

The Infinite Kaleidoscope. Architectural Patterns in the Amazon Rainforest

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1. THE MALOCA

Some of the (Mythical) History: Four Young Men in a Forest Build a Four-Pole House, With a Four Cardinal Points Orientation

Four immortal and obstinate young men persistently visit their grandfather, in search of the secret for building good houses, because the ones they make fall down very soon. Every time they come back, he asks them about the way they are building. They put some palm leaves against the trunk of a tree. Far from giving them the secret, he laughs at them, and then he provides small clues, so that they can keep on trying.

"Good morning, grandfather; are you out there? We came because we need some new palm leaves; the hut we made has just got rotten. But we have finally built a maloca!"¹

"How did you put the posts?"

"We put a big one at the center and twelve more around it."

"No. That's not a maloca. In that hut you will just be able to eat by yourself and live only with your wife and kids, and you won't be able to do the dance.² In the great maloca you can't live that way."³

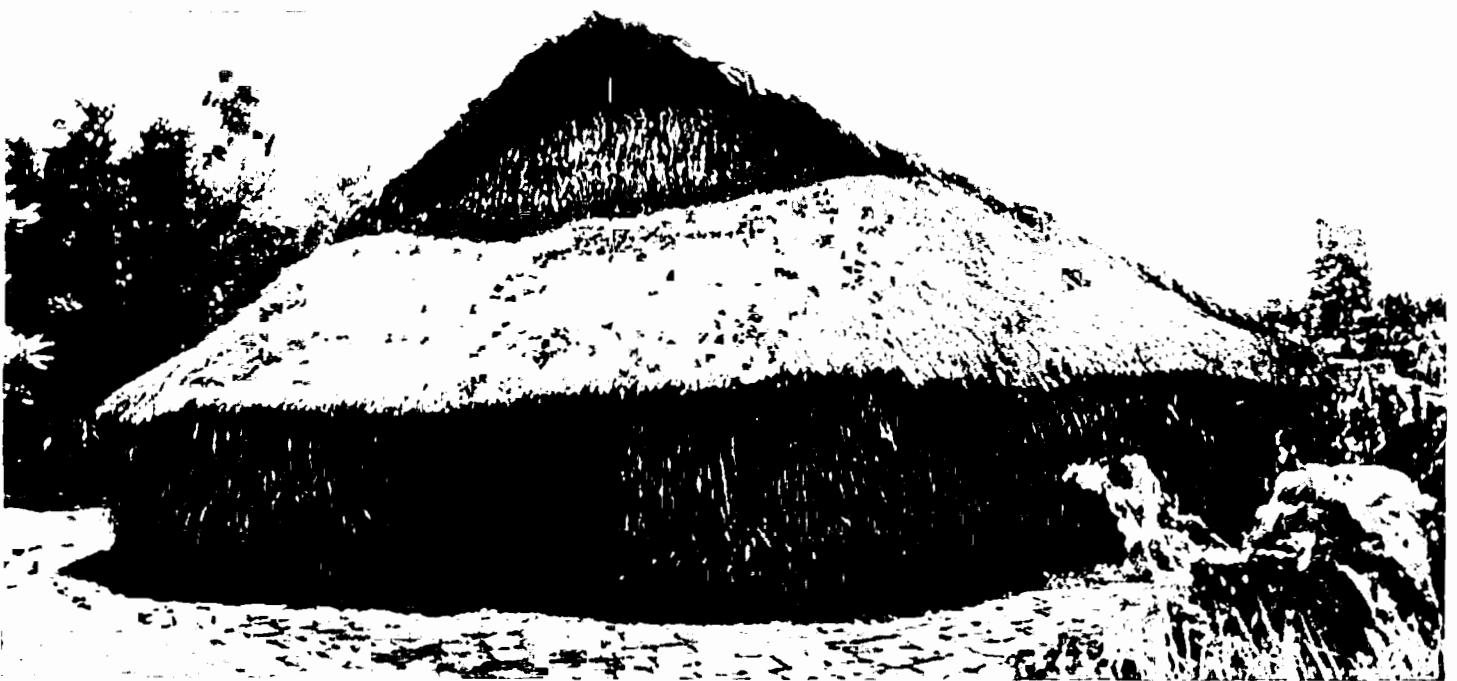


Fig. 1. *Huitoto maloca, Colombia.*

After many attempts, and as every new attempt grew better, the grandfather reveals to the four young men the secret for building the maloca: four posts at the center, at a distance equivalent in proportion to that one between the human chest and the stomach; but, also, some rituals to be observed before starting.

