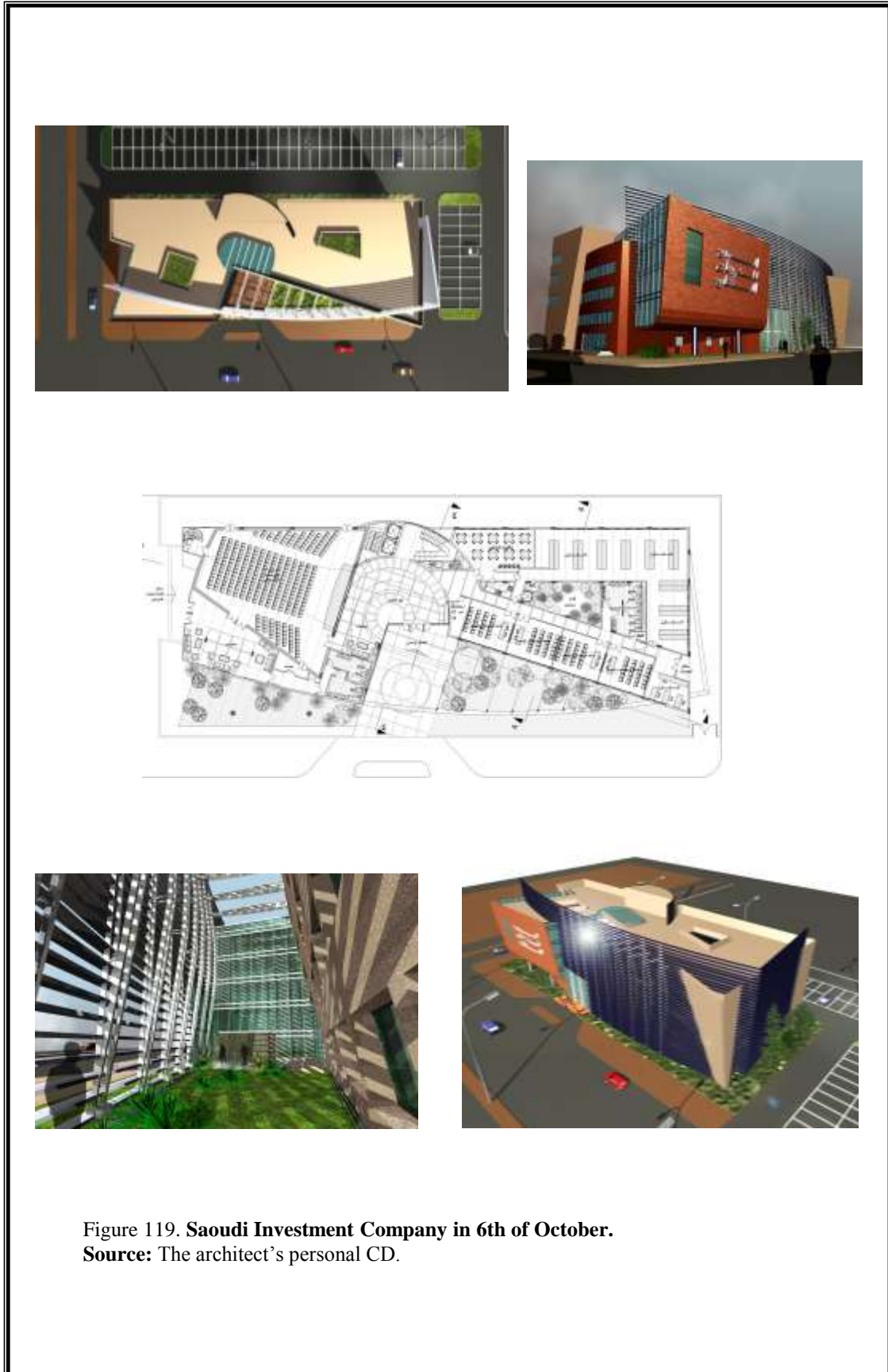
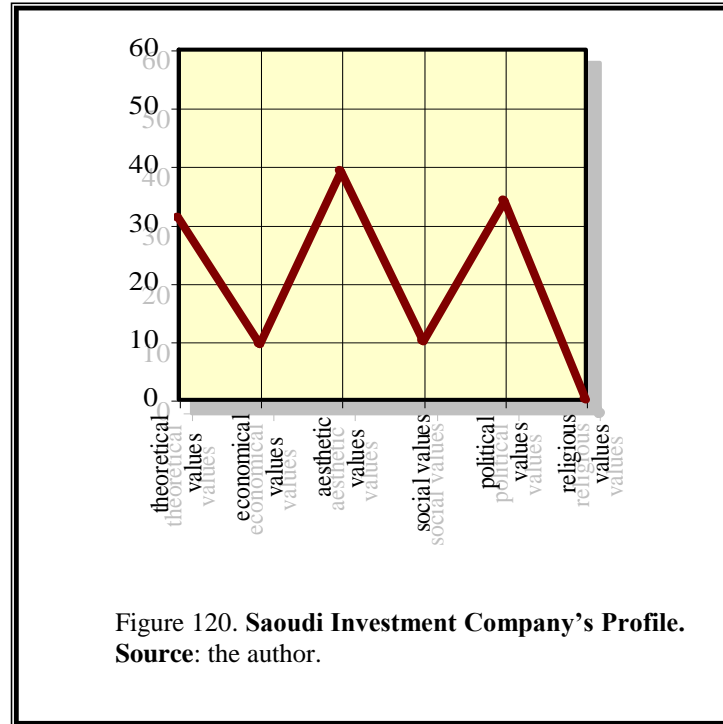


Figure 119. Saudi Investment Company in 6th of October.  
Source: The architect's personal CD.



### 10-8-3 Touristic Promotion Authority in Cairo:<sup>3</sup>

The project (fig.122) is based on one main concept the architect wanted to emphasize: *the art of motion*. This type of project, according to him, is an important event that must be perceived among all the other events surrounding us. The art of motion or of change exists in two levels: the first is simple and narrow, and the second in wider and more complex. The former is represented by two opposite rapid motions affecting the site because of its location on an island between two main streets and its surrounding by the static historical buildings of El Mokattam and the Citadel. The second level is represented by the motion of time, meaning the continuous changes through the past-present-future. According to the architect, the conventional static designs or the one single mass is not suitable for the nature of this project because it limits and controls the future's unexpected motions and changes. To provide this architectural ability of expansion, he thought of a dynamic design consisting of free elements with the elimination of the ordinary masses' boundaries.

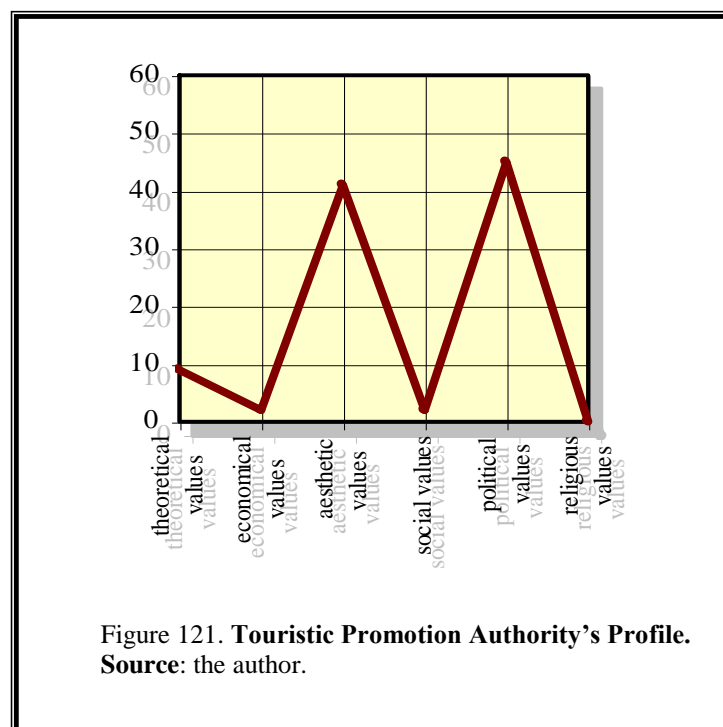
<sup>3</sup>Interview with Ahmed Emam on the 18<sup>th</sup> of October 2001.

Besides the inspiration of the form from the two levels of motion: site and time, the designer has inspired it from the morphology of El Mokattam. It could be seen in the continuous inclined sharp edges resembling El Mokattam's layers.

Concerning the panorama hall, the architect wanted to create a dynamic mass adding to the static historical context a new building reflecting the contemporary fast events. This is represented by the ascending straight lines of the longitudinal mass looking towards the future. In addition, the architect added a ceremonial touristic piazza reflecting his concern for the social dimension in his design.

### **10-8-3-1 Touristic Promotion Authority's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the product's components, the next graph has been obtained:



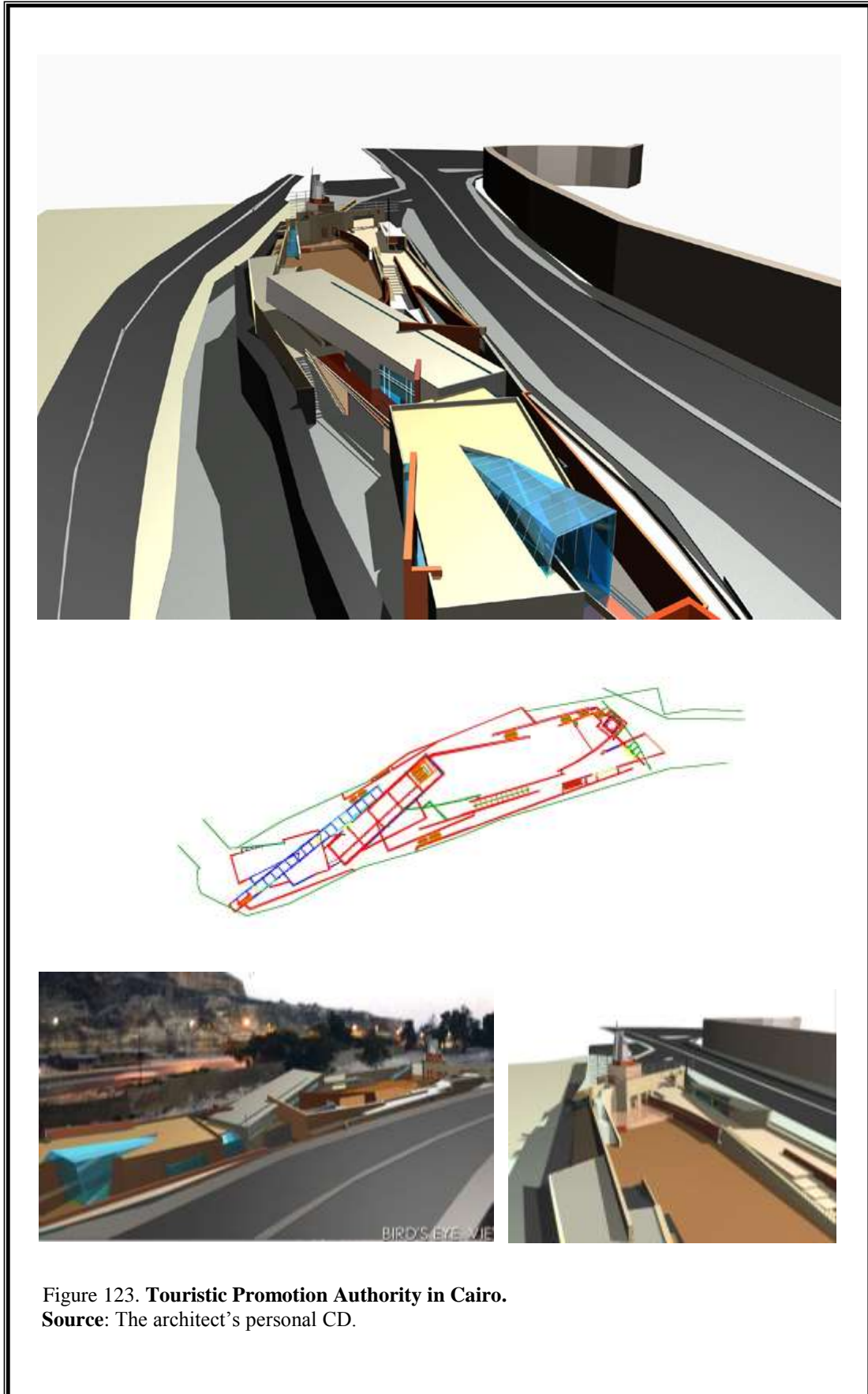


Figure 123. **Touristic Promotion Authority in Cairo.**  
Source: The architect's personal CD.

### **10-8-4 El-Azhar Ventilation Plant:<sup>4</sup>**

The main design concept (fig. 124) is based on two kinds of dialogues: *an internal dialogue* between masses and their sculptural relationship, and *an external dialogue* between these masses and the context by creating the best visual axes towards El-Azhar and El-Hussein Mosques. The later dialogue is reflected on the masses and their curved lines and edges.

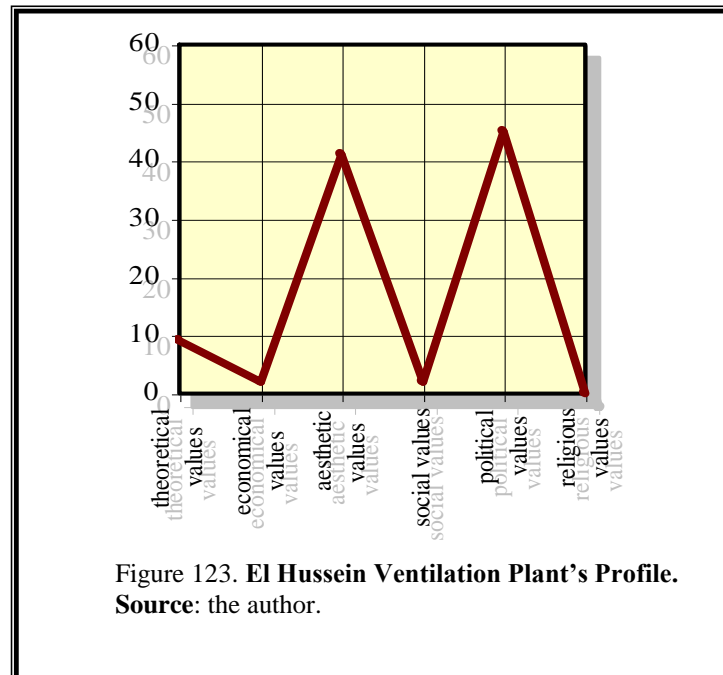
Also, according to the architect, the form was generated from observing the potentiality of the site like wind, sunrays, stony layers of the rich historical context, contradiction between verticality of the minarets and horizontality...etc.

The architect has intentionally used no modular systems in order to obtain the highest degree of elasticity.

The structural system consists of steel frames covered with a concrete layer to obtain a sculptural expression and a high insulation and fire resistance.

#### **10-8-4-1 El Hussein Ventilation Plant's Profile:**

By applying the *Matrix Values / Components* and scoring the indices of the six values on the product's components, the next graph has been obtained:



<sup>4</sup>Interview with Ahmed Emam on the 18<sup>th</sup> of October 2001.



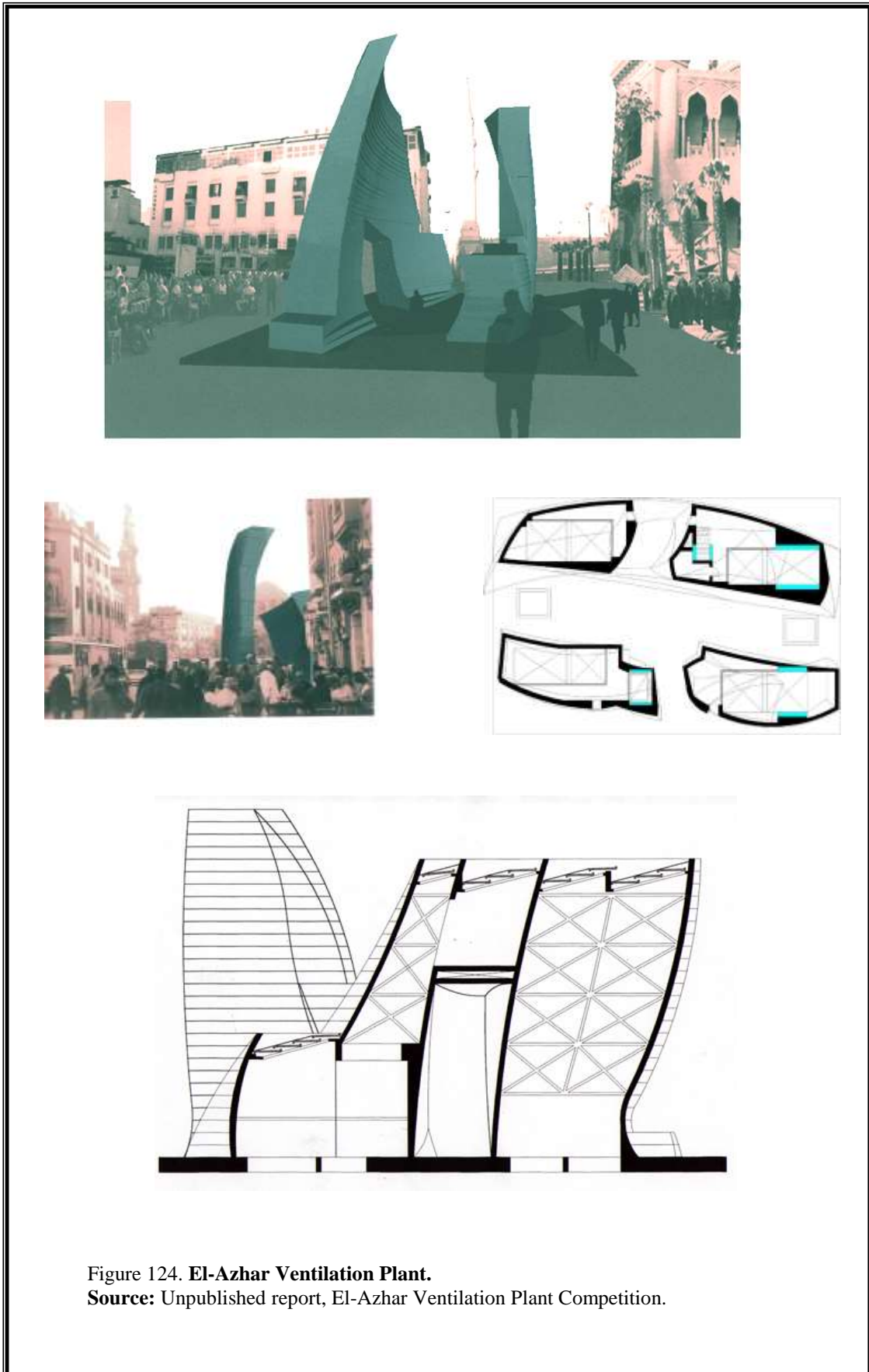


Figure 124. El-Azhar Ventilation Plant.  
Source: Unpublished report, El-Azhar Ventilation Plant Competition.



## **11-9 ARCHITECTURAL PRODUCT OF THE STUDENTS**

## **10-9 Architectural Products of Students:**

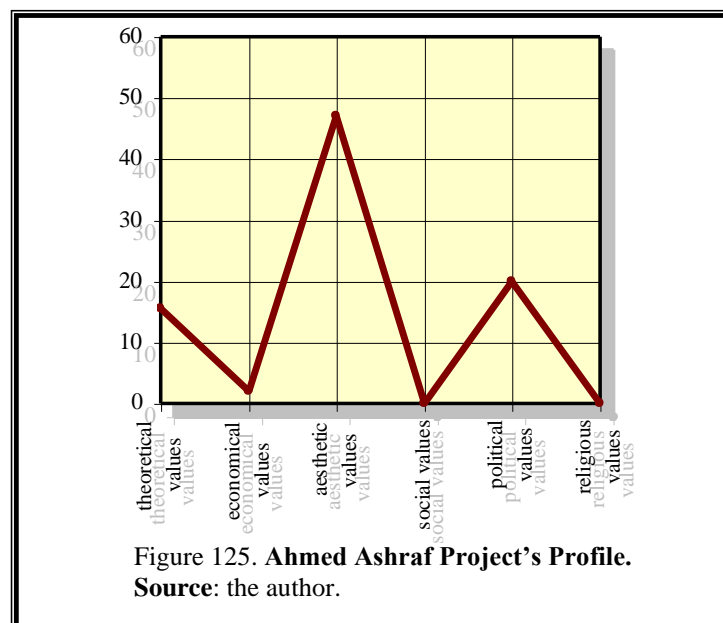
One product for each student was chosen to be assessed. This product was submitted by the whole class and it was a Restoration Center with two sites: Sakkara and Old Cairo. The matrix for assessing the product nature (profile) according to Spranger's six values was applied on sixteen projects.

