Thinking with Your Eye, Thinking with Your Hand.

The Mystery of Man.

After the conference given by Francisco de Asís Cabrero in the School of Architecture in Seville in 1975, and due to the impression caused amongst the attendees to the work put forward, one of those in attendance asked Mr. Cabrero what was really important in architecture. Cabrero, a man of few words, got up as if to leave and said, "What is important is mystery" (1). Although he did not say it directly, Asís Cabrero was referring to the mystery of the advent of Man.

Two years prior to this, and in an interview by Carmen Castro for the magazine "Arquitectura", in which he was asked what was architecture for him, Asís Cabrero responded: "I see an Art form in Architecture, one of the visual arts, but an art which has a peculiarity, its objective is to eminently seek the beauty of a tool. Fine art in a practical sense. (2)

Although it is true to say that in his texts there is no explanation which clarifies the connection between tool, beauty and emergence of the human species, what we can reconstruct is this relationship from his words, writings and lectures.

Architecture Utilitarian Visual Art.

If there is a term which Asís Cabrero likes when speaking about architecture, it is that of a tool". He uses it above all as a noun, but he also derives it and links it to other words. In this way, speaking of tool, of utensil, of usage, of practical art, of utilitarian visual art, of the aesthetics of the serviceable, etc. Cabrero does not employ the term utilitarian as an adjective, which comes from the Latin "utilis", and which means "that which produces benefit, comfort, benefits or interest". Neither does it deal with pragmatism, which he considers to be to narrow in scope and lacking committed action (3). Cabrero refers to utilitarian as that coming from the French term "outil", synonym of utensil and, according to the RAE (Royal Academy Español), is "tool or instrument of a profession or art".

It is the tool, the facilitating artifact, it is the "supporting object" of Man, as he himself called it, what he refers to when he uses the term utilitarian. The tool is the thing, as Gabriel Ruiz Cabrero says in his article published in number one of "Cuadernos de Proyectos Arquitectónicos (architectural Project Notes). (4)

Asís Cabrero, in different texts, affirms that architecture is an art form because of the optical sense, but basing its principal character, necessary and different, in relation to other visual arts, on the fact that it is appreciated as a tool; because of which he classifies architecture as a practical-visual art. (5)

In 1990, the professor of Architectural Projects Antón Capitel wrote that the work of Asís Cabrero has the condition of an autonomous visual object which is independent from the universal principles of the discipline used to plan and design (6). This relationship between "visual object and management of universal principles" we can identity with the "practical-visual" duality of the architecture described by the author.

With the desire to dig deeper into this *utilitarian-visual* duality, we expound upon the understanding that Asís Cabrero has about the terms tool and beauty, and their relationship to the advent of Man.

The Origin of Man

Asís Cabrero, in his personal search for the essence, explains in the introduction to his "*Cuatro Libros de la Arquitectura"* that tools, together with the visual capacity of Man, are the cause of the apparition of the species.

In the introduction to "*Cuatro Libros",* which begins with the chapter called "Primary Means", Cabrero explains the evolution of the tool and the origin of Man. Cabrero divides this evolutionary step into three sub-chapters called: *Implement*, *Tool and Industry* (3 page 30, Book I). In this chapter, he outlines the evolution of the first implements relating them to the craniums of the hominids that made them: Tuscany Man, Sterkfountein and Homo Neanderthalensis. These abstract drawings, done with lines and patterns, demonstrate how, parallel to the development and sophistication of the first tools, there is a development and increase in volume of the cranial casing of these hominids and, consequently, of their brain and level of consciousness.

After explaining the evolution on Man in relation to the tool, Cabrero demonstrates the conscious development of the species through its visual world in the chapter entitled *Design* (3 pages 84, Book I). Cabrero divides the progress of the conscious hominid through art into three sub-chapters called: *Profile-line-execution, Colour-expression-composition* and *Convention-scheme-sign.*

Cabrero explains how these first "faceless" men, in the search for food, discover the art of distinguishing the print whilst tracking and begin to represent their own inside their shelters, with these acquiring a certain symbolic value. The Homo Sapiens began visual art representing the surroundings they had at hand, this way discovering the necessary laws of likeness so as to be able to symbolize an extensive range of animals. This is when Man discovered drawing as an instrument of the abstract. The line is in itself a tool which permits the elimination of "that which is not important" and creates voluntary thought in these first men (3 page 92 Book I).