This is the mythical origin of the maloca, the indigenous sacred house of Northern South American rainforests⁴, as it is told by the Ufaina people of Vaupés, in Colombia.⁵ Since its very beginning, when being mythically presented by their builders, a key element that underlies this architecture is introduced: a creative process of trial and error, through adaptation and permanent changing in building solutions in every newly built maloca, by which a kind of infinite kaleidoscope of forms is configured around a basic principle: a central, four-pole structure⁶ as the core of a polar organization, with a space in between the posts that is kept empty. This space is not to be used in daily life, because it is considered a sacred space.⁷

Some of the (Implicit) History: Metaphor of the Stove

How a human group sits for eating involves a symbolism that summarizes the culture of that group. This fact has critical importance in understanding the traditional architecture of Northern South American Rainforests. The reason behind the symbolism of four central poles surrounded by a circular enclosure relates to the historical time the maloca belongs to. It is an interesting time, that of the transition between nomadic and sedentary life, in which the communities of the Amazon rainforest lived until not so long ago, 50 years at most. The maloca is the paradigm of that moment in history, in which human beings start feeling more comfortable with the surrounding environment and stop to eat in a circle, turning their back on their predators.

This historical moment brought with it important consequences in forming the forthcoming culture: democracy, geometry, communication... The circle for food was the triumph of