### **10-9-1 Restoration Center in Sakkara, by Ahmed Ashraf:<sup>1</sup>**

The student's intention was to create an abstract form combining between the various characteristics of the mass: simplicity, complexity, balance, abstraction...etc. We could notice that all the lines are abstract on both the horizontal and the vertical dimension. A curved line is extended along the facade unifying all its parts. Besides these aesthetic (formal) values, the student was interested in the modern structural technology. He suggested a space truss and a suspended roof with cables for covering long spans. According to him, using them was for aesthetic and functional reasons.

#### **10-9-1-1 Ahmed Ashraf Project's Profile:**

By applying the *Matrix Values / Components* and scoring the indices of the six values on the project's components, the next graph has been obtained:



<sup>1</sup> Interview with the student in November 2001.

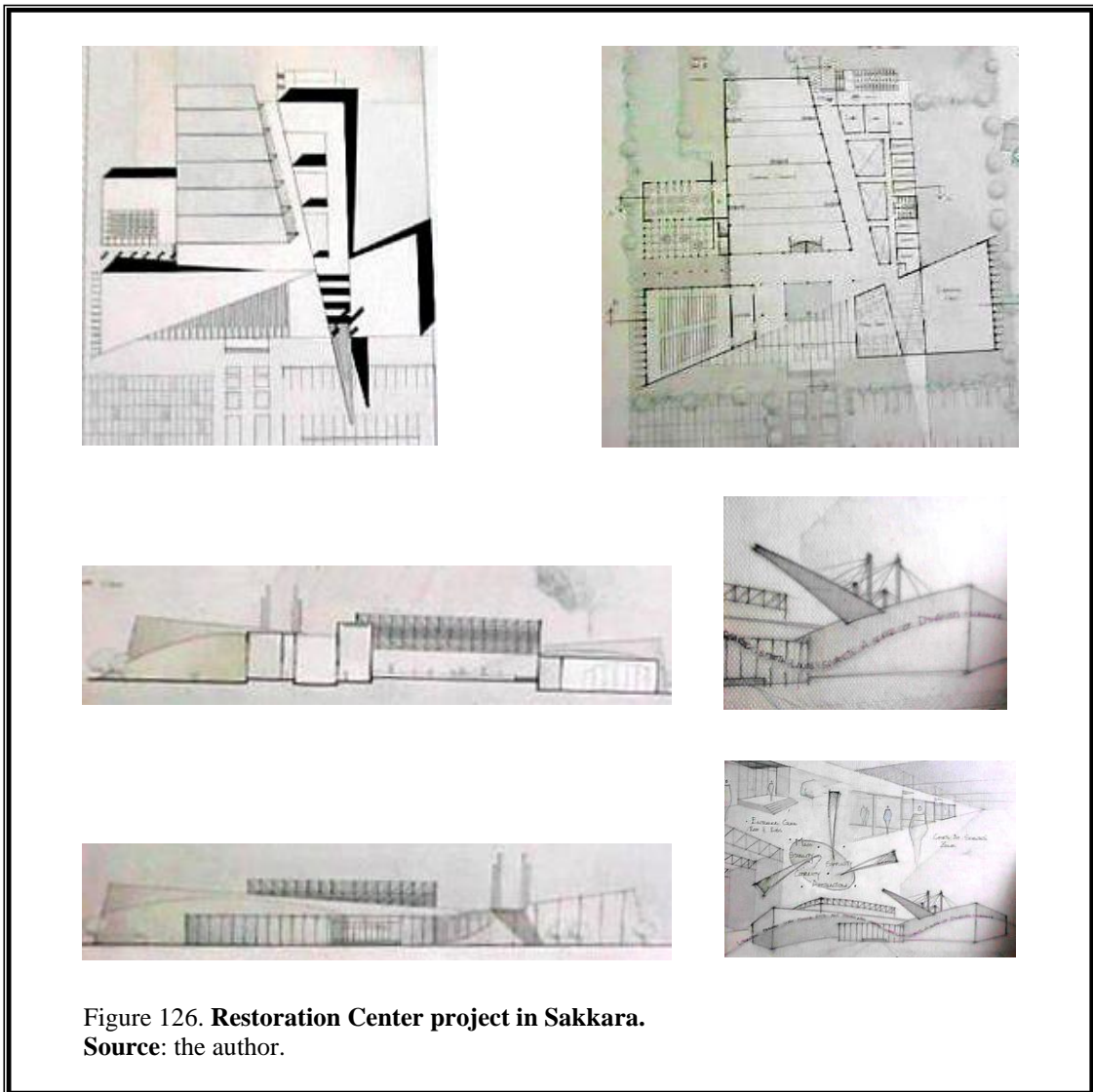


Figure 126. Restoration Center project in Sakkara.  
Source: the author.

### **11-9-2 Restoration Center in Sakkara, by Ahmed M. El Hoseiny:<sup>1</sup>**

By interviewing the student and asking him about his main design concept, we realized that his theoretical (philosophical) values were very high; he explained his design concept as follows.

The center is a structure designed to increase our knowledge of the facts surrounding the various archeological artifacts unearthed in the surrounding area. It can be viewed as an instrument whose sole purpose is the illumination of the darkness in our understanding of the period these artifacts represent. Ancient Egyptian architecture is intrinsically dark, heavy, solid, and monolithic. It is therefore appropriate that the building should reflect this effort to shine the illumination beam of knowledge onto an entity shrouded in darkness and ambiguity. It is important to represent the ancient Egyptian culture in an abstract fashion, thus avoiding misconceptions and architectural cliché. It should retain the abstract qualities of heaviness, solidity, symmetry, rhythm, and monolithism, while avoiding any superficial additions.

The rotunda located in the heart of the building is capped by the large skylight that filters light into the rest of the building. It houses a two-storey library in addition to the other circulation elements. The lightness of the space standing in contrast to the solidity of the rest of the building represents the metaphorical ray of knowledge penetrating the darkness surrounding the ancient civilization. The rotunda is the main point of entry of both the physical (skylight) and metaphorical (knowledge) manifestations of light into the building.

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<sup>1</sup> Interview with the student in November 2001.

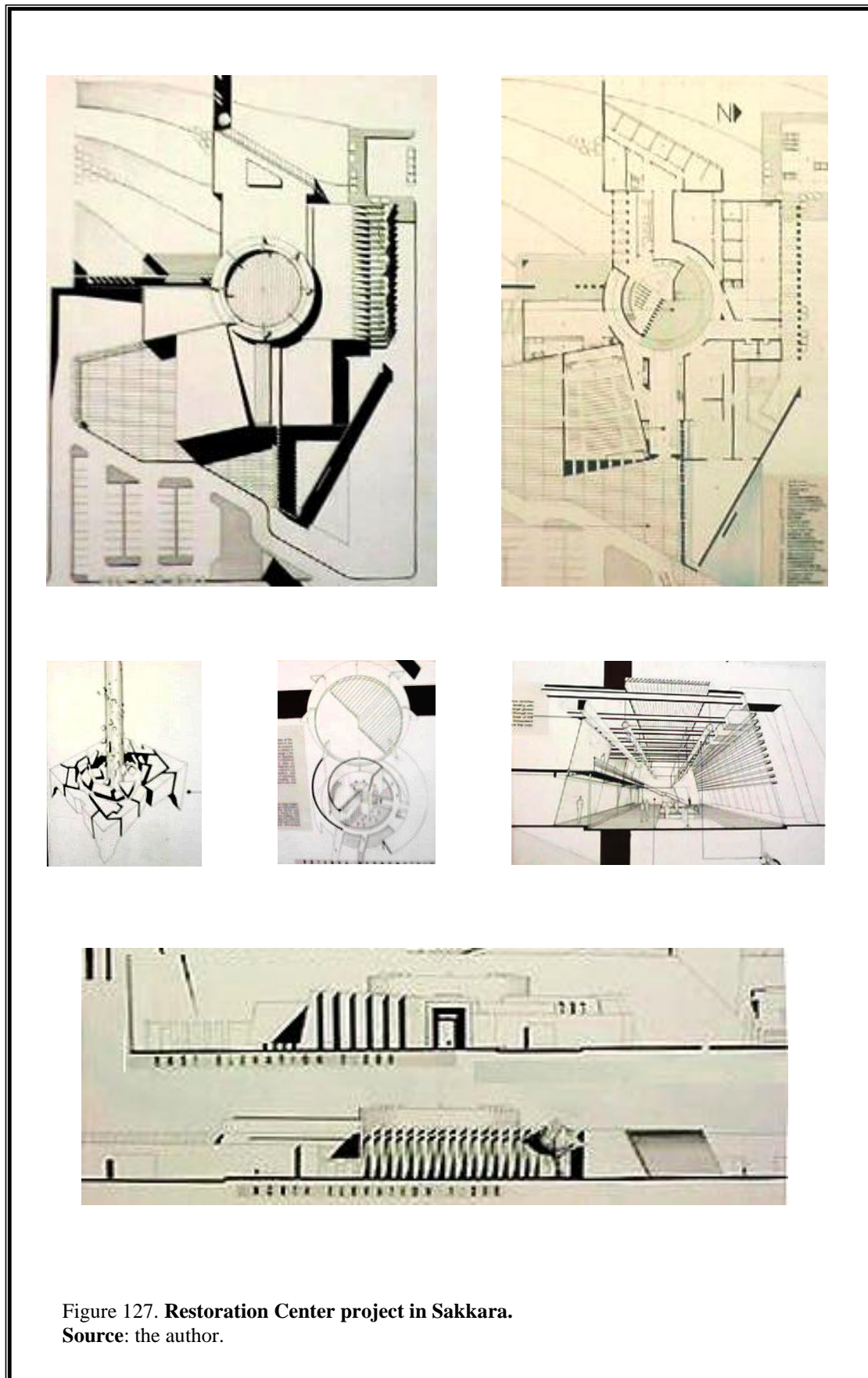
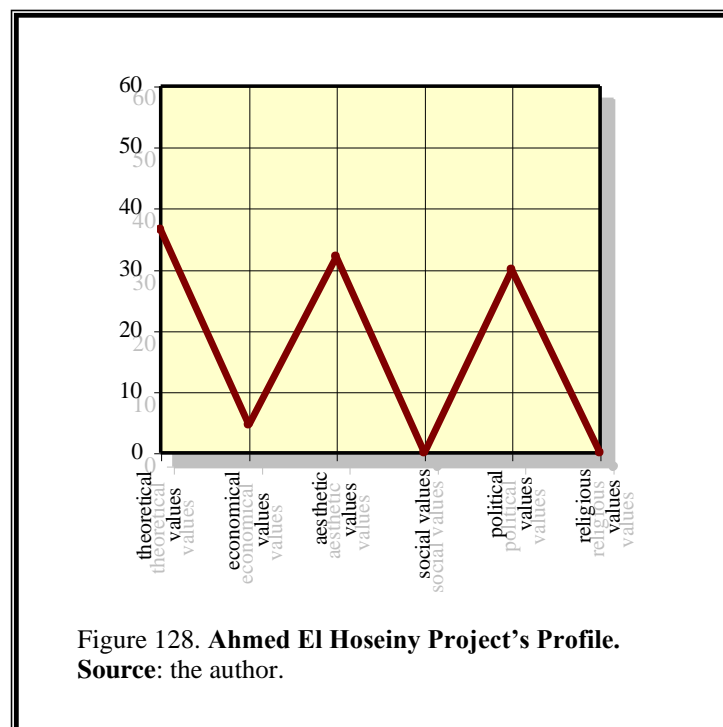


Figure 127. Restoration Center project in Sakkara.  
Source: the author.

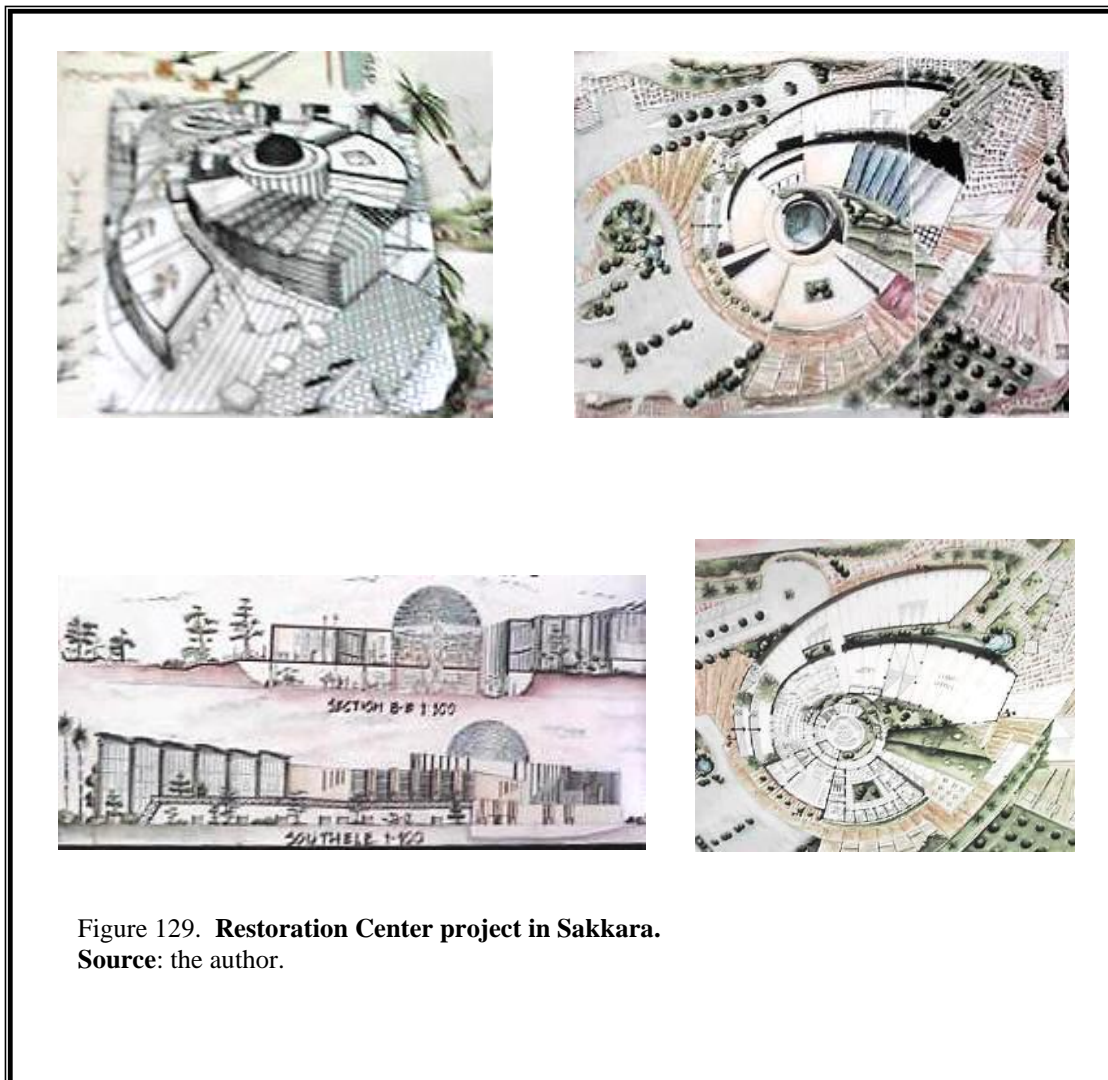
### **11-9-2-1 Ahmed El Hoseiny Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



### **10-9-3 Restoration Center in Sakkara, by Asmaa M. El Khatib:<sup>1</sup>**

The main concept of this project was to create a strong organic form reflecting a natural impression<sup>2</sup>. The student was also concerned with the freedom and fluidity of the project's landscape.

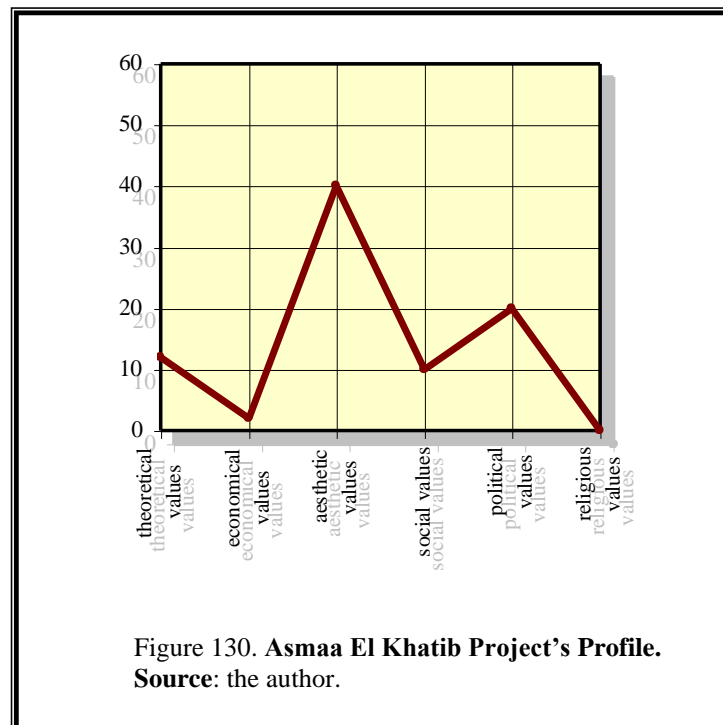


<sup>1</sup>Interview with the student in November 2001.

<sup>2</sup>The site is located at the historical area of Sakkara pyramids, and by asking the student about the relation between the spiral form and the context, she answered that it has nothing to do with it, her intentions were only to create an organic form.

**10-9-3-1 Asmaa El Khatib Project's Profile:**

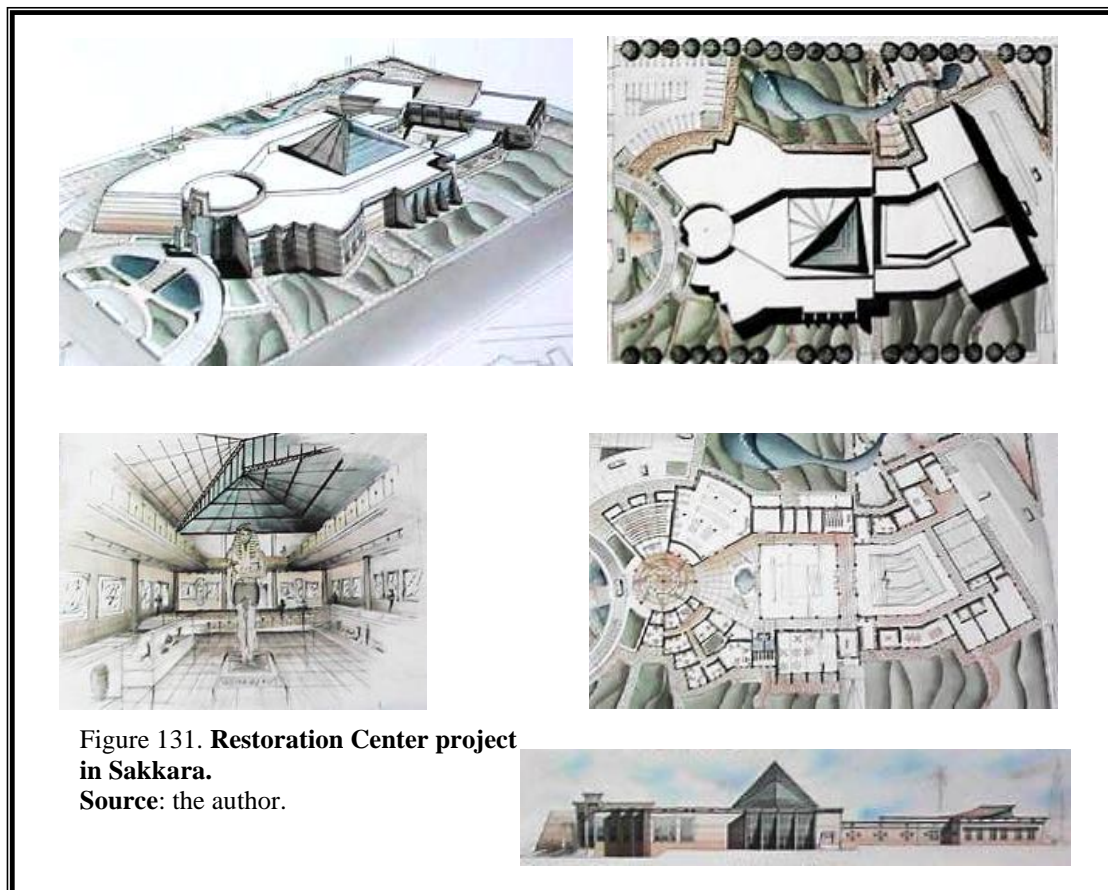
By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:





### **10-9-4 Restoration Center in Sakkara, by Dina Abdel Mohsen:<sup>1</sup>**

The student was influenced by the temples of Ancient Egypt especially the Karnak. We can see this influence by observing the general form and the spatial sequence of the building. She wanted to create continuity between the pharaonic character of Sakkara's area and the project. Many elements insure this continuity such as the pyramid in the heart of the building, the heaviness of the masses, the closeness of the facades, the choice of colors, and the treatment of the cornice. However, we could see the integration of modern dimension in the pyramid of glass and the circular grid in the entrance zone instead of the straight pharaonic lines<sup>2</sup>.