Cabrero shows the initial abstract prehistoric paintings and how later, these hominids, in search of beauty, develop a greater expertise in representation of detailed annotation of their drawings. Then, from this, colour, composition and expression appear.

After the Neolithic, Cabrero explains how man, having discovered diverse simplifying methods, begins to represent primitive schemes through the production of sketches that evoke ideas, and not objects or animals. In this way ideography came into being, preceding writing, and consequently and according to Cabrero, human culture.

For Asís Cabrero, man arose through the ability of his hand to fabricate and manipulate tools, and the abstract capacity of his visual world. For that reason, architecture is to be found between image and practice, between the seeing-eye and hand that holds the tool, between beauty and practicality. Not in vain Asís Cabrero writes that; "Man has the natural desire for the possession of the practical and the pleasure of beauty" (page 171 Book IV).

The Structure Human Beings

We discover that the terms beauty and usefulness appear as goals for Man in an explanatory note in *La Memoria de la Oposición a la Cátedra de Análisis de Formas* presented in 1973. The referred to note represents the relationship between

architecture and the different vital states, the components of reason and the deeds and goals of Man.

Asís Cabrero, to explain what architecture is, took from the Treatise of Man, by Saint Thomas Aquinas, the structure of the human being in which one can distinguish **vegetable life,** whose aim is **health**, **simple life**, whose aim is **beauty**, and **intellectual life**, which has the **truth** as its aim. Asís Cabrero adds to Thomas Aquinas by adding to the structure of the human being the **understandable** life **motive**, whose aim is usefulness. This vital state is added as a consequence of the essay reading of Oswald Spengler "Man and Technique" (6), a book from his own library, underlined and with notes in the margins. In relation to the different vital states and their aims, we can find the different **deeds of Man**. This way, usefulness can be attained through **work**, beauty through **art** and truth through **philosophy**.

Cabrero defines this picture of architecture as a work of Man belonging to the visual arts, but intimately related with the vital state of understandable motive. Saint Thomas Aquinas as well as Spengler and Cabrero, work on the structure of the human being already formulated by Aristotle in his work, "On the Soul".

The Vision and Understanding of Man

For Spengler, the history of Man is the history of his technique and this is, at the same time, the element which differentiates the human being from other forms of life. Technique is not a distinctive feature of the human being, it is "the tactic of life" and a fact linked to the mobility of animals, unlike the vegetative life of plants, whose strategies for survival are not conditioned by tactics.

Technique is an act by which moving animals survive, confronting nature. Spengler explains that the technique of the lion exists, whereby it stalks the gazelle, the technique of the brushstroke, technique of the steerable balloon and the technique of invention, to fabricate and use weapons.

Spengler differentiates different levels of animated life. On the inferior level are herbivores, in which they dominate their auditory and olfactory senses, and the situating of their eyes on either side of the head, reveal that their technique is flight. Above herbivores are rapine animals, where the sense of sight dominates over that of smell, and whose technique is attack. Animals whose eyes are forward looking and are directed towards a target, this is the origin of perspective, the control of movement in space, origin in turn, the control of the placing of objects and of distance. "A gaze that dominates the battlefield and is exclusive to the most noble rapine animals" (6 page 25). A gaze by which Man dominates the world and is the cause of his superiority.

While the technique of the animal is determined by the shape of its "active body", the technique of the human species, thanks to the multiple possibilities of the hand and the tools which serve as an extension of it, is conscious, voluntary, variable, personal and inventive. For Spengler, the rise of man was due to adding the eye of the rapine animal which "theoretically" dominates the world, to the human hand, which dominates it "practically". Cabrero picks up on Spengler and writes in his "*Cuatro Libros de la Arquitectura"* that the understanding of the hand and the vision of the eye are the origin of human consciousness. (3 pages. 38, Book I).

The Hand and The Tool

In the introduction to his **"***Cuatro Libros de la Arquitectura",* Asís Cabrero defends the position that it is impossible that the human hand, in the upright position, and the tool

have developed in succession one after the other (3 page 35 Book I). Not only the hand and its upright position arose at the same time, but also the hand and the tool, one without the other does not make any sense. "Not only has the tool been formed around the figure of the hand, but also the hand has been formed around the figure of the tool" (7 page 33).This way we can differentiate between Man and the other rapine animals because Man chooses his tools and prepares them according to a personal reflexion. This fact Spengler called "the liberation against the coercion of the species", which he used to explain how it came to be that Man became independent from the specialisations of his body.