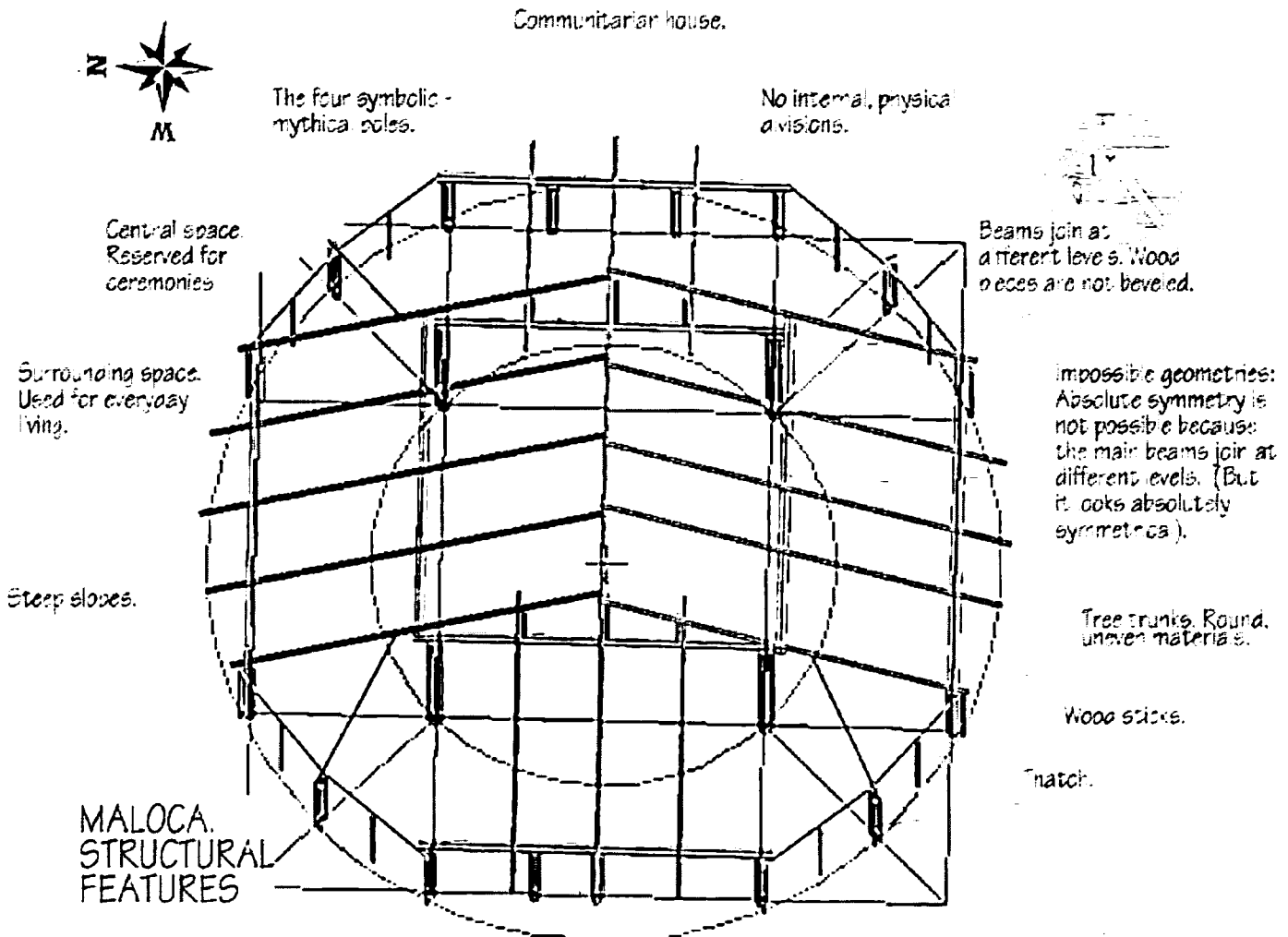


Fig. 2. Maloca. Structural features.

cooperation and community, and it also marked a first moment of identification with nature; the feeling that it could be predicted. It was a turning point in the history of humanity, which was to be celebrated in the great monument, architecture, through the symbolism of the maloca.

The center of the maloca commemorates the place for the fire. The surrounding circular enclosure represents humanity. In the maloca, that surrounding area is the place for people. The center is the place where, in ritualistic sessions, the community makes contact with the spiritual fire of eternal life.

Structure vs. Symbol: Geometry of the Fourth Dimension

In the maloca, the four central posts are just the beginning of an amazing structural system that avoids beveling the wood pieces by placing the joints one on top of the other and not at the same level.

This fact prevents the polar symmetry of the maloca from being possible. However, the maloca appears to be totally symmetric. The fact that the traditional builder uses materials that are not totally symmetrical solves that impossibility. Semi curved sticks of variable diameter leave a margin to be "forced" and obtain forms that are visually perceived as totally even and symmetrical. This curious way to use the imperfection of the material to get the perfection of form has such profound implications in this architecture as to make that, what is perceived as a circular plan maloca with an octagonal roof, when checked by using CAD software results in being an ellipsoidal maloca with a polygonal, 12-side roof. It looks like a building of the past designed by using the geometry of the future, the geometry of the fourth dimension, that allows two different malocas to take place in the same spot, at the same time.

Symbolism: Humanism and Gender in the Maloca

From its very same mythical basis, when the proportions for its structure are determined, the maloca is associated with a human being. Following that logic, a maloca is born, then it reproduces, when its solutions are copied and transformed into new malocas, and finally it dies. There are no repairs to the maloca, more than the basic to make it work during the time it is needed.⁸

The parallel between the maloca and human beings goes even further and regularly makes structural elements play a symbolic role; each of them is related to a part of the body; what is most interesting, the body of a woman, a special woman. The maloca is the mother.⁹

Gender in the architecture of the maloca is manifested in an attribute that sets it as basically different from western architecture. Following the classic paradigm, the western house

reserves the public space for men, and assigns the private space to women. In the maloca, for everybody public space is reserved to the day, private space to the night.¹⁰

In spite of the fact that the value of femininity is so appreciated as to characterize the quintessential building as feminine, social indigenous organization is based on male dominance in the very same way or even more radically than it happens in western culture. The house is, in actuality, more than the mother: it is the mother, but with attributes of the father.

The maloca is consecrated to the equinox, that moment in which mathematical perfection is expressed in nature through the day and night having exactly the same duration. Dedicated to its consummate exactitude, the maloca is the center for science and arts; the cultural life of the community.¹¹ But, as equinox and culture are considered expressions of masculinity in the indigenous vision, the architectural representation of masculine attributes in the Amazon is a woman.

What the architecture of the maloca states is a vision of the world through the integration of opposites, and this involves the symbolism of the maloca at an even deeper level: with an East-West orientation, the entrance of the maloca faces the sunrise and its exit meets the sunset. The maloca responds metaphorically to the sun, and its solar orientation is part of its masculine attribute. But, vice versa, the entrance is also the exit, and that is part of its feminine attribute: the maloca is a reclining woman that everyday gives birth to humanity, which comes into the world through the front door, transcending the supernatural (cultural) dominions of the celestial mother to the material (natural) realm of the forest, outside.