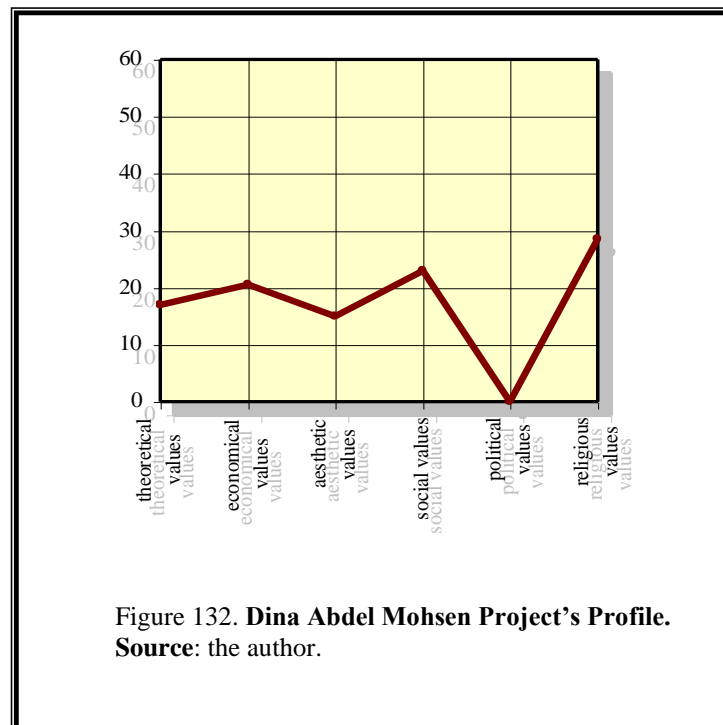


<sup>1</sup> Interview with the student in November 2001.

<sup>2</sup> The use of the circular grid was for aesthetic (formal) reasons, it has no philosophic or metaphoric dimension.

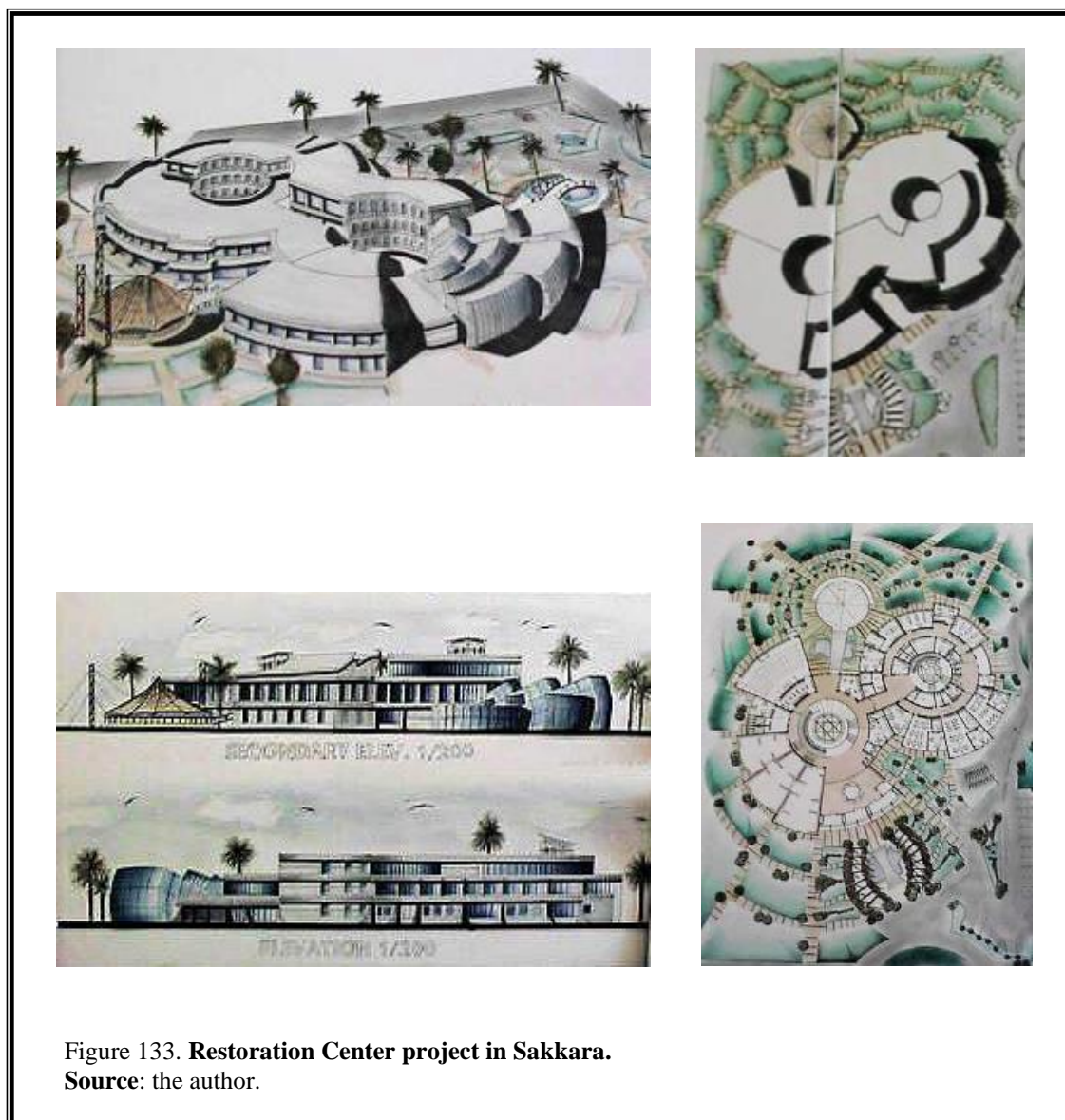
**10-9-4-1 Dina Abdel Mohsen Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



### 10-9-5 Restoration Center in Sakkara, by Dina Osama:<sup>1</sup>

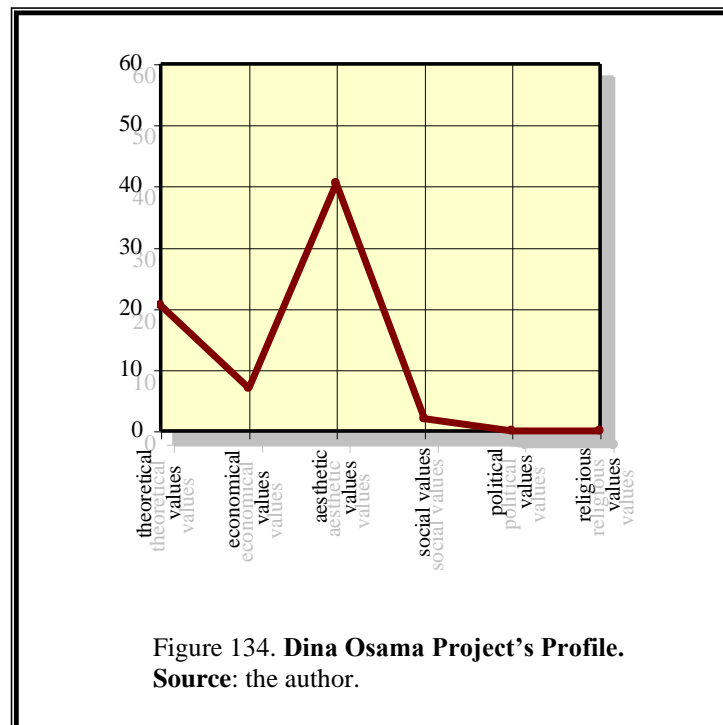
The form consists of two masses circumscribing two courts. They are generated from intersected circular grids. All formal lines are related to these masses and their centers. The student was concerned with providing natural lighting and complete view of Sakkara Pyramid; this was achieved by increasing the porosity of the galleries. The galleries' stepped roof resembles the shape of the Pyramid.



<sup>1</sup> Interview with the student in November 2001.

**10-9-5-1 Dina Osama Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



### 10-9-6 Restoration Center in Old Cairo, by Hoda Faisal:<sup>1</sup>

The site is located in Old Cairo. It is characterized by its historical duality: a *Coptic area* consisting of churches and an *Islamic area* consisting of mosques. The student has taken advantage of this context for generating the form by combining three main grids: a Coptic grid respecting the Coptic tissue, an Islamic grid respecting the Islamic tissue, and a neutral grid respecting the site's edges.

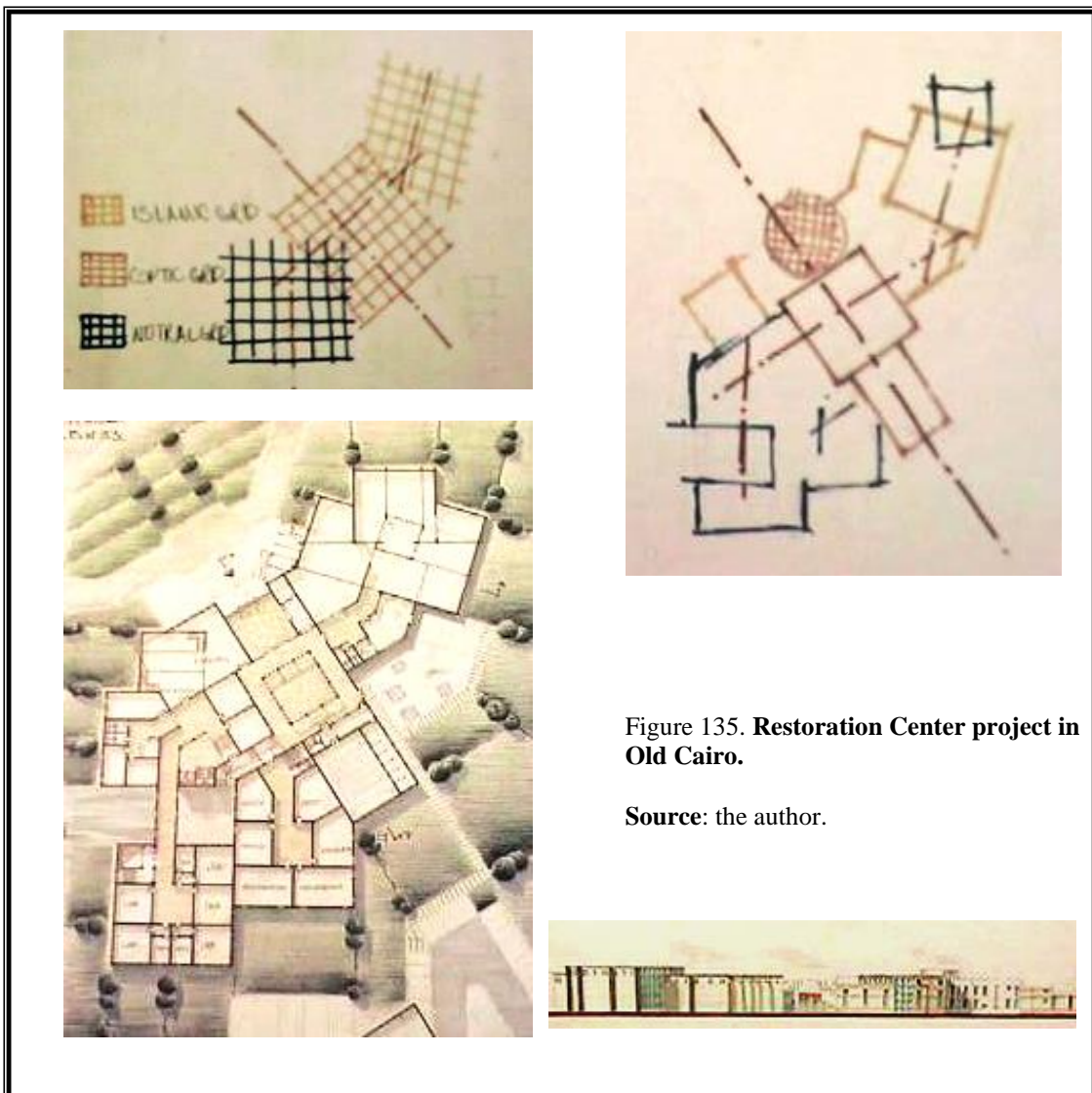


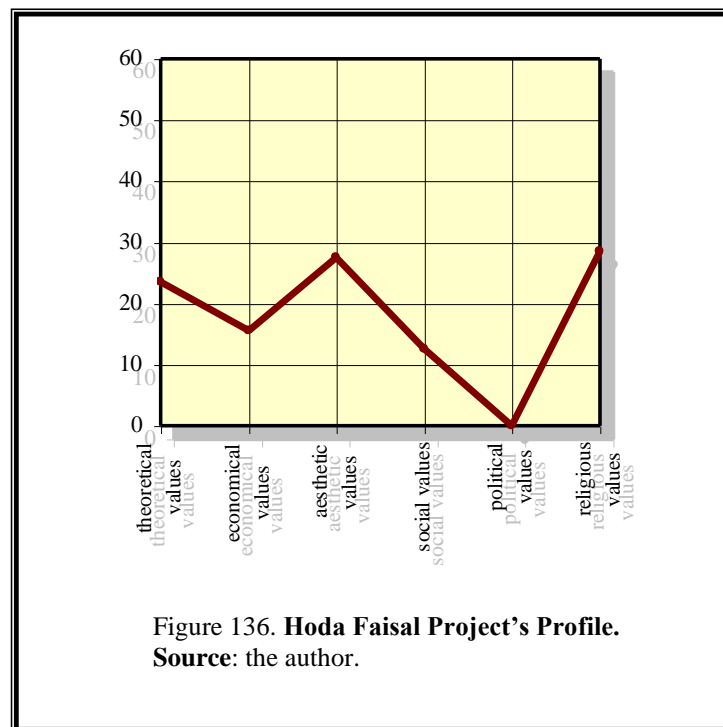
Figure 135. Restoration Center project in Old Cairo.

Source: the author.

<sup>1</sup> Interview with the student in November 2001.

**10-9-6-1 Hoda Faisal Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:





### 10-9-7 Restoration Center in Old Cairo, by Mohamed El Shazly:<sup>1</sup>

The design concept stresses on the dominance of the exhibition zone and its central location. All the project's elements, such as the cafeteria, workshops, administration, and services, respect the distinctive spiral shape of the museum. To increase this dominance, the student suggested a gigantic elliptic glass dome for the museum roofing. In addition, he was careful to separate the public path of the visitors and the private path of the workers.

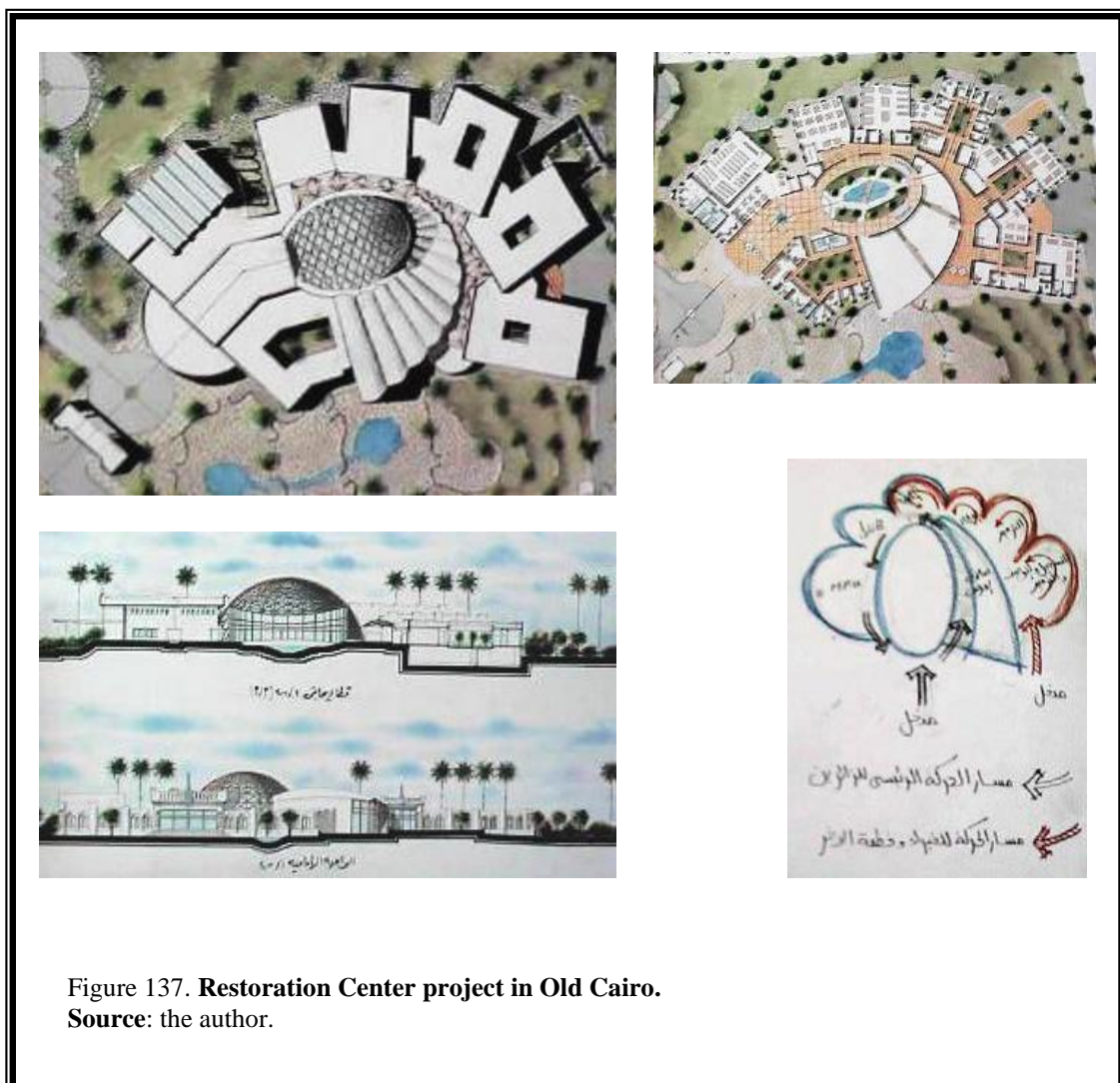
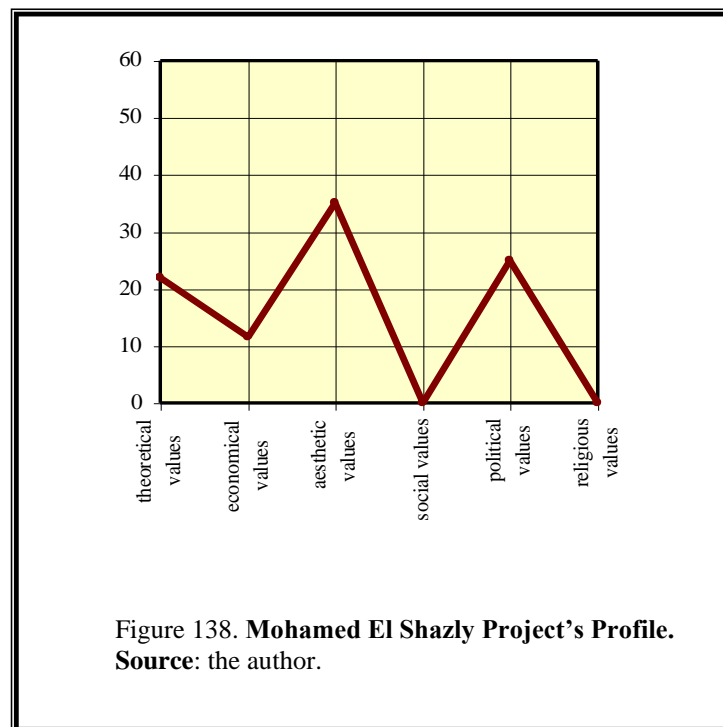


Figure 137. Restoration Center project in Old Cairo.  
Source: the author.