The ability to construct many different tools as an extension of the hand makes Man a species of animal with interchangeable organs. Specialisation is a limitation and Man is capable of selectively specialising his hand with each tool that he makes, matching every specialised animal. Man can mine like a mole, cut down trees like a beaver or grow things like an ant. However, an animal is limited to its habitat by the specialisation of its body, while Man is capable of adapting to a diverse and changing environment.

The construction of tools goes with an estimate of the results of the use of them, this indicates complex mental development. Between Man´s needs and the achievement of the result there is a series of intermediate thoughts, i.e. a plan of action exists that leads to the supposition of the imagination of something that does not exist, inventiveness and experimentation. Asís Cabrero refers to this practical thought when he talks about mobile-voluntary life. Man, to confront nature, to survive, to adapt to different environments, is capable of making an axe or a hoe, work a skin, make a trap or a shelter. As Benjamin Franklin said, Man is a maker of tools. (8 page 21).

Thinking with Your Eye, Thinking with Your Hand.

For Spengler there exits a **"thinking" with the eye**, that which will come ahead of theoretic, contemplative thought, meditation and the wisdom of the monk, the scientist or the philosopher. On the other hand, there exists a **"thinking" with the hand** that comes from practical, active thought, audacity, strictly speaking intelligence, which can be commonly found in the salesperson or a General. So, while the eye enquires about the cause and effect of the facts, the hand works on the means and the end that provoked said facts. Cabrero picks up on this thought that Spengler used as an example for the action of the creation of fire: "One can see- cause and effect- of how fire is made. As many animals can also see, but only Man thinks- means and end- a reason for producing it.

Cabrero splits Spengler´s the thinking eye idea in two: intellectual thought and sensory thought. So, three types of consciousness are established: **mobile-voluntary thought**, which acts over a medium in search of a **useful end**, **sensitive thought** which perceives the effect or the aspect of the search for **beauty**, and **cognitive thought** which enquires into the search for the **truth**.

Although for Cabrero, in every deed in which Man participates, the goals of the different vital states: health, usefulness, beauty and truth; in architecture mainly look for a practical sense and beauty, and not, however, the truth. According to Cabrero, architecture is reached through work and art, and not through philosophy. Architecture is reached through will power and feeling, and not through understanding. Architecture is reached through practice and image, and not through ideas. Architecture is reached through intuition and perception, and not through concepts. Here we have the thoughts of Asís Cabrero, who associates the visual and useful condition of things, both appropriate and necessary for architecture.

The Evolution of the Tool and of Architecture

Cabrero, ends the introduction of his "*Cuatro Libros"* with the chapter entitled *Dwellings.* After explaining the advent of Man through his ability to fabricate tools, and capacity for the abstract as a consequence of his visual world, Cabrero describes three primitive civilisations in different geographical locations: valley, coastal and plateau. He studied the Kisi, agricultural people from the Guinean jungle; the Matautu, fishing folk located on the island of Tikopía; and the shepherd folk of the Sahara.

The environmental characteristics and surroundings of each of these primitive peoples were studied and, as a result, their work systems and social organisation. Cabrero explains that as the primitive dwelling arose based on the tools that could be exploited with alimentary ends. So, in the chapter dedicated to the fishermen of the island of Tikopía, he even drew the technique for tying knots to fishing hooks and other tools with the intension of identifying them with those used for the construction of their primitive dwellings.

For Francisco Cabrero the tools used by each civilisation are different, and these, are what determine the character of each type of architecture. In this case he shares the same opinion as Le Corbusier when he says that ancient civilisations do not exist, only ancient tools, as he affirms in his "Cuatro Libros de la Arquitectura": "Tools evolve throughout history, and their limitations define the limitations of the material employed, which always remains the same in nature, at the same time acquired knowledge by Man, acting as a personal background of consciousness, sensing (9) the tensions of phenomenon which are produced in the material conceived in the corresponding bonding work." (3 page 180 Book I).