Functional Symbolism

Functionality in the maloca is not an undervalued concept, though. Indigenous culture is functional and the permanent transforming of the maloca testifies to that. It encompasses the searching for an architectural solution that can always work best in relation to the ever-changing circumstances of the rainforest. The maloca itself is a super-functional building, concentrating in only one structure all of the buildings that are necessary for living in a community: house, temple, hospital, dance hall...

Even the most abstract symbolism in the maloca is not at all dispossessed of a functional benefit. The central, sacred space, that one in which healing is achieved, is actually a privileged place in which the possibilities of naturally recovering from a disease are the greatest: it is the tallest, lightest, safest, most ventilated and most comfortable area of the house. The maloca, otherwise, is supposed to be surrounded by a cosmic placenta that protects it from every malignant influence. Protection is physically represented in the form of a circular fence made of

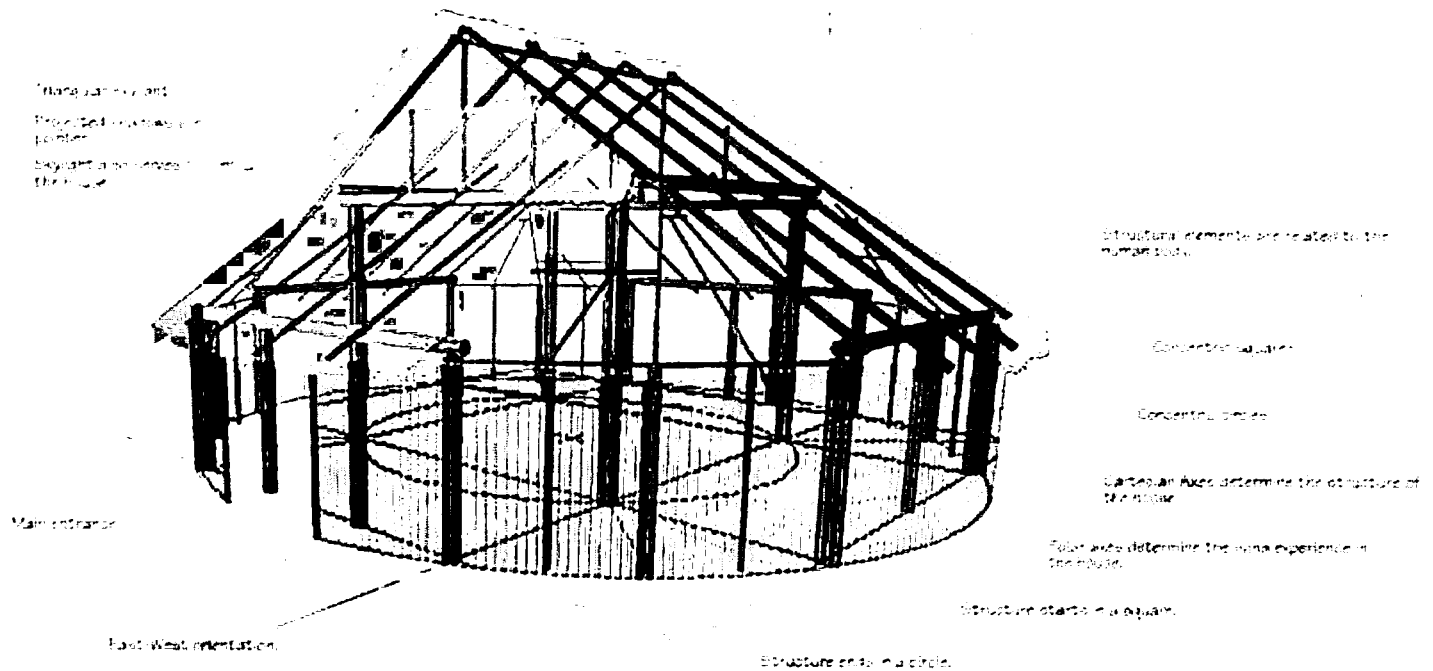


Fig. 3. Maloca. Functional features.

sticks, that encloses the area around the Maloca. This fence actually protects those inside from rodents, snakes or felines.