<sup>1</sup> Interview with the student in November 2001.

**10-9-7-1 Mohamed El Shazly Project's Profile:**

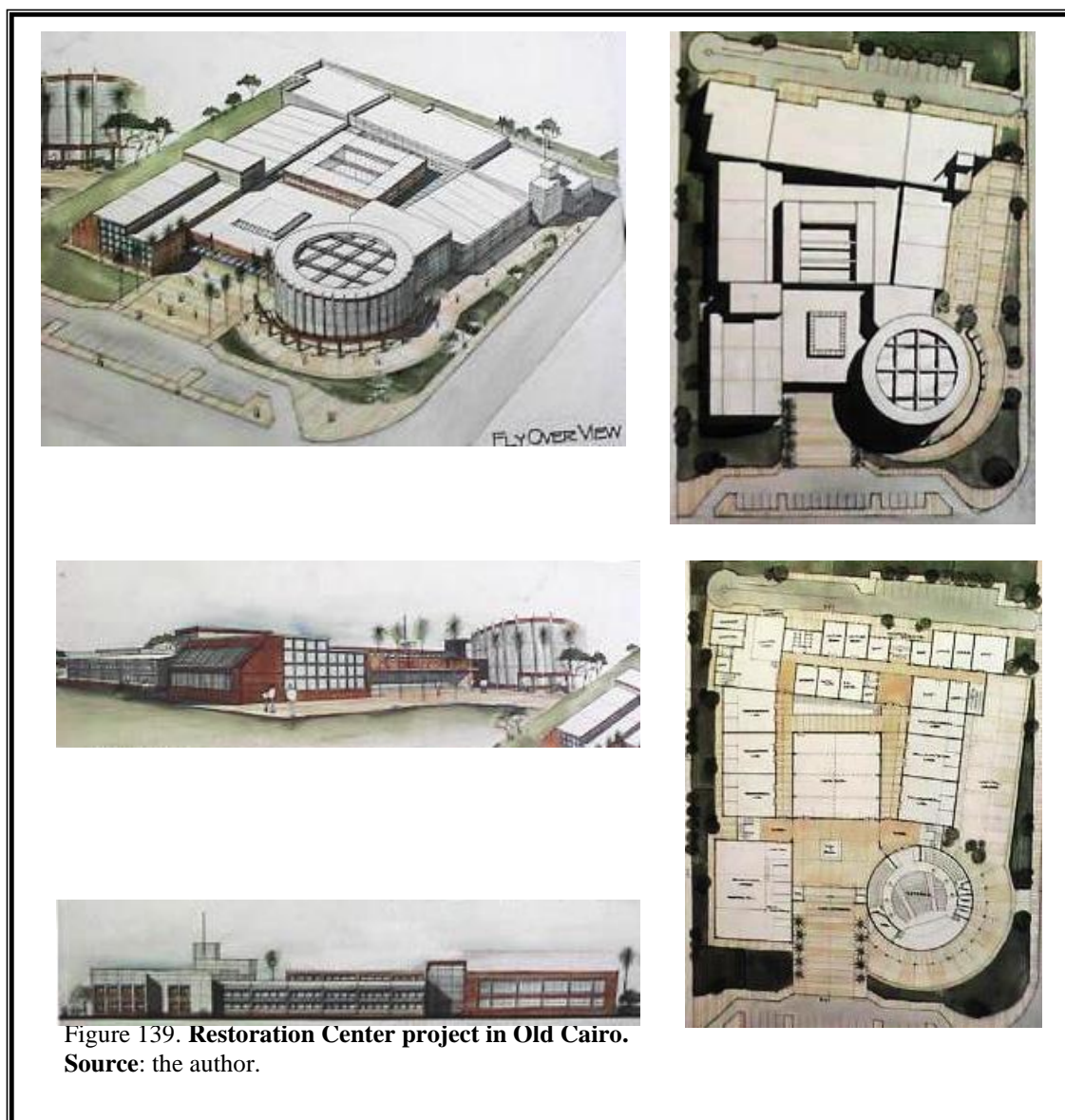
By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:





### **10-9-8 Restoration Center in Old Cairo, by Mohamed A. Fangary:<sup>1</sup>**

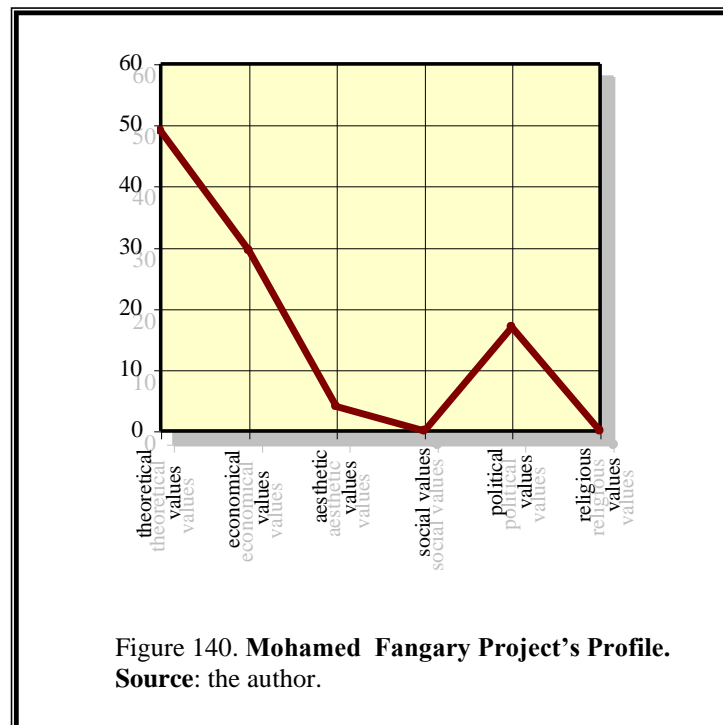
The rational functional relationships and the simplicity of spaces and masses were the main characteristics of this project. Even the circular shape of the conference hall was chosen to suit its activity. The student has respected the edges of the site and their directions. The form as a whole is firm and dominant, the intensity of the used color and the large surfaces of reflecting glass have increased this dominance.



<sup>1</sup> Interview with the student in November 2001.

**10-9-8-1 Mohamed Fangary Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



### 10-9-9 Restoration Center in Old Cairo, by Mona El Ahmady:<sup>1</sup>

The main concept is based on connecting all the building's parts together by an inclined spine consisting of sequential courts. The spine, the courts, and the complex masses reflect the traditional Islamic tissue of old Cairo. In addition, the concept was built on distinguishing between the public and the private zone. The former is represented by a grid parallel to the site edges and the latter by a 45 degrees grid intersecting the first.

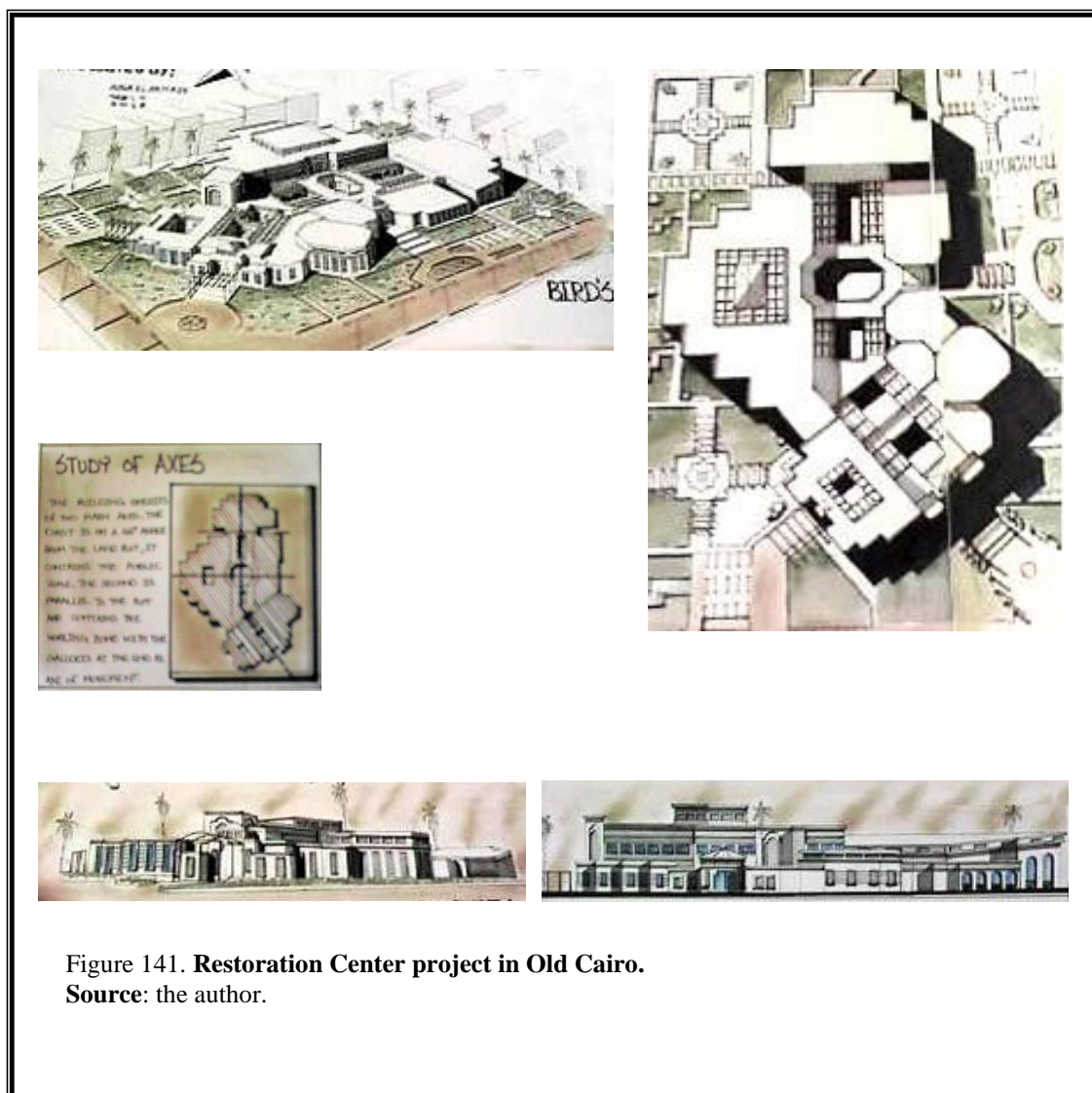
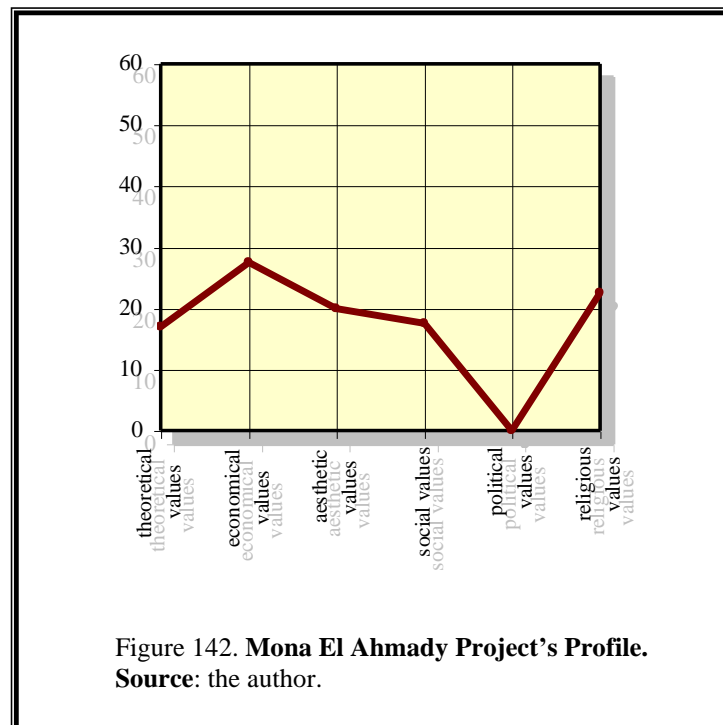


Figure 141. Restoration Center project in Old Cairo.  
Source: the author.

<sup>1</sup> Interview with the student in November 2001.

**10-9-9-1 Mona El Ahmady Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



### **10-9-10 Restoration Center in Old Cairo, by Mostafa Khater:<sup>1</sup>**

Two main dimensions have influenced the design concept: a *functional* and a *formal* dimension. The first depends on the separation between the exhibition and the service zone; the former is represented by an inclined dynamic path and the latter by a straight static path. The second dimension is formal. The form was generated from the traditional (Islamic) cube with its central court. The student has divided the cube into 9 equal parts by means of a modular grid, then has rotated three of them with the site direction representing the static service zone. The form is characterized by its closeness respecting the traditional context (Old Cairo) except the modern entrance mass, in the form of a cube of glass.

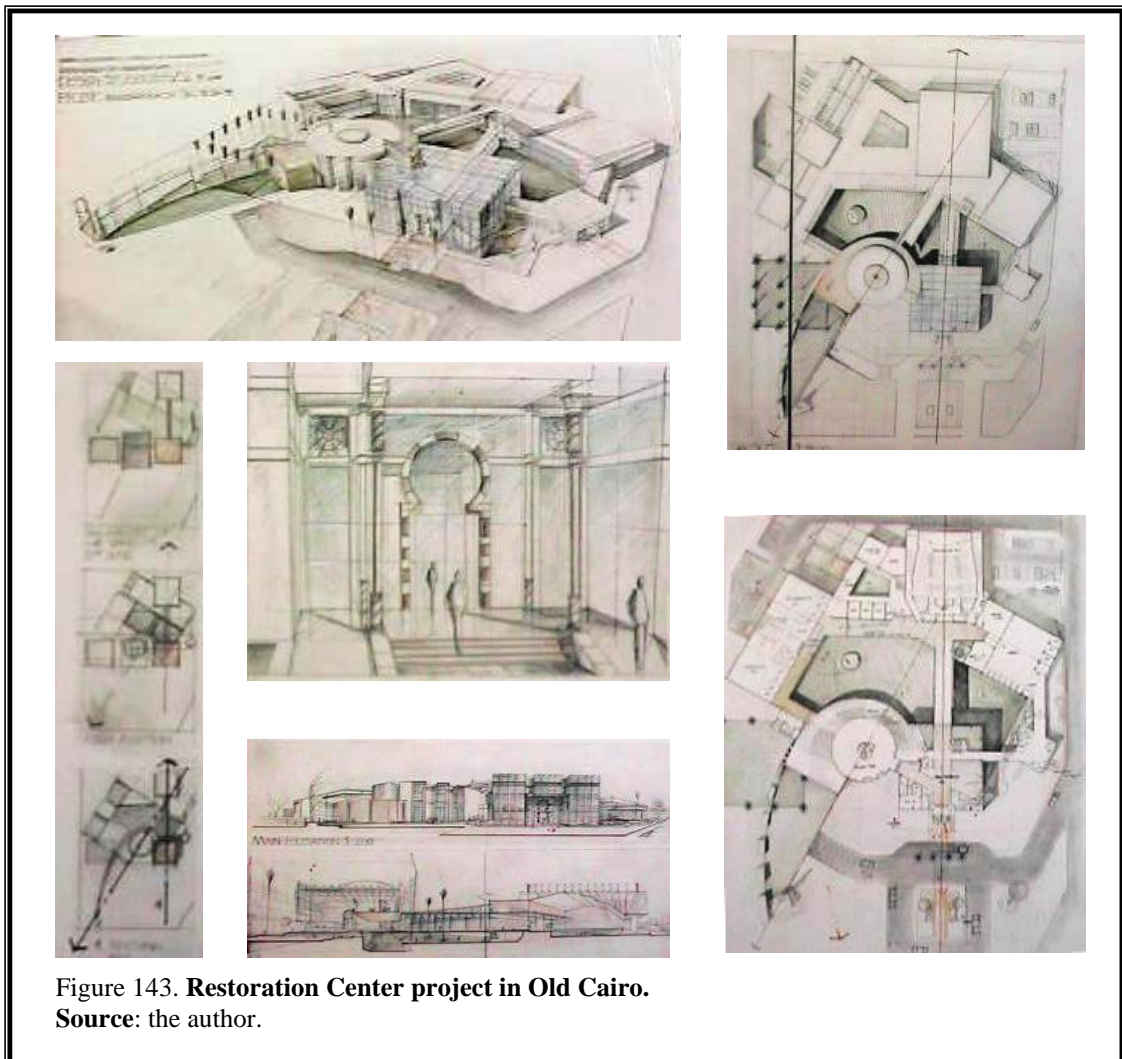
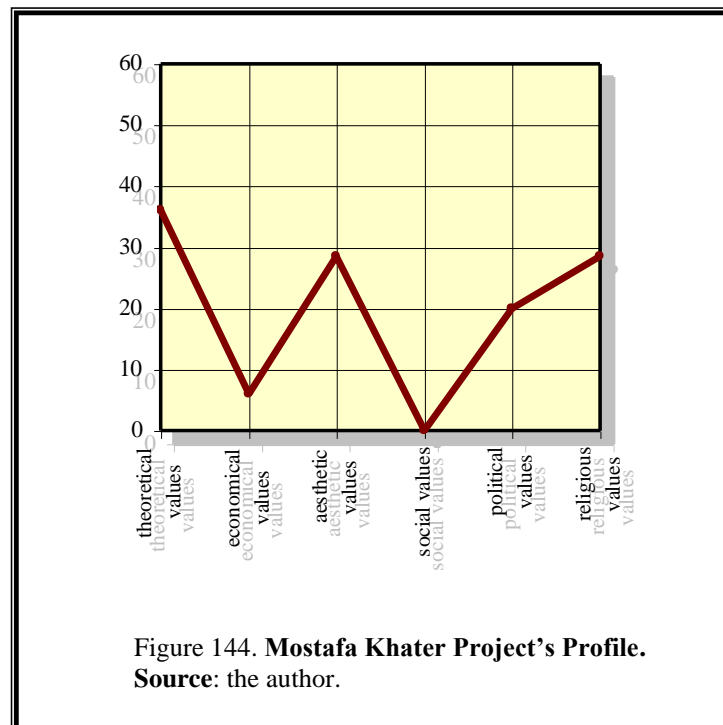


Figure 143. Restoration Center project in Old Cairo.  
Source: the author.

<sup>1</sup> Interview with the student in November 2001.

**10-9-10-1 Mostafa Khater Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:





### 10-9-11 Restoration Center in Sakkara, by Radwa Zaki:<sup>1</sup>

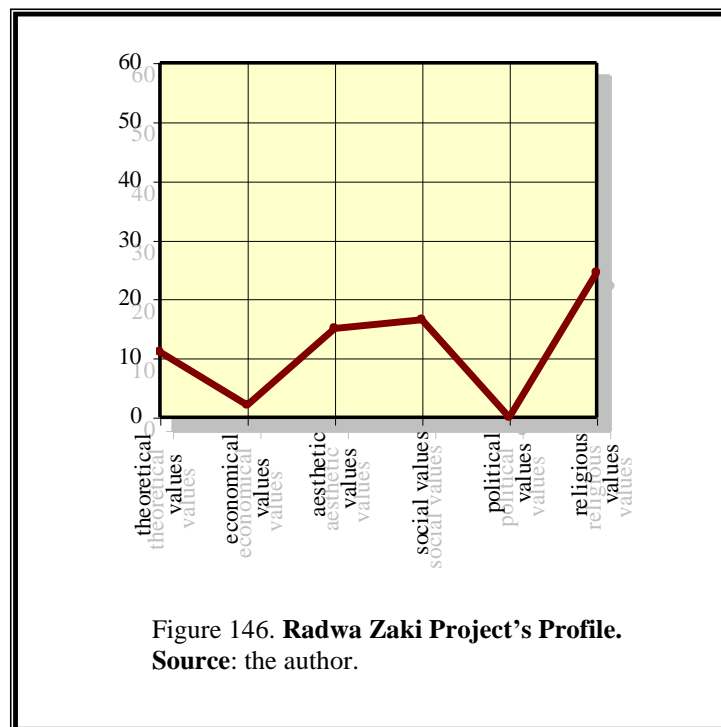
The main concept of this project has two dimensions. Both are related to the historical nature of Sakkara area. First, all the project's elements are distributed around a main plaza except the side opposite the pyramid. The visitor of the internal galleries may see the external exhibits in the plaza and feel the historical value of the site at any time and any place in the building. Second, the student was interested in the stepped shape of the pyramid to the extent that she made every part of the building looking like it. We could see this resemblance in the plaza's form, the entrances, the masses' edges, and the skyline.