Matter, Material and Bonding

For Cabrero, **matter** is converted into **material** by means of the tool, so that it can be **bonded**, in order to be able to construct. If we understand that this bonding is the way in which materials are joined together in a construction, a structure is another way of bonding things, they can just as well be made from bricks, stone or any other type of material. What are Cabrero´s works if not large unions of stone, brick or iron? Stone bonding in the Cruz del Valle de los Caídos, brickwork bonding in the houses of the Virgen del Pilar, concrete bonding in his project Viviendas Gunitadas, steel bonding in Arriba, at his house in Puerta de Hierro and in the Glass Pavilion. Bonding that "explains" putting his bare buildings in perspective, in a way that we can understand the order of usage of the material as happens in the educational drawings in perspective in construction books.

So, Asís Cabrero concludes the first of his "*Cuatro Libros de la Architecture",* with what he refers to as *Vernacular Structure,* which are built according to what can be identified as material reality and visual appearance. In this way the Dome, the Lintel, the Structural Framework, the Laminated Structure and the Removable are defined as structures born out of the rational use of clay, stone, wood, foliage and leather, according to their corresponding idiosyncrasies (10) – malleable, robust, flexible and tensile-. Each material possesses an idiosyncrasy or law, which is the combination of the mechanical capacities linked to its capacity for manufacture. Stone, for example is a hard and robust material, but it can be cut using simple tools in order to obtain prismatic pieces for the construction of bonding.

Cabrero puts so much importance on the material condition of architecture that, although recognising that it is in space, "where there is nothing", Where usefulness is,

architecture begins to exist as such when space is obtained and organised by existing elements. (page 136 Book IV)

Vernacular Structures

Faced with a primitive hut, built with branches and tree trunks and suggested by the abbot Marc-Antonie Laugier in 1753 as the origin of architecture, Asís Cabrero puts forward five vernacular constructions en relation to five materials. The lintel, the dome, the framework, the laminated structure and the removable are Cabrero's cabins made from stone, mud, wood, foliage and leather, respectively. (3 pages 179- 271 Book I)
For Cabrero, the **dome** possesses a determined **formal character** born from the malleable characteristics of **clay**, which permit its easy moulding and forging. Man intuitively knows the capacities of resistance of clay in the working of it and in the observation of the natural structures of eroded clayey hillsides. To prepare this fluid material, Man fabricates tools like the centring frame, the rammer, the trowel, and carry out the dome like forms which are solely held together by the forces of compression that they are capable of withstanding. Cabrero demonstrates the formal character of the mud bonding constructed by the Massai and the dome shaped shelters made in the basin of River Esla from his trip through León and Zamora.

For Cabrero, the **lintel** building triumph destined to save a great opening with the idea of permanence. This construction originates from the capacity to cut stone and wood and the durability of the compact stones, which can be fractured with simple tools into prismatic pieces capable of forming the lintel. Asís gives examples from nature; bridges and natural ceilings which generated in the first Men the desire to permanently cover a space. With examples like Stonehenge and Menga, he explains the commemorative significance that these civilisations had for the invention of the lintel.

From the bonding of **wood** the "**constructivist"** (10) **character** of **structural framework** stands out. Cabrero explains the different use of material according to the types of trees that they come from, focusing on those of slow growth to explain this bonding. He explains the capacity of the material to be sawn and of the suitability of this for the making of joints. For Cabrero, Man intuitively knows these ways of the fabrication of "wooden" frameworks in the observation of the structure of trees. While conifers develop around a vertical "post" from which horizontal cantilevers protrude, in fruit trees the trunk branches off in a "V" shape, reinforcing itself with the shape of an inverted triangle. Illustrating this with the example of the structured framework according to how it is put together and the level of sophistication of the tools used, demonstrating the first fences made in European architecture in the VI Century B.C. And the frameworks of Viking architecture of the IX Century in Trelenborg, Denmark.

Of the **laminated** structures made from **foliage** of leafy plants, Cabrero highlights the strong **spatial character**, due to limited thickness of the layers in relation to the opening obtained. Of this material, he highlights the elasticity of its fibres, its homogeneity and the adaptable character which suits the curve of the wood and personalises these flexed structures. To bind foliage, techniques are used such as slitting open and splitting off which allows the weaving of the wood. These membranes, made with sticks, function by avoiding bending and only working with traction and longitudinal compression. Cabrero illustrates the example of this type of laminated structure with the "Extremenian Hut", nomadic shepherd shelter, the spheroidal dwellings of the Bechive Zulu, the Mudhif Iraki made from giant reeds and the Maipua constructions in Indonesia.