Technology: The Amazing House That is a Sundial and a Solar Calendar

Certainly the most amazing feature that some malocas exhibit is the fact that, by taking advantage of the shadows projected in the interior, they can work as a solar clock and calendar. These shadows are created by sunlight that enters through a very characteristic triangular skylight, present in the majority of the variations of the maloca. The time of the day is determined by observing how low these shadows have descended onto the two West main columns during the morning, and how high they have ascended onto the two East main columns during the afternoon. The month of the year is established by observing the yearly displacement that these shadows make along the beams that are supported by these columns. The reliability of this timing method is secured by taking care in building the maloca in an exact East-West orientation. This is achieved by installing the main columns during sunset of the equinox, so that they coincide with the last lines of light that evening.

Geometry: Quadrature of a Circle

The geometry of the maloca is generated by two concentric squares, in a 1:1/2 proportion, and two circles, each circum-

scribing the squares. The squares determine the constructive axes and are the basis for the structure of the maloca. The circles embody the symbolic axes and determine the way the maloca must be used.

Cartesian and polar geometries connote the same languages in the Amazon Rainforest as they do in western architecture: cartesian carries the meaning of rationality, as resolving the structure, and polar defines the emotional, symbolic aspects of the maloca. The innovative approach in this case comes from both geometries being intermingled in a single entity, in ways that reinforce the concept of structure-symbol being a whole: in a beautiful counterpoint, structure starts in four poles, but it develops until becoming a circle at the roof level. The square organization is more perceivable at the floor level, where the foundations of the maloca determine the physical areas of occupation. The circular organization becomes more evident at the ceiling, which, when being observed from the ground level, invites the liberation of mind. On the other hand, all the symbolism of the maloca develops the idea of spherical, integrated conception, but it is based on the cartesian organization of the four cardinal points. By observing the maloca, we assist in one of those exceptional occasions in the history of Architecture in which both geometries are not discrepant.

THE INDIGENOUS AMAZONIAN ARCHITECTURE IN TWELVE LINES

- 1.- Typology of theme-and-variation.
- 2.- Semi-nomadic architecture.
- 3.- 100% made of vegetable elements.
- 4.- One community house per settlement.
- 5.- Sacred activities in domestic architecture.
- 6.- Symbols have functional connotations and vice versa.
- 7.- Cartesian and polar geometries are integrated in one entity.
- 8.- Geometrical perfection is obtained through natural imperfection.
- 9.- It is solar architecture with an East-West orientation.
- 10.- The house expresses the duality culture-nature.
- 11.- This is gender architecture: the house is the ancestral mother.
- 12.- This is green architecture: uses ancestral alternative technologies.

Table 1. The indigenous Amazonian architecture in 12 lines.

2. THEME AND VARIATION

From Circle to Square

As for architectural analysis¹², the aspect of the theme and variation is the most notable overall feature of the maloca, not only because of the significance of a traditional typology in which tradition is expressed through a very curious way of permanent re-defining around itself, but because of the crucial interest that this attribute is presently playing for the future of the typology.

The variations on the theme of the maloca are manifested through virtually every possible thing that can be varied in architectural language: form, scale, dimension, proportion, materials, structural solutions, even symbolism. The reason that stimulates these variations relates to the particular environmental variations of the site where every individual house must be built, the particular cultural cadences of the culture that builds it, and, also, certain creative pleasure that is intrinsic to the traditional builder of the Amazon. But what makes this dynamic of variation a subject of architectural interest is the way how, in spite of permanently mutating, the maloca manages to keep a formal unity of type, and because of that, every maloca that appears in the middle of a virtually endless number of versions summarizes the environment, the culture and the building science of the Amazon Rainforest. This is what makes us call the maloca a typology of theme and variation.