<sup>1</sup> Interview with the student in November 2001.

**10-9-11-1 Radwa Zaki Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:





### **10-9-12 Restoration Center in Sakkara, by Rasha Salah El Din:<sup>1</sup>**

This project has been influenced by the pharaonic character of Sakkara Pyramid site. This influence could be seen in the hierarchy of masses resembling the pharaonic temples<sup>2</sup>, the closeness of the facades, the existence of internal and external courts containing a number of columns, the openings resembling Egyptian ornaments, the pallet of colors, the cornice of the building looking like Sakkara Pyramid, and the inclined edges of the masses.

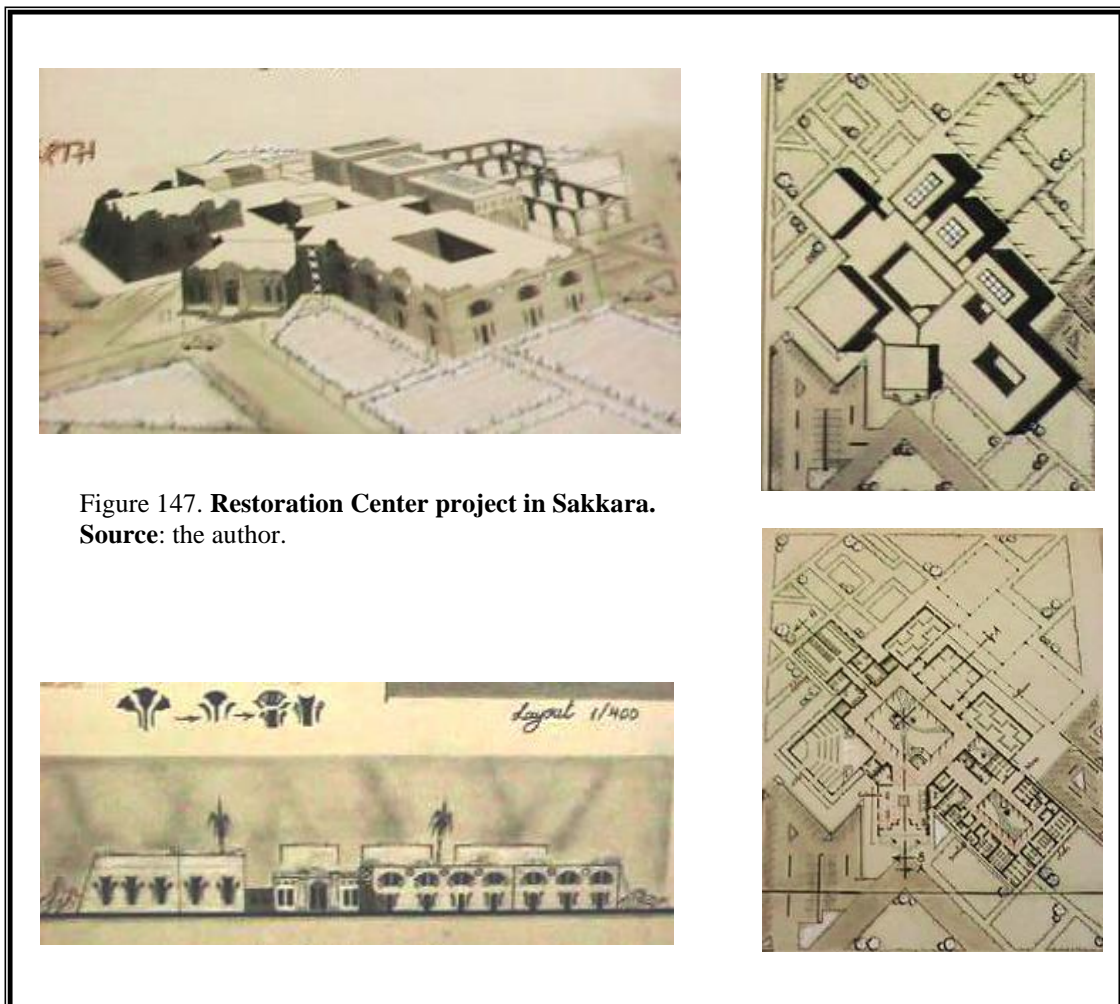


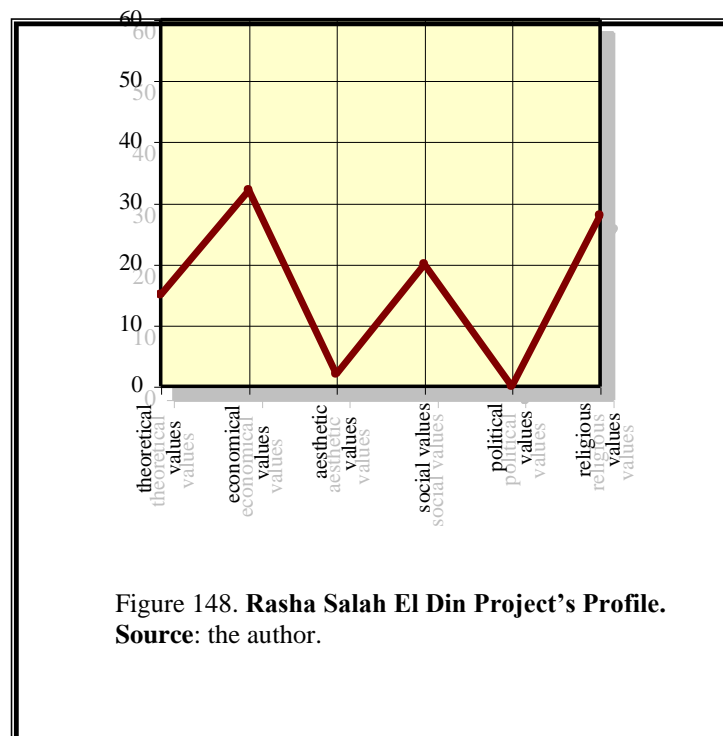
Figure 147. **Restoration Center project in Sakkara.**  
Source: the author.

#### **10-9-12-1 Rasha Salah El Din Project's Profile:**

<sup>1</sup>Interview with the student in November 2001.

<sup>2</sup>One could not feel this hierarchy internally because the entrance is in the middle of the project's spine and not at its beginning as the temples of Ancient Egypt.

By applying the *Matrix Values / Components* as shown in chapter nine and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



### **10-9-13 Restoration Center in Sakkara, by Samah M. Maamoun:<sup>1</sup>**

The design is divided into two main concepts generated from rational ideas. First, the building is consisted of 3 zones: public zone for visitors, private zone for workers and administrators, and an intermediary zone which is the exhibition zone. The second idea is concerned with circulation and axes. The activities are distributed on two axes, the first connects the private zone to the public zone, the second passes through the entrance, the internal exhibition, and the external exhibition intersecting the first path.

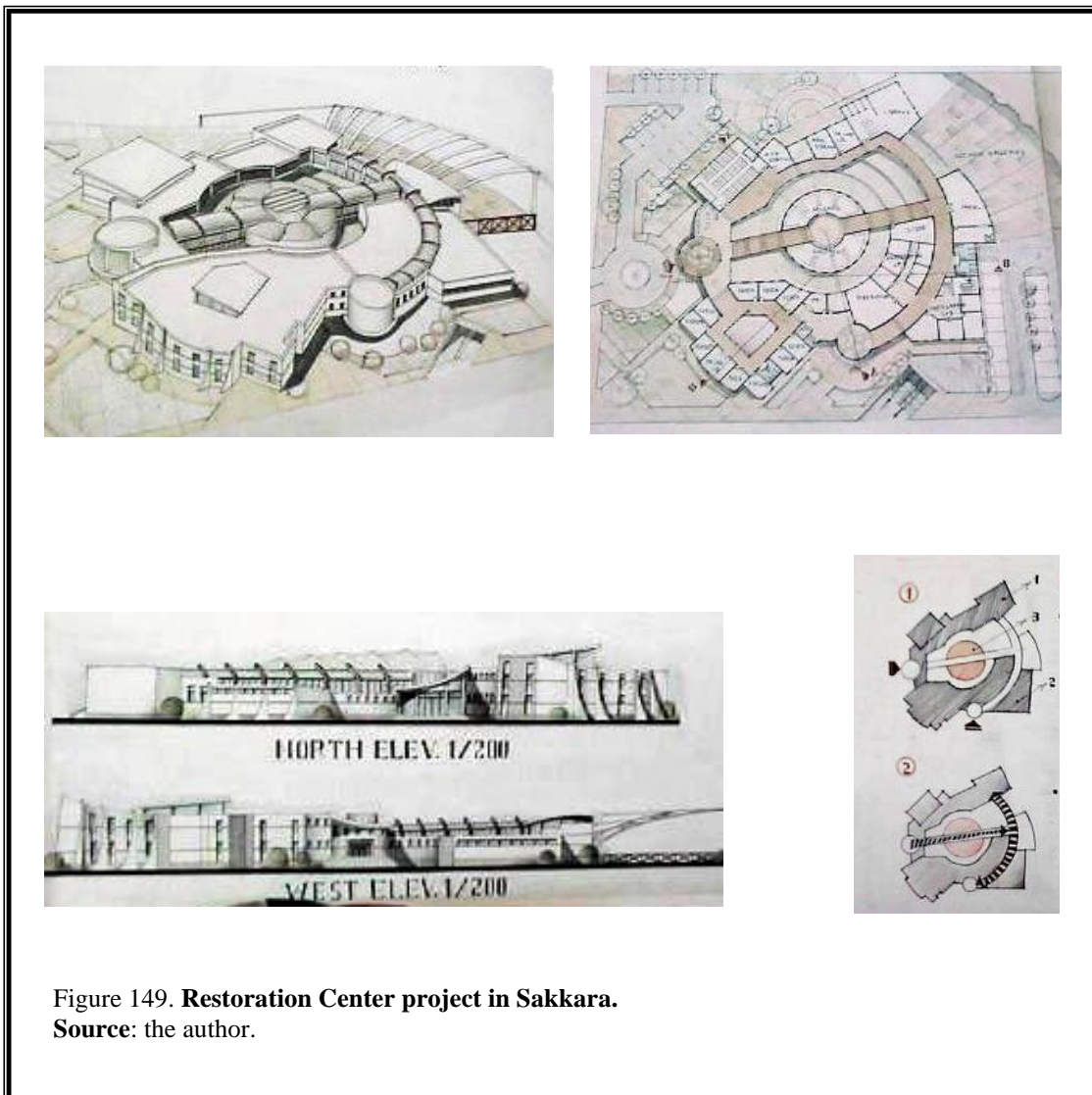
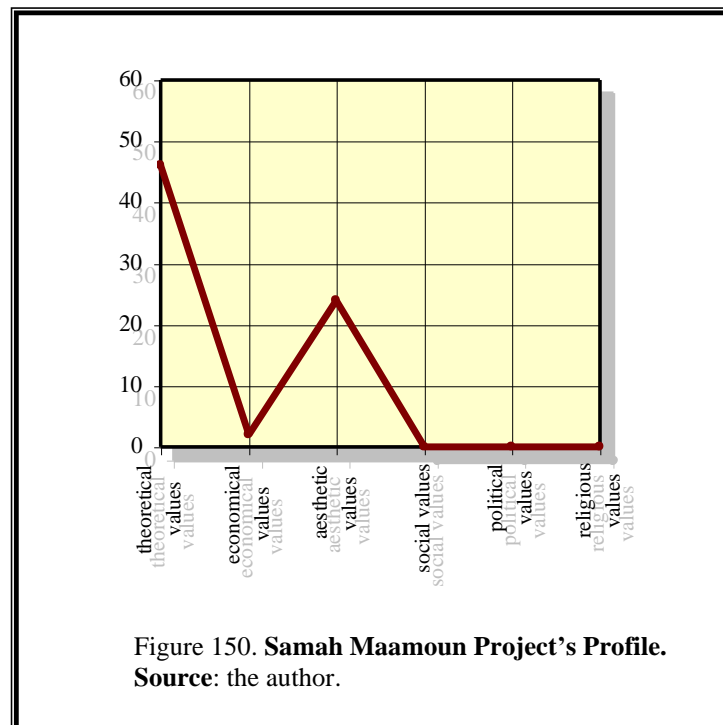


Figure 149. **Restoration Center project in Sakkara.**  
Source: the author.

<sup>1</sup> Interview with the student in November 2001.

**10-9-13-1 Samah Maamoun Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter nine and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



### 10-9-14 Restoration Center in Sakkara, by Soha Abou El Ez:<sup>1</sup>

The main concept is formal for its own sake, but the external treatment has a philosophical idea based on the historical nature of the site. Instead of following the contextual character represented by the yellow solid masses of Sakkara Pyramid and its surroundings, the student has created a contradictive envelop consisting entirely of reflecting glass. By asking her about her intention, she declared that she preferred to reflect the historical character on the masses' envelop instead of copying it.

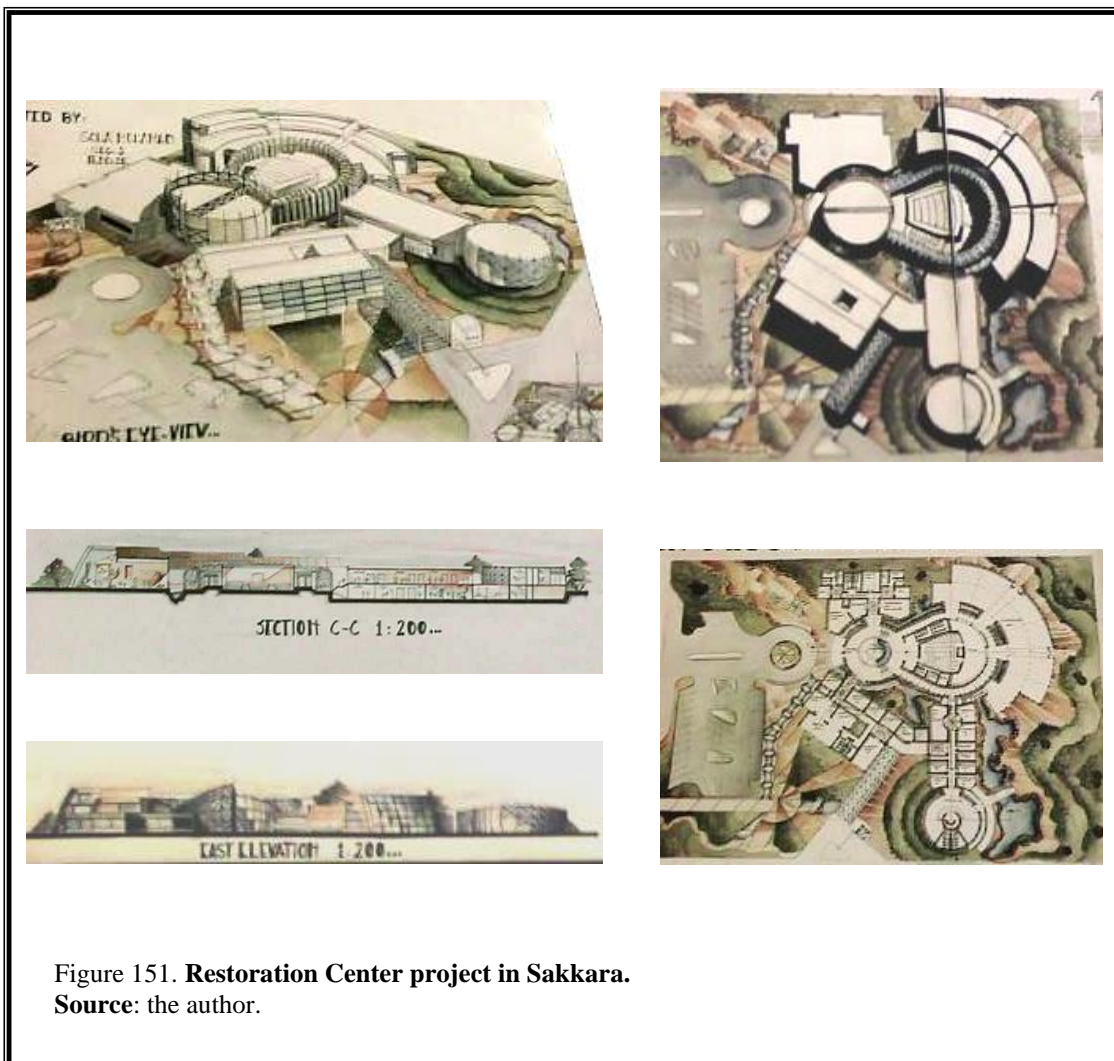
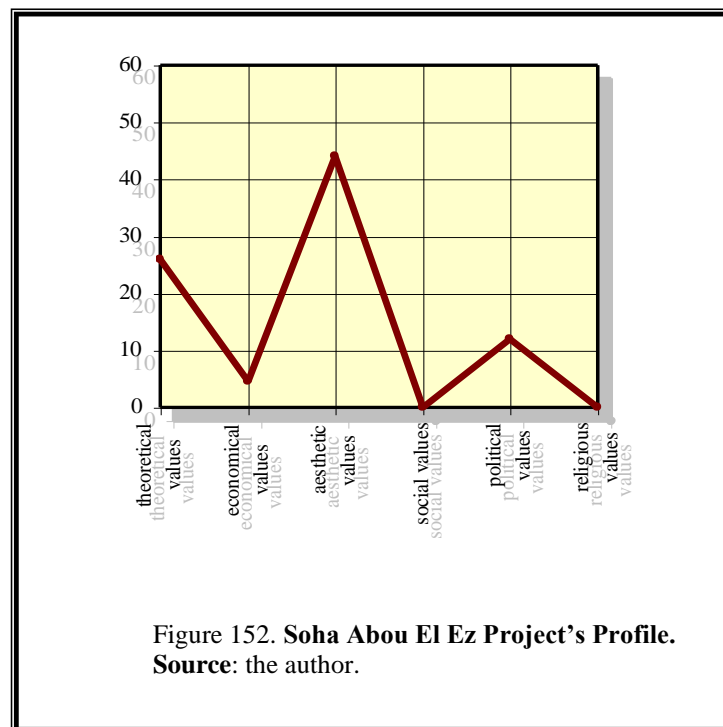


Figure 151. Restoration Center project in Sakkara.  
Source: the author.

<sup>1</sup> Interview with the student in November 2001.

**10-9-14-1 Soha Abou El Ez Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter nine and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:





### 10-9-15 Restoration Center in Old Cairo, by Yara Anan Ali:<sup>1</sup>

The student was influenced by the Islamic character surrounding the project's site. The domes, the Islamic skylight " Shokhshekha", the minaret (transformed into two ventilation towers), the openings, the unifying beige color of the masses, the Arabic tent over the external exhibition, and many other design elements were reflecting the student's impression and respect of the context. The main entrance was treated with a glass wall symbolizing a gate traversing from the contemporary modern life to the historical internal trip.

By asking the student about the form, she replied that it was a sequence of shapes: first, the ordinary square shape of the entrance, second, a circular distributing space representing the concept of distribution, third, a dynamic irregular shape reflecting the dynamic nature of the museum and the freedom of exhibiting methods.