Finally, Cabrero highlights the flexibility and lightness of **leather and weaving** which allows the easy dismantling and moving of completed framework structures. Sheering, cleaning, spinning, rolling up thread, tautening into rope make the transformation of

raw materials into construction materials possible for use in construction. Cabrero demonstrates in his "*Cuatro Libros"* that removable structures like the yurta in Mongolia and the jaima in the Sahar, which he describes as the best structure as far as its mechanics are concerned, where the forces of bending are eliminated thanks to its shape of a catenary.

For Cabrero these structures are the basis of the classic styles, (3 page 127 Book I) which arise from the rational use of the different materials and form bonding where the visual reality of the condition of the material identifies it. (12)

The Ages of Asís´ Architecture

If these vernacular structures are the basis of the classic structures, they are also the basis for the work of Francisco de Asís Cabrero. Architecture is no more than bonding or structures made from certain materials that the industry of that time uses, chosen a priori, and which are organised according to its internal laws. Cabrero looks for the possibilities of the material, the capacity to organise and the capacity to combine with others. This way he creates a hierarchical order in the project, exploiting to the maximum its visual capacity (13). A practice in which a naked architect, without skin to hide his real being, whose appearance manifests his stark physical condition. Architecture where appearance, structure and shape are one and the same.

Francisco de Asís Cabrero, throughout his professional career, has elaborated structural bondings in the materials that the tools in each era can work with. Francisco de Asís Cabrero´s professional career stretched from the 1940s to the 1970s, having different materials at his disposition during these three decades. In the post civil war period, the country was impoverished and isolated from the exterior, opening up during the following decades and consequently widening the availability of materials and the technology associated with them. In this way we can classify Cabrero´s work according to the materials available in each period and not through the argument of stylistic reasons, as has been the case on other occasions.

Of the **Stone Age** of Asís Cabrero, we can speak with reference to the moment when he designed La Cruz del Valle De los Caídos. Cabrero. He drew his first project as an architect with gigantic granite ashlars in 1941. He raised the cross over a pyramidal shaped piece of stonework and on this, raised a monumental bonding of granite ashlar where the cross was constructed with lintels, and where the arms of this rest on a suspension of groin vaults. The joint, which insistently separates each of the units of the bonding, is converted into the mechanism which isolates each of the elements that form the monument. Cabrero achieves a character of permanence and the overcoming of death for his funeral monument which he assigned to the stone construction in his writings.

The Age of Clay is the name we give to the work carried out during the 1940s. The scarcity of steel due to the isolation suffered in post war Spain meant that Cabrero basically built using brick. In 1948 he constructed the Virgen del Pilar dwellings with a system of walls and "Catalan vaulting" with one on top of the other. The structure of the exterior was unadorned, with south facing two storey patios and which are apparently have the appearance of being left open and show supporting brickwork. The walls were built replete with buttresses showing the sides of the piling of the "Catalan vaulting". Inlaid in these, blocks of concrete showed the chains that tauten the system. Cabrero knows the material and studies how it should be bonded, he draws the layers of the brick domes, these join to the walls and the inlaid steel bars in the concrete blocks. All of these elements are visible to the exterior.

Experimenting with the same material, in 1949 Cabrero developed La Feria del Campo, where he always worked in collaboration with the architect Jaime Ruiz, his brother in law. They practiced different solutions to bonding using the same material, developing domes with different lighting, dimensions and geometries. For the access plaza he managed to eliminate the lateral buttresses by creating a bonding with circular layout. In the cow pavilion the system opens out in a fan shape, and supports the domes on arches which rest on one of its side walls on an undulating wall. In this way Cabrero exploited the "formal" character that he gives to ceramic construction in his writings.