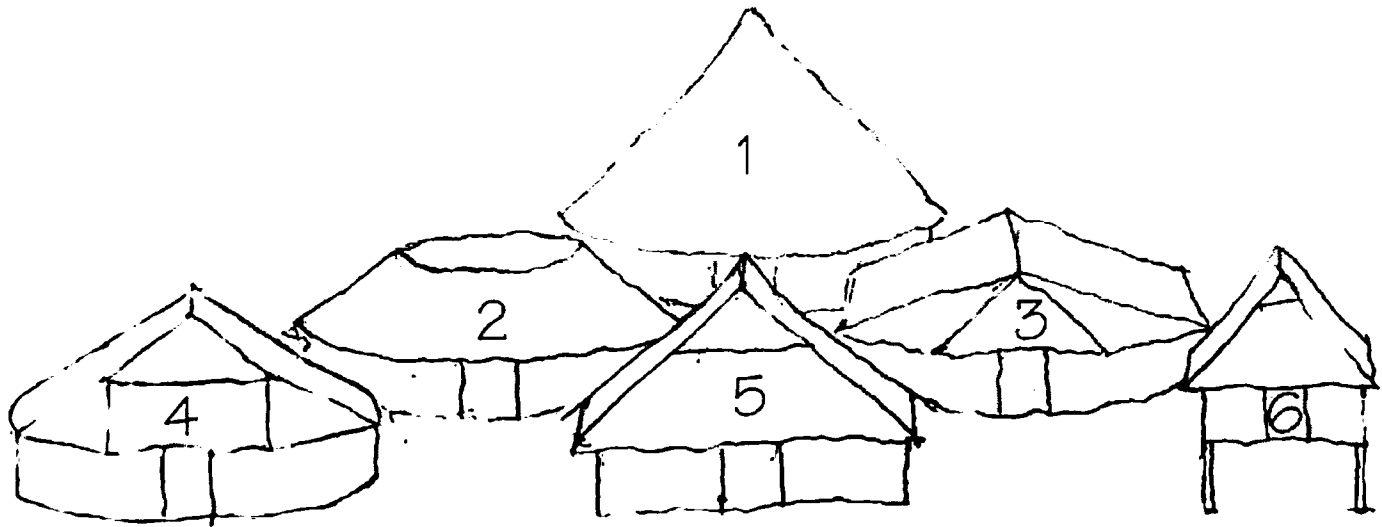
These variations get to be so deep that malocas that coexist or that are geographically very close are totally different entities. A clear example of this is personified by the circular-plan Huitoto Maloca, a common typology in the Putumayo area, and completely distinguishable from the square-plan Huetara Maloca, the common typology just 30 miles South.

3. GETTING POISONED WITH THE OWN MEDICATION

It is very easy to witness the phenomenon of theme and variation in most of the communities of the Amazon Rainforest, even in those that are more in contact with western culture.¹³ Commonly, malocas related with centenary traditions, the classical ones, coexist with more recent versions, which now involve building languages from the western cities.

An illustrative case is Playas del Cuyabeno, in the convergence between the Aguarico and Cuyabeno Rivers in the Ecuadorian Amazon. In no more than two hectares, five different types of maloca can be noticed at a glance. But, along with these, two more housing typologies are also present in the same space: one of them is an archetypal building made of concrete blocks and asbesto cement panels, that is commonly brought to the rainforest by the governments or NGO's as centers for social programs. The other one is the typical construction of the favelas, very poor neighbourhoods from cities like Bogotá, Quito or Caracas, made of galvanized steel roofing and sawn wood, and brought there by people who come by themselves to

MALOCA. VARIATIONS ON A THEME: FROM CIRCLE TO SQUARE.



1. Ufaina Maloca.
East of Colombia.

Circular plan. Steep-slope conical roof.

2. Yanomami Maloca.
South of Venezuela - North of Brazil.
Circular plan. Central space uncovered.

3. Sieco_pai Maloca.
East of Ecuador.
Rectangular with semi octagonal endings.

4. Huitoto Maloca.
South of Colombia.
Octagonal plan. Polygonal roof.

5. Tukano Maloca.
South East of Colombia.
Quadrilateral.

6. Quichua Maloca.
East of Ecuador.
Rectangular plan and upper floor.

Fig. 4. Maloca. Variations on a theme.

try to survive by exploiting the resources of the rainforest. These two types are unsuspected enemies that the maloca faces in its permanent search for changing solutions.

The quick transformations that environment experiences in the Amazon Rainforest demand quick transformations of culture as well, for people to be able to adapt to the new conditions and survive. The Amazonian culture today tends more and more to individualization. As a result of this, the classic maloca is being rapidly abandoned as a community dwelling and recreated as a smaller house that can fit individual, nuclear families.¹¹

The individualized maloca is, however, unable to respond to the logic of expansion/division that a family house needs, because its centralized structure does not easily allow additions or subtractions to it. When in need of expanding the area of his maloca because his family grows, what the indigenous builder presently does is build another small maloca close to the existent, and many more as his family continues demanding

space. The present image of an indigenous house is changing to that of a small urban complex of three or four houses inside the bigger urban organization of the town.