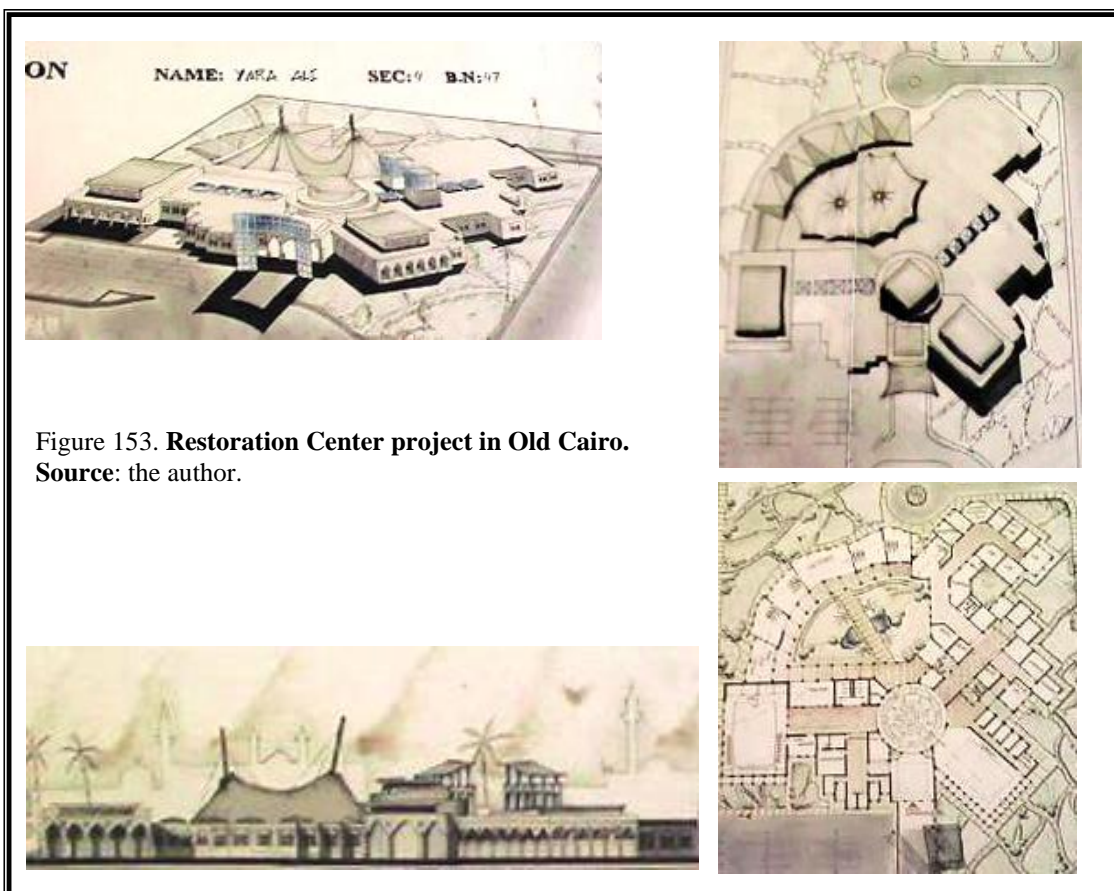
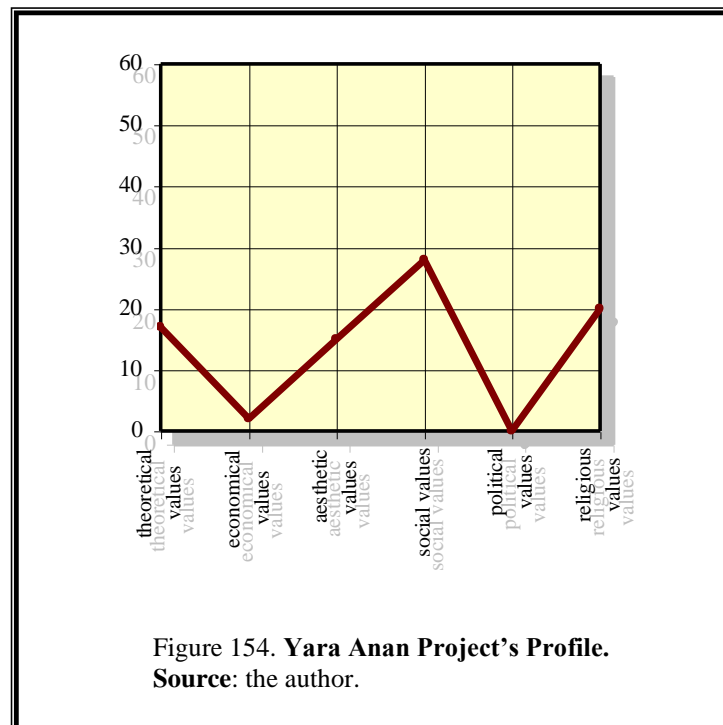


Figure 153. **Restoration Center project in Old Cairo.**  
Source: the author.

<sup>1</sup> Interview with the student in November 2001.

**10-9-15 Yara Anan Project's Profile:**

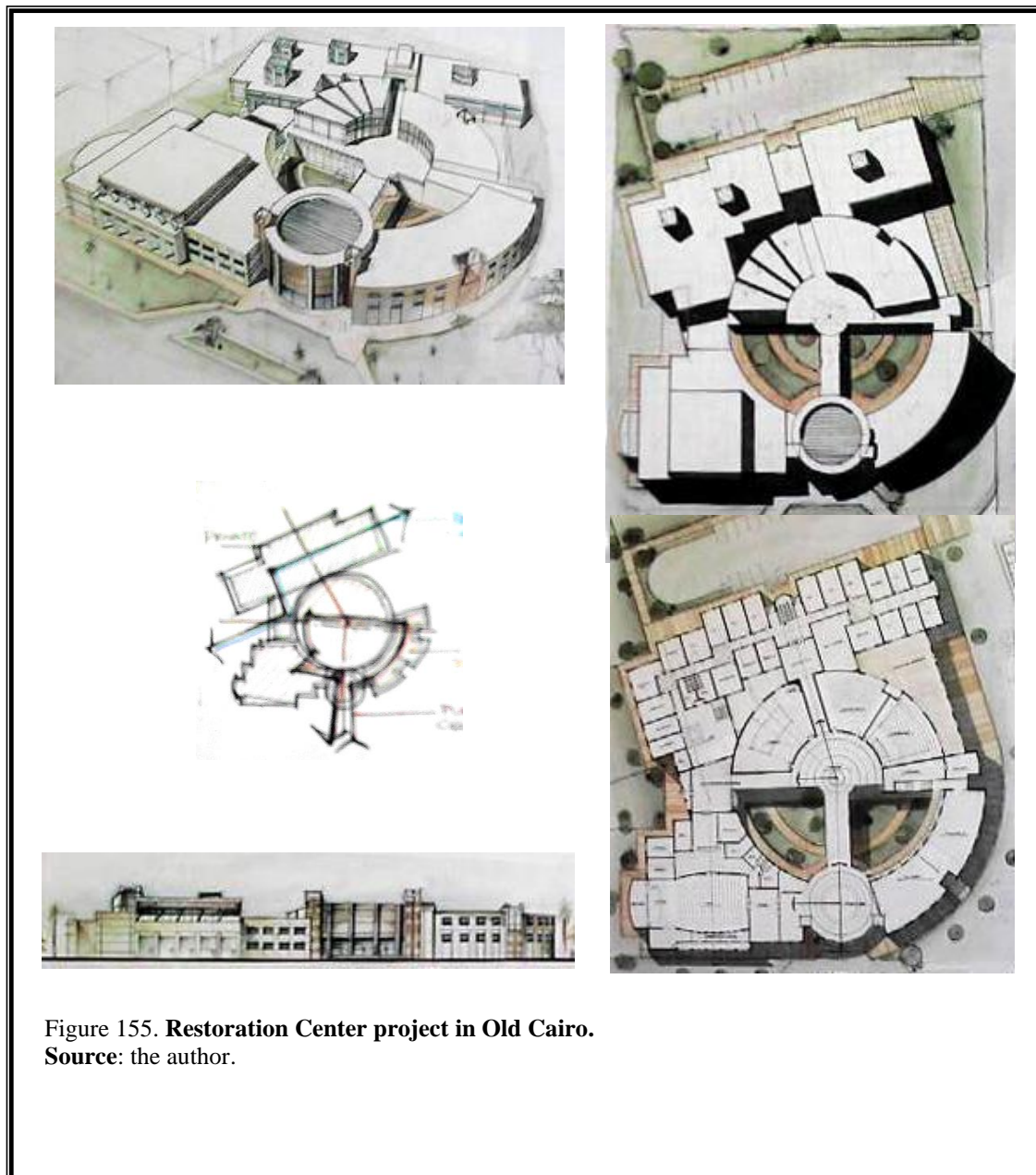
By applying the *Matrix Values / Components* as shown in chapter nine and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:





### **10-9-16 Restoration Center in Old Cairo, by Youssef H. Seleit:<sup>1</sup>**

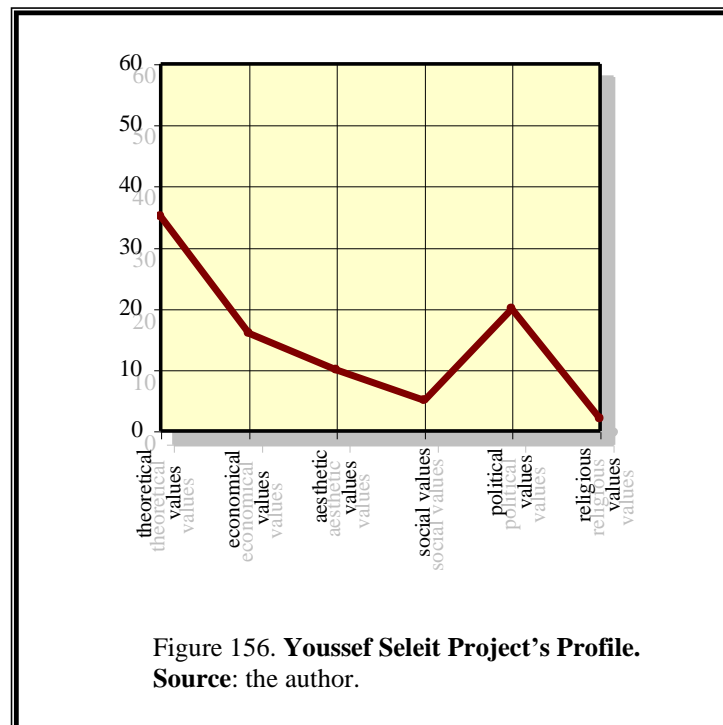
The design concept is based on the dominance of the exhibition zone and its central location. The dominant circular shape in the heart of the project represents the exhibition and all public zones, while the service zone is represented by a regular grid surrounding the circle and generated from the site edges.



<sup>1</sup> Interview with the student in November 2001.

**10-9-15-1 Youssef Seleit Project's Profile:**

By applying the *Matrix Values / Components* as shown in chapter eight and scoring the indices of the six values: theoretical, economic, aesthetic (formal), social, political, and religious (traditional) on the project's components, the next graph has been obtained:



In order to investigate empirically the relationship between the architect's personality profile and the nature of his architectural product, we have assessed in chapter nine the personalities of some Egyptian architects and students in terms of values, chapter ten dealt with the assessment of their works. In this chapter, a comparison between the personality profile of each architect or student and his product nature will be made. A table is suggested to facilitate the comparison. The first column will indicate the architect's personality profile (graph) and the remaining columns each will indicate the nature or profile (graph) of one of his products. The comparison will be then very easy to make just by observing the table. This chapter represents the stated comparison and also summarizes the previous two chapters.

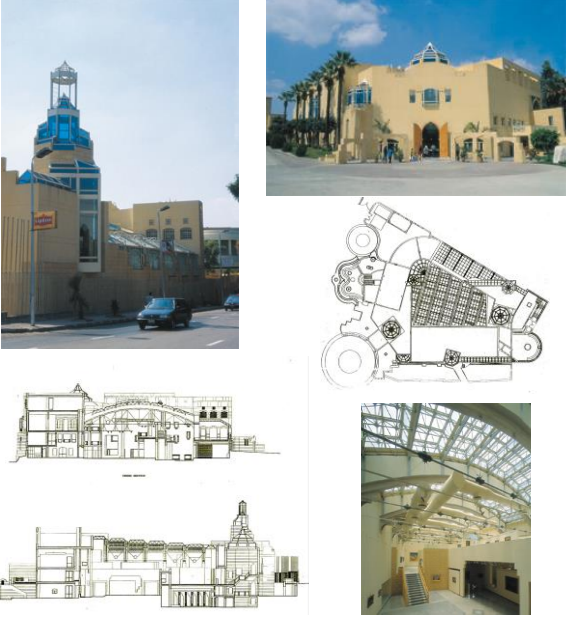

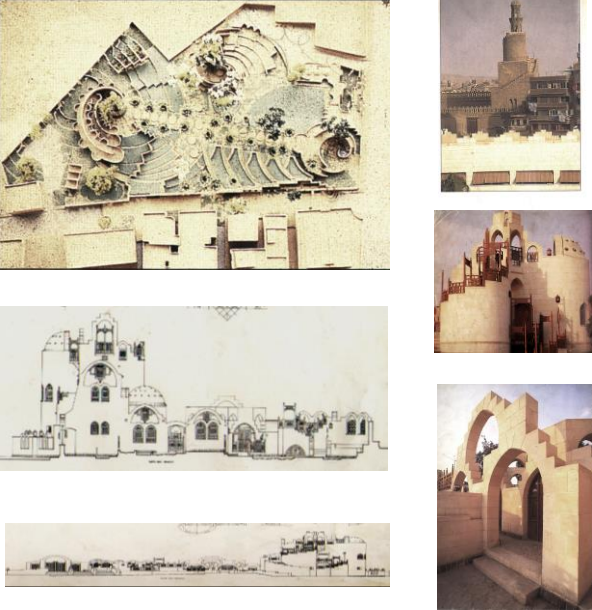
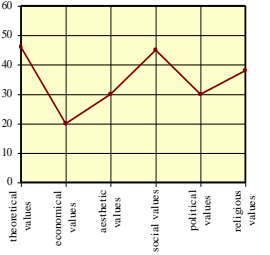
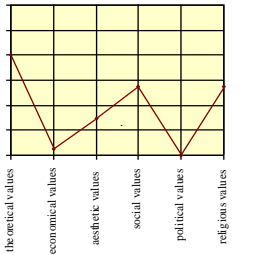
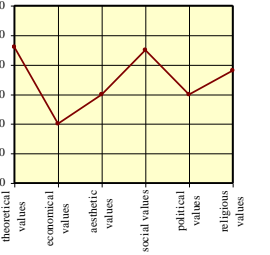
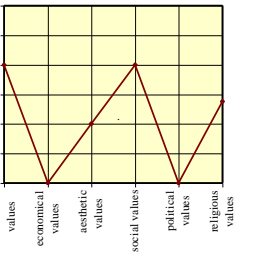
PERSONALITY PROFILE	Arch. Abdel Halim Ibrahim		
Keywords	Quar El Funoun	Mosque in Direya	Cultural Park El Hod El Marsoud
<p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>			
			

Table 17. Comparison between the Personality Profile of Abdel Halim Ibrahim and the Profile of his Architectural Product.

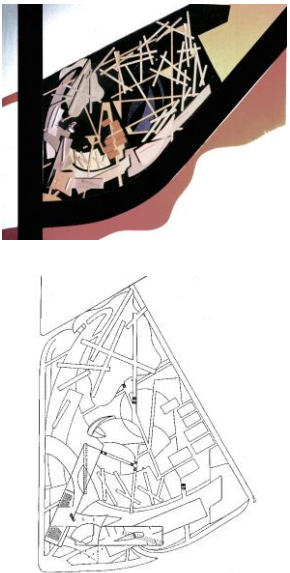
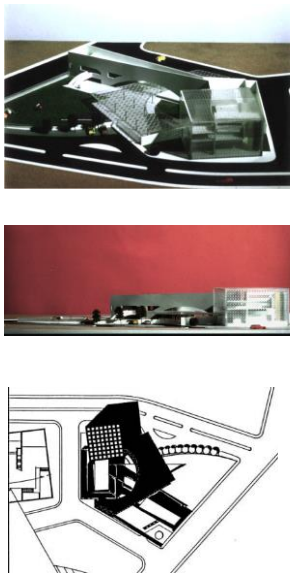
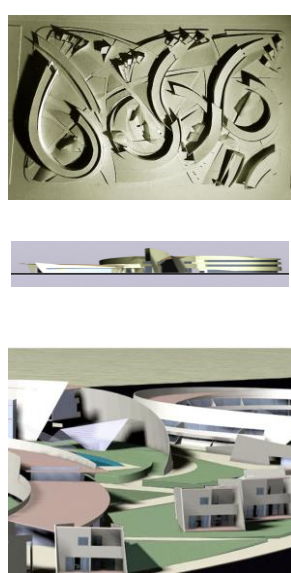
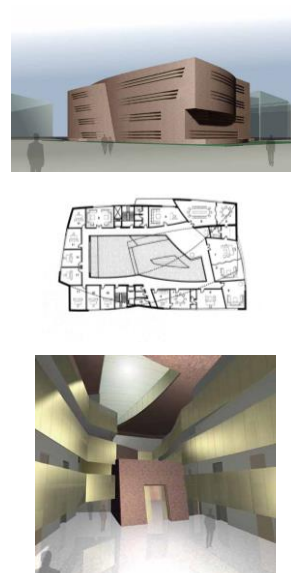
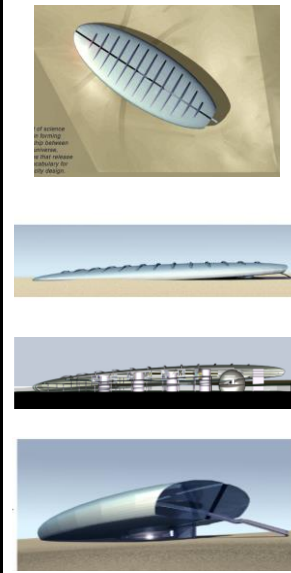
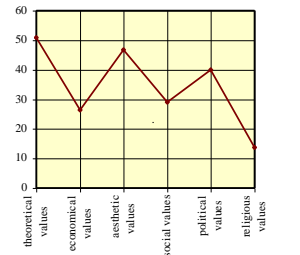
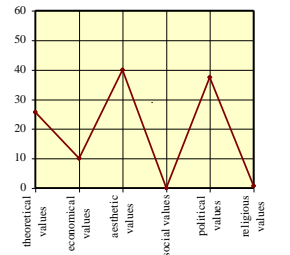
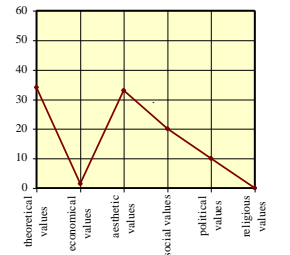
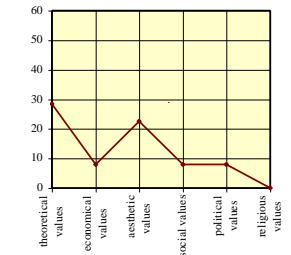
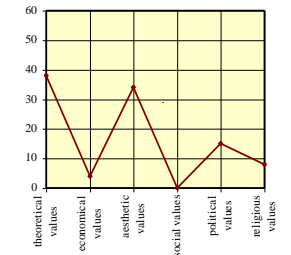
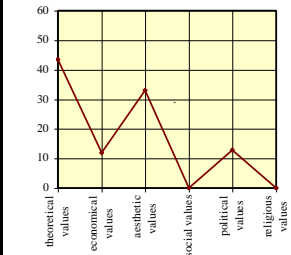
PERSONALITY PROFILE	arch.Akram El Magdoub PRODUCT PROFILE				
Keywords	Touristic Khofo Center, Cairo	Engineers Syndicate, Ismailya	Public Resort, Port Said	Egyptian Embassy , Berlin	Sciences City, Cairo
<p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p>					
					

Table 19. Comparison between the Personality Profile of Akram El Magdoub and the Profile of his Architectural Product.



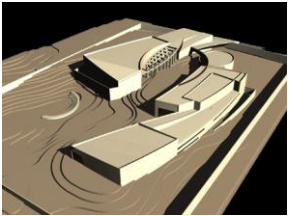
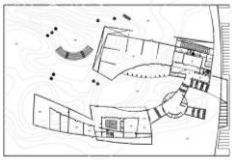

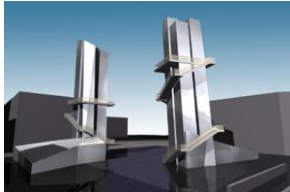
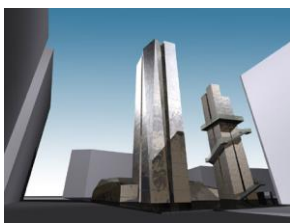



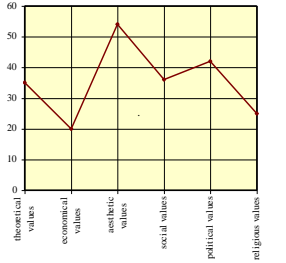
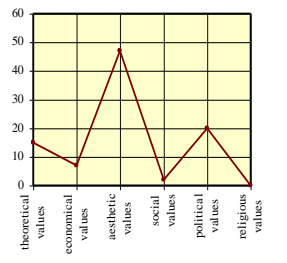
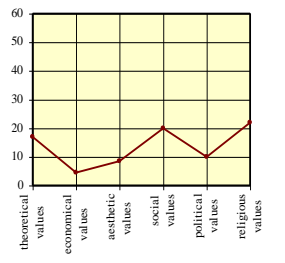
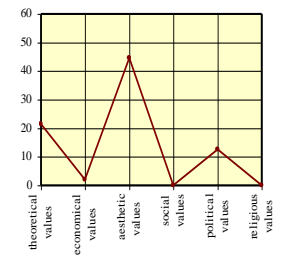
PERSONALITY PROFILE	arch. Amani Kamel PRODUCT PROFILE				
Keywords	Edfou International Museum	El Hussein Ventilation Plant	Saoudi Investment Co.		
<p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>	  	 	  		
					

Table 21. Comparison between the Personality Profile of Amani Kamel and the Profile of her Architectural Product.