With the beginning of the opening up of the country to the exterior and the consequent arrival of iron, Cabrero began his personal **age of concrete**. In the Feria del Campo, Cabrero had already announced the type of work he would develop in the 1950s with reinforced concrete and constructed a watchtower. From the two walls set in the ground are large projections in the style of viewing platforms. From reinforced concrete Cabrero was interested in the material double condition: on the one hand, the formal capacity of a flowing material that sets in a mould, and, on the other hand, the hidden strength of the interior steel which permitted him to make structures which appear to be a real defiance of gravity. So, in 1950, and after visiting Max Bull the previous year, Cabrero designed his "Forma Conmemorativa". This time the strength of the reinforcing allowed him a change in direction of his much recycled reinterpretation.

Cabrero visually made the most of a bonding constructed with a material of stony appearance and whose resistant iron hidden inside permitted the creation of apparently unstable construction. In this way he designed the monument to Calvo Sotelo on the Paseo de la Castellana in 1955. Two triangular wings of victory on a monumental scale which are mysteriously supported on one if its apexes. Years prior to this, Asís Cabrero had already experimented with the possibilities of the construction with reinforced concrete, designing la Basílica de Madrid in 1953 with Rafael Aburto. A system arranged in a series of parabolic reinforced concrete arches whose cross sections deviated directing the great diaphanous space towards the altar. The bell tower resembles its "commemorative shape", but the steel is without the concrete which covers the monument and makes it more slender and lighter, suggesting the use of laminated steel girders.

In 1956 Cabrero built the dwellings in Calle Reyes Magos in Madrid giving the exterior a concrete bonding tangent which, in the sculptures of Bill, the master, was converted into the exterior emblem of the structure. In the Mausoleum Alí Jinnah in Karachi, Asís Cabrero understands that the strength of the dual condition of the bio-component material allowed him to use different bonding in the same work. The possibility of potent reinforcing allows the construction of a massive empty cube in which the tomb of Qaide would be placed. In contrast with the transcendent lintelled cube, domes appear which are less reinforced and more in tune with this terrain.

With the desire to exploit the possibilities of building with reinforced concrete to the maximum, Cabrero built the concrete roof of his first house in Puerta de Hierro, reinforcing it with highly valued iron heating pipes. In 1956 he designed a neighbourhood of dwellings using dome frameworks for a posterior hosing of concrete.

Finally, in the 1970s, with the development of national industry, Cabrero was able to get sheet steel contours for the construction of his buildings, arriving at his "**Steel Age"**. Here he investigated the bonding of this new material, which was painted red, emulating the raw material in its natural state. He finally managed to make his much desired grid into a more abstract and lighter reality! He reinterpreted his repertoire with the newly available material, and constructed sheet steel contours designed years before in La Castellana. El Diario Arriba, 1961, once again took up the frontal position of the Casa Sindical, making the grid lighter and eliminating the base and the cornice. With the availability of the new, light-weight material, he could recreate in La Casa de Campo

the gigantic diaphanous space designed in the Basílica de Madrid and construct the Glass Pavilion. A great space without pillars where one can see the site where the Basílica is but, this time with a lintelled structure.

Cabrero, not being able to cut the first laminated contours that arrived at his house from the Altos Hornos of Bilbao, left them sticking out from the roof of his second Casa en Puerta de Hierro. Like the ingenious bricklayer who bonds brick without cutting them, Cabrero converts these contours into double "C" on the roof of the house in an expression of his bonding of/building with iron. To answer the question that everyone asks about this strange circumstance, Cabrero said to his son Santiago, "Before cutting one of these countours, I´d rather cut off one of my fingers".

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Thinking With Your Eye and Thinking With Your Hand.

Defining architecture as a visual-functional art, Asís Cabrero goes back to the origins of the human species to explain the elements of conscience involved in the work of humankind. Human survival is voluntary, variable personal and inventive in sharp contrast with the instinct of nature´s other species. Humans are intelligent beings whose thinking is determined by their sense of sight, by the ability of their hands to make tools, on top of their predatory nature. This human animal of exchangeable organs is able to specialise himself in the use of the tools he makes to be on equal terms with specialised animals. So does Man make tools to come face to face with a variable and changing nature, be it a knife, an axe or a shelter.

Since architecture is a product of what your eye sees, it is the functional use of your hand that comes into play in architectural drawings. According to Cabrero, matter becomes material through tools, to be bonded, to be built. Tools which have evolved over the course of history as matter always remains the same in nature. Asís Cabrero has researched five primitive architectures related to five original matters. He has studied the dome structure, the lintel, the framework, the laminated structure and the removable structure in connection with the rational use of clay, stone, wood, branches and skin.