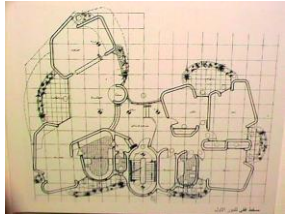
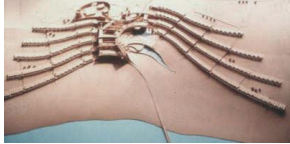


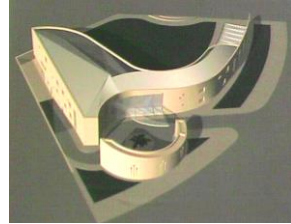


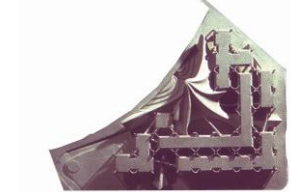
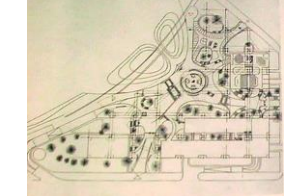
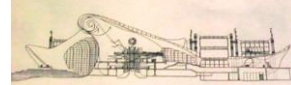

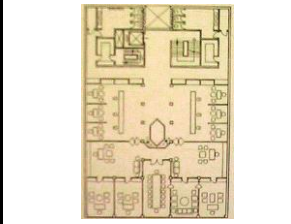
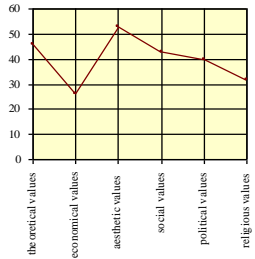
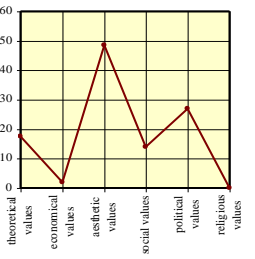
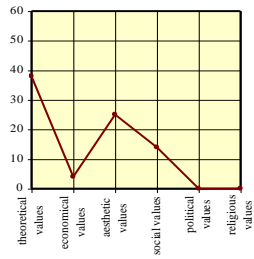
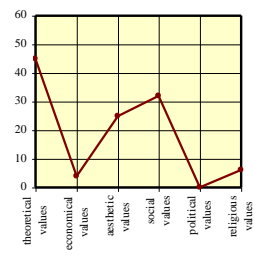
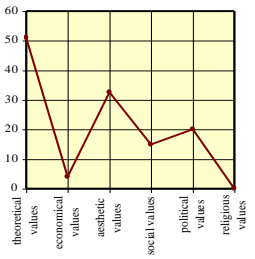
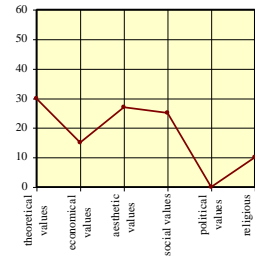
PERSONALITY PROFILE	arch. Gamal Bakry PRODUCT PROFILE																																																																																								
Keywords	Badran Villa	Dahab Touristic Village	Ambassador residence, Berlin	History of Art Mus., Germany	Engineering Syndicate, Port Said																																																																																				
<p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>	 	  	  	  	 																																																																																				
 <table border="1"> <caption>Personality Profile Values (Gamal Bakry)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>45</td></tr> <tr><td>economical values</td><td>25</td></tr> <tr><td>aesthetic values</td><td>55</td></tr> <tr><td>social values</td><td>40</td></tr> <tr><td>political values</td><td>35</td></tr> <tr><td>religious values</td><td>30</td></tr> </tbody> </table>	Value Type	Score	theoretical values	45	economical values	25	aesthetic values	55	social values	40	political values	35	religious values	30	 <table border="1"> <caption>Product Profile Values (Badran Villa)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>15</td></tr> <tr><td>economical values</td><td>5</td></tr> <tr><td>aesthetic values</td><td>45</td></tr> <tr><td>social values</td><td>15</td></tr> <tr><td>political values</td><td>25</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	15	economical values	5	aesthetic values	45	social values	15	political values	25	religious values	5	 <table border="1"> <caption>Product Profile Values (Dahab Touristic Village)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>35</td></tr> <tr><td>economical values</td><td>5</td></tr> <tr><td>aesthetic values</td><td>25</td></tr> <tr><td>social values</td><td>15</td></tr> <tr><td>political values</td><td>5</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	35	economical values	5	aesthetic values	25	social values	15	political values	5	religious values	5	 <table border="1"> <caption>Product Profile Values (Ambassador residence, Berlin)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>45</td></tr> <tr><td>economical values</td><td>5</td></tr> <tr><td>aesthetic values</td><td>25</td></tr> <tr><td>social values</td><td>30</td></tr> <tr><td>political values</td><td>5</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	45	economical values	5	aesthetic values	25	social values	30	political values	5	religious values	5	 <table border="1"> <caption>Product Profile Values (History of Art Mus., Germany)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>50</td></tr> <tr><td>economical values</td><td>5</td></tr> <tr><td>aesthetic values</td><td>30</td></tr> <tr><td>social values</td><td>15</td></tr> <tr><td>political values</td><td>20</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	50	economical values	5	aesthetic values	30	social values	15	political values	20	religious values	5	 <table border="1"> <caption>Product Profile Values (Engineering Syndicate, Port Said)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>30</td></tr> <tr><td>economical values</td><td>15</td></tr> <tr><td>aesthetic values</td><td>25</td></tr> <tr><td>social values</td><td>25</td></tr> <tr><td>political values</td><td>5</td></tr> <tr><td>religious values</td><td>10</td></tr> </tbody> </table>	Value Type	Score	theoretical values	30	economical values	15	aesthetic values	25	social values	25	political values	5	religious values	10
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Table 16. Comparison between the Personality Profile of Gamal Bakry and the Profile of his Architectural Product.

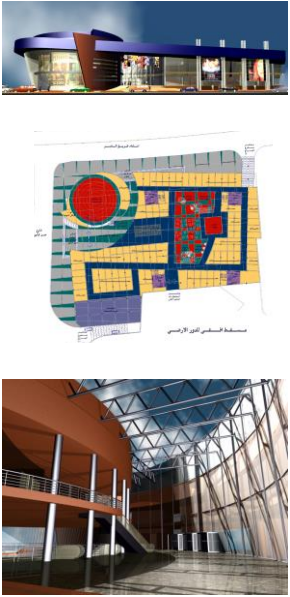
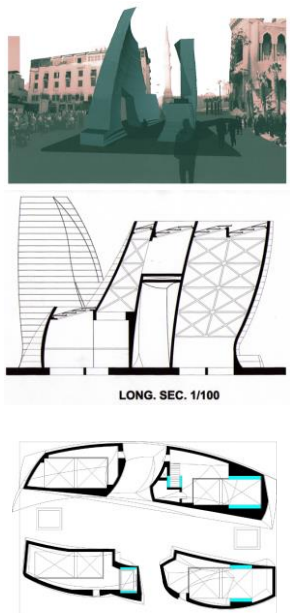

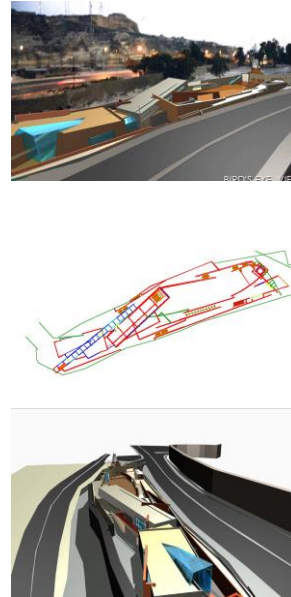
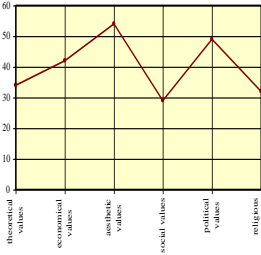
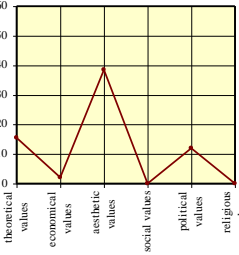
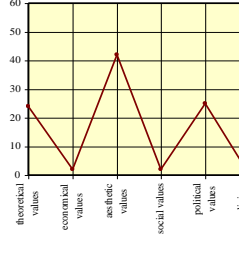
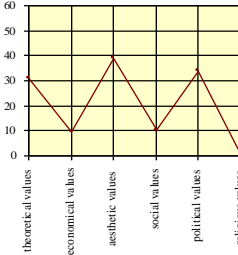
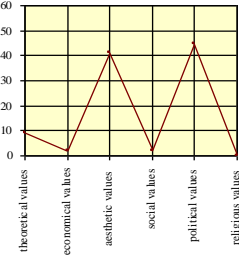
PERSONALITY PROFILE	arch. Ahmed Emam PRODUCT PROFILE																																																																										
Keywords	Ahly Club Mall ,Cairo	El Hussein Ventilation Plant	Saoudi Investment Co.	Touristic Promotion Authority, Cairo																																																																							
<p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p>		 <p>LONG. SEC. 1/100</p>	 <p>مساحة قاعة المؤتمرات 2501</p>																																																																								
 <table border="1"> <caption>Personality Profile Values (Ahmed Emam)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>35</td></tr> <tr><td>economical values</td><td>40</td></tr> <tr><td>aesthetic values</td><td>55</td></tr> <tr><td>social values</td><td>30</td></tr> <tr><td>political values</td><td>50</td></tr> <tr><td>religious values</td><td>35</td></tr> </tbody> </table>	Value Type	Score	theoretical values	35	economical values	40	aesthetic values	55	social values	30	political values	50	religious values	35	 <table border="1"> <caption>Product Profile Values (Ahly Club Mall, Cairo)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>15</td></tr> <tr><td>economical values</td><td>5</td></tr> <tr><td>aesthetic values</td><td>38</td></tr> <tr><td>social values</td><td>5</td></tr> <tr><td>political values</td><td>12</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	15	economical values	5	aesthetic values	38	social values	5	political values	12	religious values	5	 <table border="1"> <caption>Product Profile Values (El Hussein Ventilation Plant)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>25</td></tr> <tr><td>economical values</td><td>5</td></tr> <tr><td>aesthetic values</td><td>42</td></tr> <tr><td>social values</td><td>5</td></tr> <tr><td>political values</td><td>25</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	25	economical values	5	aesthetic values	42	social values	5	political values	25	religious values	5	 <table border="1"> <caption>Product Profile Values (Saoudi Investment Co.)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>30</td></tr> <tr><td>economical values</td><td>10</td></tr> <tr><td>aesthetic values</td><td>40</td></tr> <tr><td>social values</td><td>10</td></tr> <tr><td>political values</td><td>35</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	30	economical values	10	aesthetic values	40	social values	10	political values	35	religious values	5	 <table border="1"> <caption>Product Profile Values (Touristic Promotion Authority, Cairo)</caption> <thead> <tr> <th>Value Type</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>theoretical values</td><td>10</td></tr> <tr><td>economical values</td><td>5</td></tr> <tr><td>aesthetic values</td><td>40</td></tr> <tr><td>social values</td><td>5</td></tr> <tr><td>political values</td><td>45</td></tr> <tr><td>religious values</td><td>5</td></tr> </tbody> </table>	Value Type	Score	theoretical values	10	economical values	5	aesthetic values	40	social values	5	political values	45	religious values	5	
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Table 22. Comparison between the Personality Profile of Ahmed Emam and the Profile of his Architectural Product.



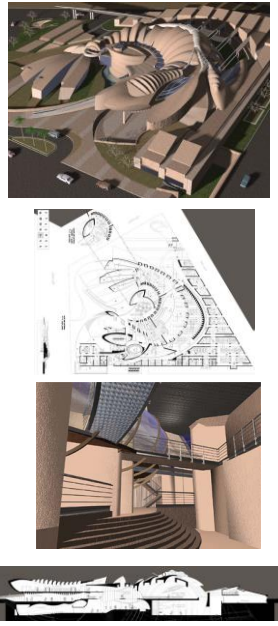

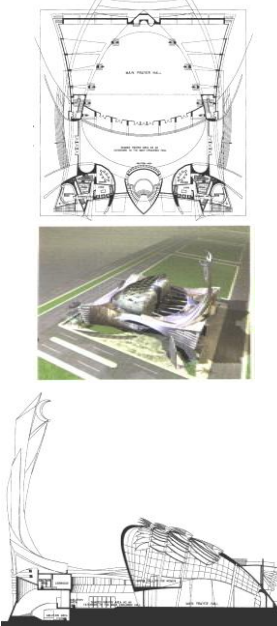
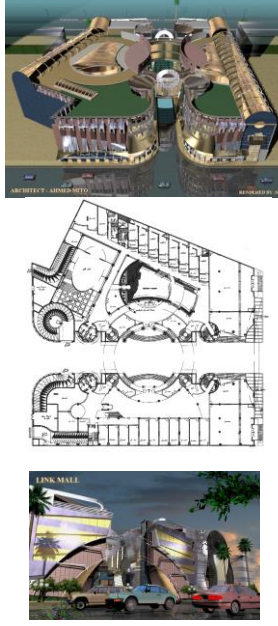
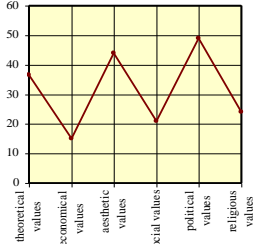
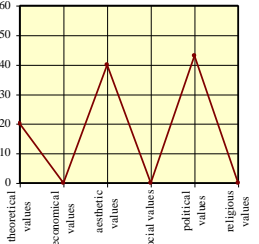
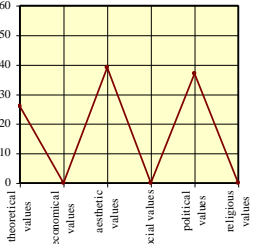
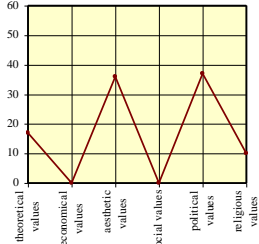
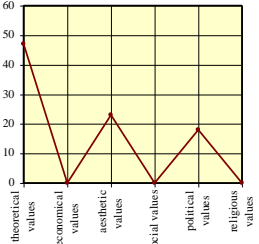
PERSONALITY PROFILE	Arch. Ahmed Mito					PRODUCT'S NATURE																																																																					
Keywords	Hurgada International Museum	Abbasia Trade Center	Mosque in Ryad	Maadi Trade Center: the Link																																																																							
<p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>																																																																											
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Table. Comparison between the Personality Profile of Ahmed Mito and the Nature (profile) of his Architectural Product.



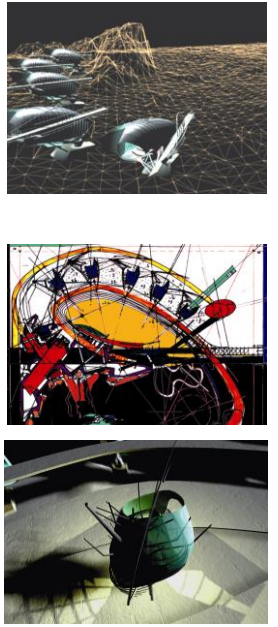
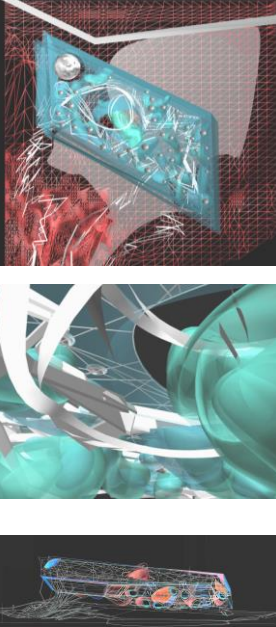
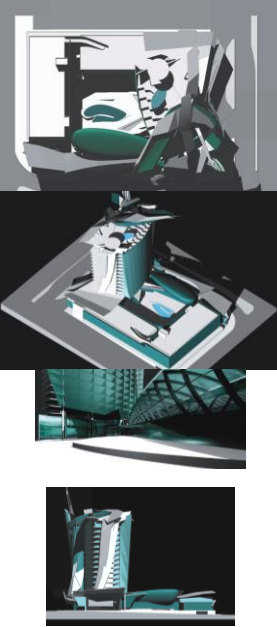
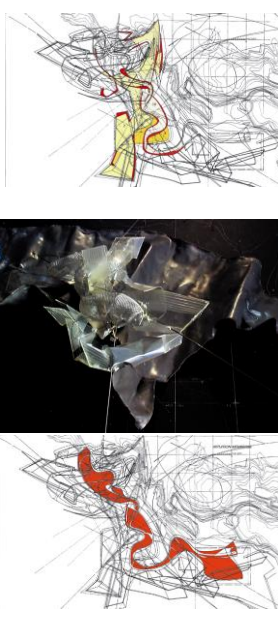
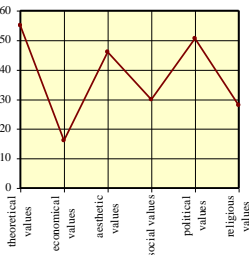
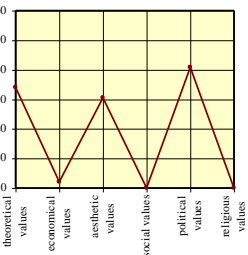
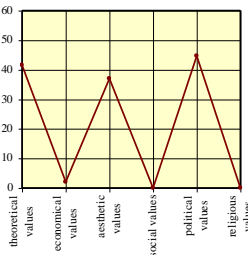
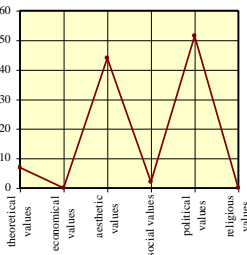
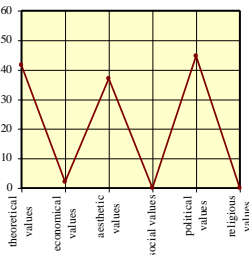
PERSONALITY PROFILE	Arch. Tarek Abu El Naga PRODUCT NATURE				
Keywords	Sharm Safari Gate	Science City	Marina International Hotel	House of Emergent Suspensions	
<p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>					
					

Table 18. Comparison between the Personality Profile of Tarek Abou El Naga and the Profile of his Architectural Product.










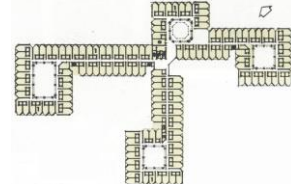

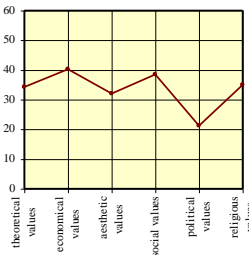
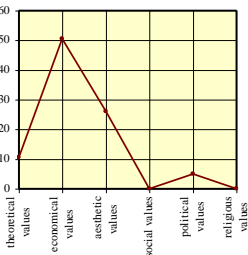
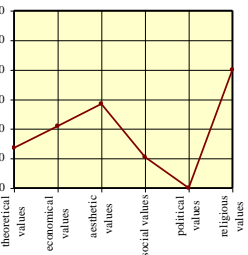
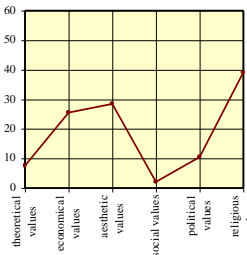
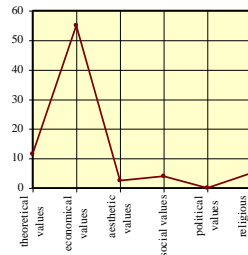
PERSONALITY PROFILE	arch. Ali Raafat PRODUCT PROFILE				
Keywords	Demographic Center , Cairo	Egyptian Embassy,New Delhi	Egyptian Embassy,Islamabad	Hilton International,Luxor	
<p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p>	 	  	  	  	
					

Table 15. Comparison between the Personality Profile of Ali Raafat and the Profile of his Architectural Product.



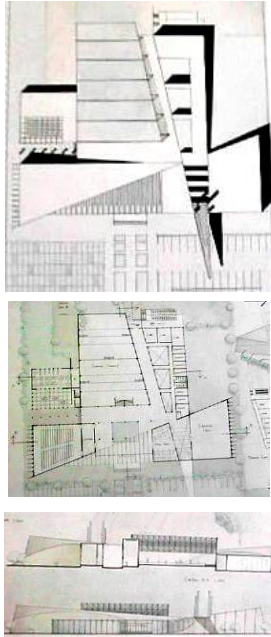
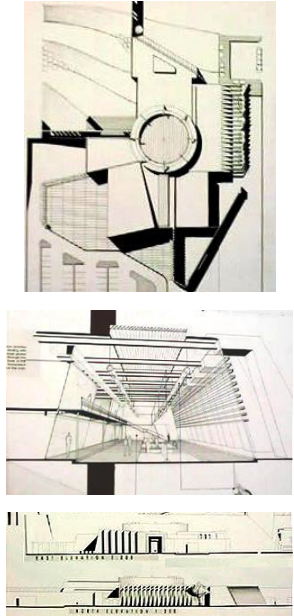

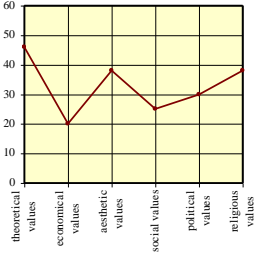
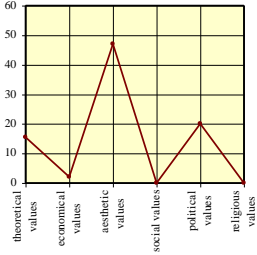
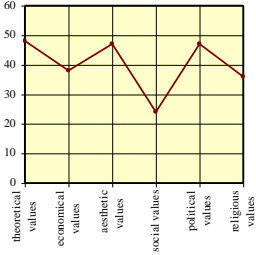
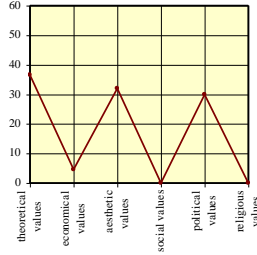
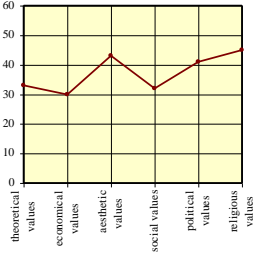
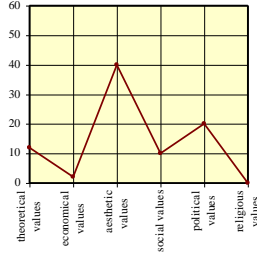
PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE
<p><b>Ahmed Ashraf</b></p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>		<p><b>Ahmed El Hoseiny</b></p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p>		<p><b>Asmaa Mostafa</b></p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>	
					

Table 23. Comparison between the Personality Profile and the Product Profile of Ahmed Ashraf, Ahmed El Hoseiny, and Asmaa Mostafa.

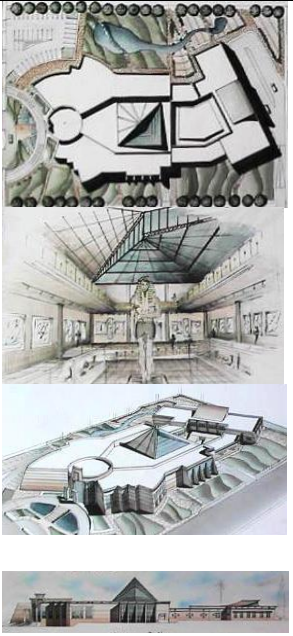

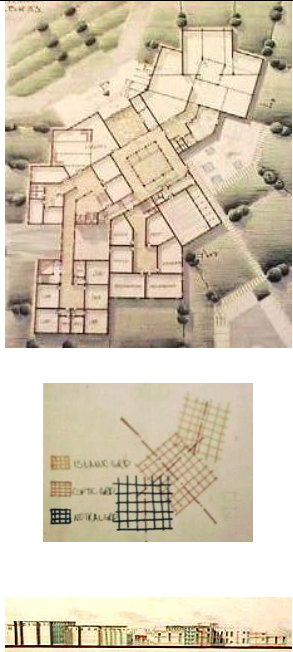
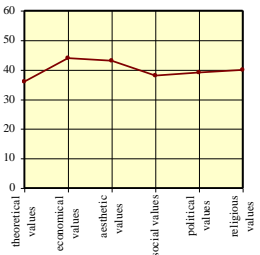
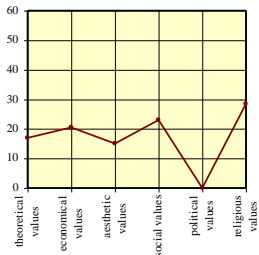
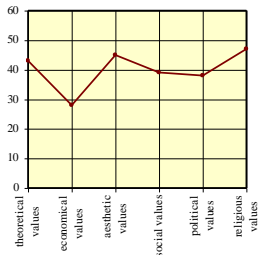
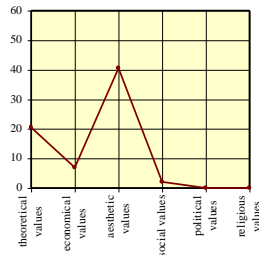
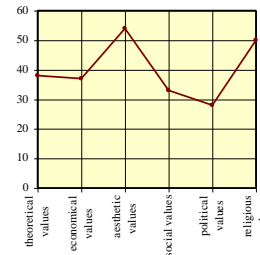
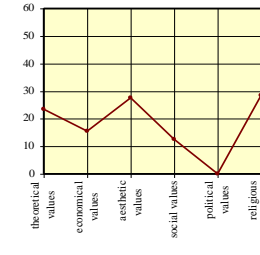
PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE																																																																																				
<p><b>Dina Abdel Mohsen</b></p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p>		<p><b>Dina Osama</b></p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>		<p><b>Hoda Faisal</b></p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p>																																																																																					
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Table 24. Comparison between the Personality Profile and the Product Nature of Dina Abdel Mohsen, Dina Osama, and Hoda Faisal.



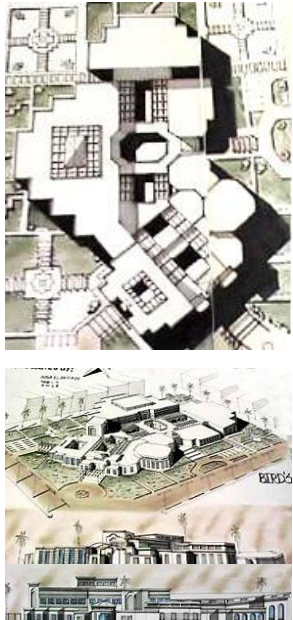
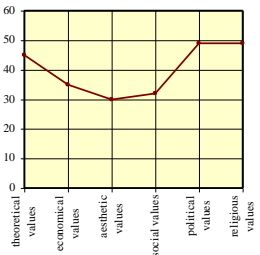
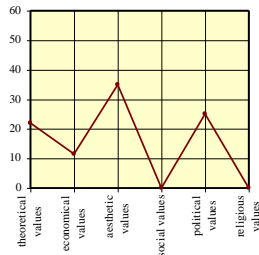
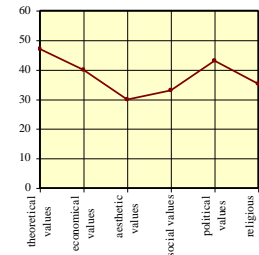
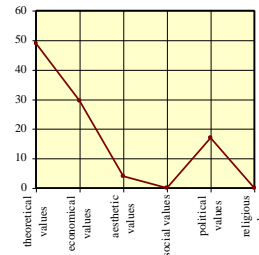
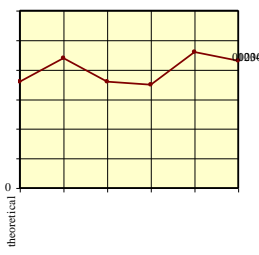
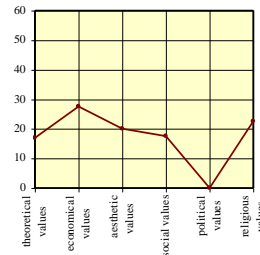
PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE
<p><b>Mohamed El Shazly</b></p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p>		<p><b>Mohamed Fangary</b></p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p>		<p><b>Mona El Ahmady</b></p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p>	
					

Table 25. Comparison between the Personality Profile and the Product Profile of Mohamed El Shazly, Mohamed Fangary, and Mona El Ahmady.



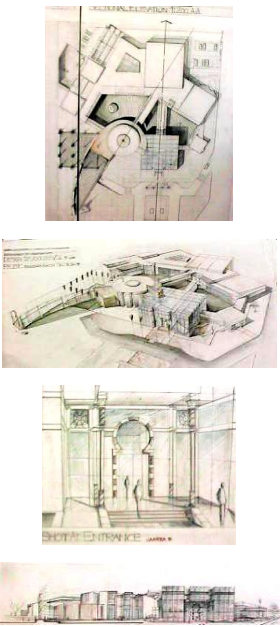


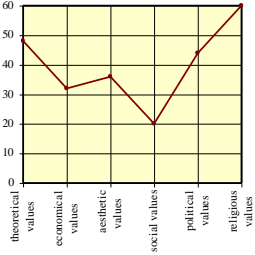
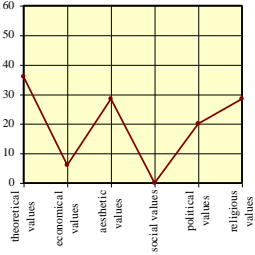
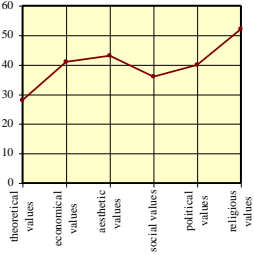
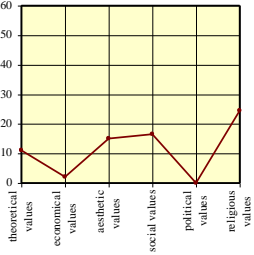
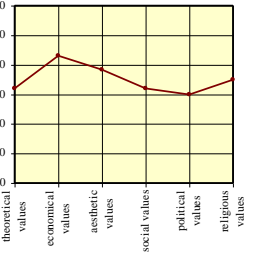
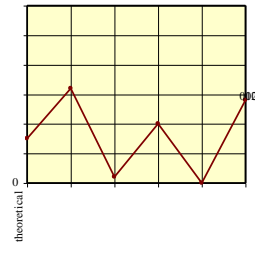
PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE
<p><b>Mostafa Khater</b></p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p>		<p><b>Radwa Zaki</b></p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p>		<p><b>Rasha Salah El Din</b></p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p>	
					

Table 26. Comparison between the Personality Profile and the Product Profile of Mostafa Khater, Radwa Zaki, and Rasha Salah El Din.



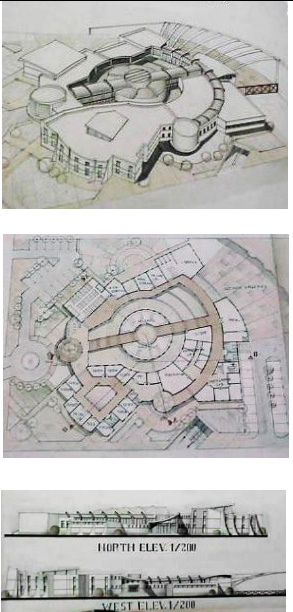

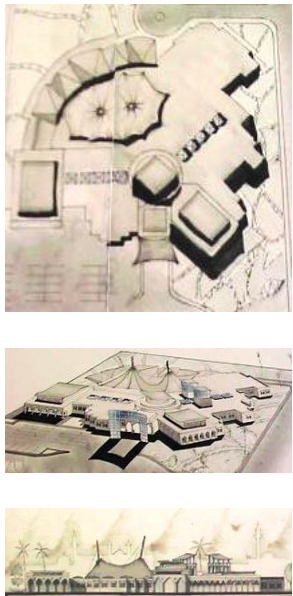
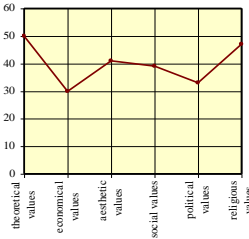
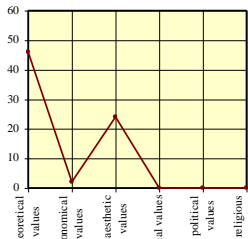
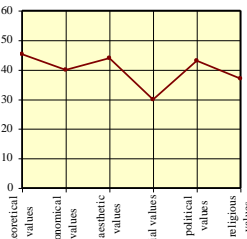
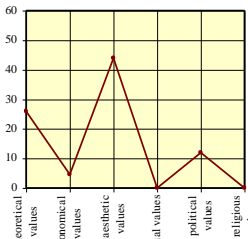
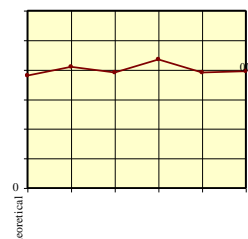
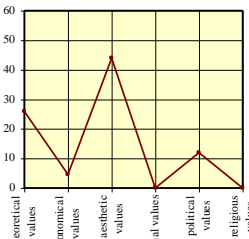
PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE
<p><b>Samah Maamoun</b></p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p>		<p><b>Soha Abou El Ez</b></p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p>		<p><b>Yara Anan</b></p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p>	
					

Table 27. Comparison between the Personality Profile and the Product Profile of Samah Maamoun, Soha Abou El Ez, and Yara Anan.

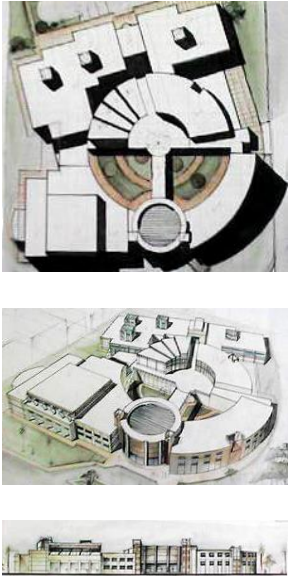
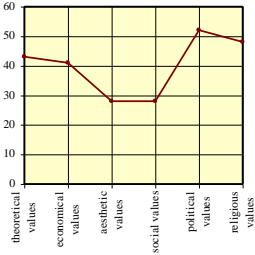
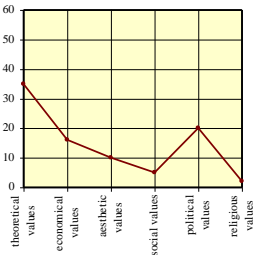
PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE	PERSONALITY PROFILE	PRODUCT PROFILE
<p><b>Youssef Seleit</b></p> <p><b>Political:</b> subjective, strange, unrealizable, powerful.</p> <p><b>Religious:</b> submission to past models, traditional architecture, conservative, post modern.</p> <p><b>Theoretical:</b> rational, intensive analysis, environmental control, functional performance, order, philosophical, metaphor after rigorous research., technology.</p> <p><b>Economic:</b> cheap systems, conventional functional solutions, cost, no interest in form.</p> <p><b>Aesthetic:</b> abstract forms, subjective, selfish, imagination.</p> <p><b>Social:</b> unselfish, architecture as a social means, culture, community, character, social spaces.</p>					
					

Table 28. Comparison between the Personality Profile and the Product Profile of Youssef Seleit.

In this chapter the results of the empirical study will be discussed, and the hypothesis of our research will be tested; then some recommendations will be stated. First, we must remind of the hypothesis:

Within the design process there always remain a margin of freedom and a range of choices for the architect sufficient to make subjective decision, and where his personality plays a principal role in determining the form of the final product, to the extent that **we could find a relationship between the designer's personality profile and the nature of his architectural product.**

By reviewing the tables of each architect and student developed in the previous chapter, the following observations may be indicated. When the scores of the six values in the architect's personality are convergent we find an obvious dissimilarity between the natures or profiles of his products. Meaning that when there are no dominant values controlling his personality, there are no dominant values always influencing his works. An example of this case is of architect Ali Raafat and his works. On the contrary, when one or several of the six values dominate the architect's personality, we find consistency and resemblance between the profiles of all his products. An extreme example of this case is of architects Ahmed Mito and Tarek Abou El Naga; the profiles of their products are almost identical to the profile of their personalities. This consistency can be found also in the other interviewed architects but with different degrees. A resemblance between the personality profiles and the nature of the projects of nine students (from sixteen) is also found.

When observing the products' nature of each architect, it could be noticed that the degree of resemblance between them and the architect's personality profile differs with the type of the building and the constraints imposed on it. The stronger the constraints, the narrower the differences between the scores of the six values in the product's nature; it may be said that they are convergent. And on the contrary, when the constraints are not very strong, there is a divergence between the scores of the six

values in the product's nature. But there is a relationship and resemblance between the architect's personality profile and the nature of this product in the two cases. For instance, when scoring the indices of the six values in Badran Villa designed by architect Gamal Bakry, aesthetic values were dominant with big difference in their score relative to the other values, then came the theoretical, social, and political values. When observing his personality profile, aesthetic values also came first, then the theoretical, social, and political values. On the other hand, when scoring the indices of the values in the Engineering Syndicate in Port Said, the scores were convergent and the order of the dominant values was theoretical values, aesthetic values, and then social values, with small differences between their scores. This means that the product's nature (profile) may be a concrete indicator of the architect's margin of freedom in a certain project.

It could be also noticed that, in general, the values in the personality profile never score zero, while in the product's nature there are always one or more values scoring zero degree. This means that all the six values of Spranger exist in any personality but with different degrees, but the product on the other hand represents only one situation where one or more of the dominant values in the architect's personality appear and control his decision during design.

Another point may be observed. It was mentioned at the beginning of part four that the projects of the sixteen final undergraduate class students were in fact the same project (a restoration center) submitted by each. It was a very good opportunity to investigate the words of Brian Lawson empirically: "*design situations vary not just because the problems are dissimilar, but also because designers habitually adopt different approaches*".<sup>1</sup>

In general, the obtained results may be considered concrete evidences of the involvement of the designer's personality when confronting any problem posing options for action. It insures concretely the theoretical studies by Hillier et al (1972),

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<sup>1</sup> Lawson, B., 1980, op. Cit.

Darke (1979), Cross (1984), and Lawson (1980 &1994) representing the Contemporary Theories of Design Epistemology.

When obtaining the results, a very important additional point was observed. The social values were very low in most of the products even if they are not so low in the architects' personalities. The social values represent the architect's awareness of the social background of the community in general and the user of his building in particular. They also reflect his concern about their comfort and involving them in the decision making process. Only architect Abdel Halim Ibrahim applied the public participation or community design in his works.

The above results may lead us to some recommendations that might be very useful in the academic and the practical field of Architecture:

1- The architect's self criticism:

By applying the scale of *Allport - Vernon - Lindzey*, the architect recognizes himself and the dominant values controlling his personality. And by applying the matrix of *Values / Components*, he also recognizes to what degree did his personality influence his decision and what are the values, other than the dominant, that must be taken care of in his product.

2- Public participation:

Designers must increase the involvement of the user in the decision making process, whether he was the client himself or a certain community. Intensive researches must be done on the social role and experience offered by the building and on the social goals achieved for the user.

3- Teamwork:

Increasing the importance and the acceptance of the teamwork is a useful recommendation for both the academic and the practical field of Architecture. Each of the team members will be aware of his personality profile and of the others. Every

member will be able to see a side in the problem which the other may not see it. This will guarantee the equilibrium and the objectivity in the solution, providing the acceptance and awareness of the personality profile of each other.

- 4- Using the research's empirical results in the recent researches covering the problem of the break between the architect and the user or community, and the architect's detachment and subjectivity.
- 5- The adapted scale of *Allport - Vernon - Lindzey* for assessing the personality profile could be applied when choosing the jury members of the competitions. It will guaranty the variety of their approaches and attitudes and thus the variety of their choices of the evaluated projects.
- 6- The empirical results may be useful in any research about the Contemporary Theories of Design Epistemology (conjecture) or criticizing the Modernist Systematic Thinking. The present research is a concrete evidence of the designer's intuition during the decision making process.

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