The variety of available materials in the professional career of Asís Cabrero, from post-war isolation to the liberalisation of the sixties, allows us to set five ages in the work of Francisco de Asís Cabrero according to the material and the tools he used.

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6. Abstract art and meaning in the architectural work of Francisco Cabrero. Capitel, Antón. 118, Madrid: s.n., 1990, Architects, pages 9-28.
7. Spengler, Oswald. Man and technique and other essays. Buenos Aires: Espasa-Calpe Argentina, 1947.
8. Lewis, John. Simplified Anthropology. Mexico: Selector, 1985.
9. Asís Cabrero uses the verb "know intuitively" to explain how Man understands, without the needing to reason, how to work materials and how they should be bonded. This apprenticeship is served through working directly with the material, through practice. The relationship that Cabrero had with the trades is significant, classifying himself as a skilful carpenter.

10. When referring to the "idiosyncrasies of the material" Cabrero means its capacities of resistance linked to its capacity for being manipulated. These are the qualities of the transformation of material due to certain tools.
11. Asís Cabrero habitually used terms which had a different meaning those commonly used. So, he speaks of "constructivist" architecture to refer to that with a physical condition which is obvious in its appearance.
12. According to Asís Cabrero, in these vernacular structures, "There exists a unity between the practical equations, static and aesthetic, with different materials and its tipológica shape.
13. A condition which has already been explained by Antón Capitel in 1990: "above all the art of his works, their condition as visual objects".

All of the photographs in this article were taken by Francisco Asís Cabrero. Those obtained from other publications for the production of "Four Books of Architecture" are retouched by the author, as is the case of the Massai dwelling in which the image is contrasted to demonstrate its material component.

Photos

1. Asís Cabrero with the Chief of the Tapua Clan, Melanesia.
2. Tuscany Fossil, The Four Books of Architecture.
3. Natural implements, The Four Books of Architecture.
4. Homo Neanderthalensis, The Four Books of Architecture.
5. The first implements, The Four Books of Architecture.
6. Homo Sapiens, The Four Books of Architecture.
7. Two sides of a tool, The Four Books of Architecture.
8. Castillo Cave paintings, The Four Books of Architecture.
9. Silhouette of a horse in the La Pasiega Cave, The Four Books of Architecture.
10. Colour-expression-composition, Altamira, The Four Books of Architecture.
11. Convention-scheme-sign, Cave of the Horses, The Four Books of Architecture.
12. Calligraphic ideograms in the cave of Cogul. The Four Books of Architecture.
13. Explanatory note in *La Memoria de la Oposición a la Cátedra de Análisis de Formas.*
14. Kissi dwelling, Niger, The Four Books of Architecture.
15. Instruments for Maipua fishing, The Four Books of Architecture.
16. Maipua bonding joints, The Four Books of Architecture.
17. Self portrait stonework wall inn the background.
18. Stone, The Four Books of Architecture.
19. Clay, The Four Books of Architecture.

20. Wood, The Four Books of Architecture.
21. Eroded Clayey Hillsides. The Four Books of Architecture.
22. Massai dwellings, The Four Books of Architecture.
23. Natural roofs, The Four Books of Architecture.
24. The Lintel, Stonehenge. The Four Books of Architecture.
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36. Dwellings in Calle Virgen del Pilar, Madrid, 1948.
37. Dwellings in Calle Virgen del Pilar, Madrid, 1948.
38. Floor of the Feria del campo, Madrid, 1949.
39. Entrance plaza to the Feria del Campo, Madrid, 1949.
40. Tower of the Feria del Campo, Madrid, 1949.
41. Commemorative form. 1950.
42. Monument to Calvo Sotelo, Paseo de la Castellana, Madrid. 1955.
43. Basílica de Madrid, 1953.
44. Dwellings in Calle Reyes Magos. Madrid. 1956.
45. Mausoleum Aí Jinnah in Karachi. 1958.
46. Mausoleum Aí Jinnah in Karachi. 1958.
47. Hosed reinforced concrete dome.
48. Diario Arriba, Paseo de la Castillana, Madrid, 1961.
49. Glass pavillion, la Casa del Campo, Madrid, 1964.
50. Beams protruding out of the roof of the Casa de Puerta de Hierro. Madrid, 1961.