But something unexpected is happening behind this logic of expansions by addition. The new additions are every time more often built by following the example of those precarious houses of the colonists, seductive to the indigenous eyes after having added new functional advantages to the kaleidoscope of architectural solutions of the Amazon: they are cheap, they can be built very fast, internal divisions and extensions are possible, and they provide the indigenous people with the prestige of looking like people from the city.

Sped by the contact with western society, natural/cultural transformations in the Amazon Rainforest have become so extraordinarily fast that in a period of just a few years a place can change completely. This has been proven by the experience of the Sieco_pai, an Ecuadorian community of 300 people who

**DIFFERENCES BETWEEN THE HUITOTO MALOCA AND THE HUETARA MALOCA,
CURRENTLY BUILT IN THE PUTUMAYO BASIN**

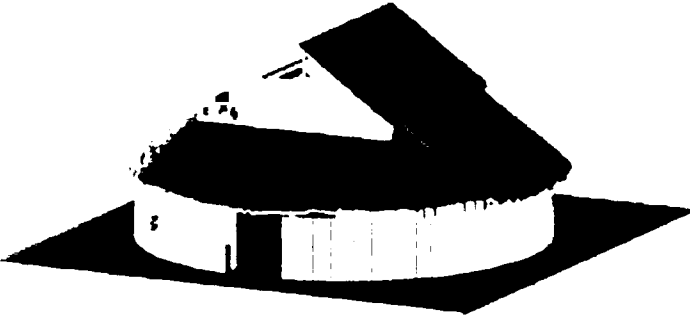
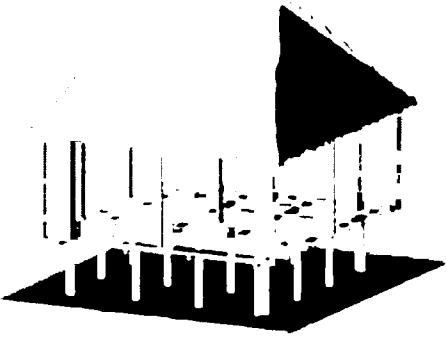
HUITOTO	HUETARA
	
Symbolic	Functional
Communitary; extended family	Individual; nuclear family
Temporary	Permanent
Polar	Cartesian
Cardinal orientation	Urban orientation
Isolated One per community	Integrated Various per community
Floor level on the soil	Floor level at an upper level
Central space is empty	There is a post in the middle of central space
Octagonal / polygonal floor plan	Quadrilateral / rectangular floor plan
Polygonal, complex roof	Quadrilateral, simple roof
There is no interest in preserving the structure	Takes care in preserving the structure
Used materials are barely modified	Materials are sawn and finished

Table 2. Differences between the Huetara and the Huitoto Maloca.



Fig. 5. Huctara and other malocas in Playas, Ecuador.

had their fifteen minutes of fame in 1993 because of the doubtful fortune of oil presence in their territory.¹⁵ Something very curious happened when an agreement to allow a first phase of seismic prospection was reached between indigenous leaders and representatives of the Occidental Petroleum Company: everything the community asked in exchange was related to industrial building materials and elements to facilitate the building process. The most visible of these materials were thirteen hundred corrugated galvanized steel sheets, with which it was just a matter of three years, from 1997 to 2000, for practically all the traditional architecture to have disappeared from the place.

The Amazon Rainforest is no longer that primitive Arcadia in which everybody lives in a peaceful and self-sufficient way. That magnificent landscape is presently the scenario of one of the most complex social situations of all around the planet, and that includes the much-extended internal Colombian conflict. Indigenous communities today are pawns in the power game, battling between oil industry and environmentalism, war and churches, tourism and eco-tourism, traditional science and biotechnology, illegal crops and agriculture, crude reality and snobbery. In a reasonable move to try to secure their own

survival, they take a chance for what they believe can protect them the most. Not always do they choose the best alternative. None of those seems to be the one.

4. RE-ENGINEERING, OR PRESERVATIONISM?

Every maloca is the materialization of the way of life the group that uses it has at a particular moment. So linked it is to the changing life of the communities that it does not make sense to think about preserving it, "freezing" one of its multiple states; the reason why every maloca is changed is clearly that it cannot solve or does not need to solve aspects that it used to.

The Amazon today is a place in which some of the traditional communities have access to the Internet and learn about their old customs by watching the Discovery Channel™. Some of them have been so exposed to contact with western culture that they behave as authentic western people in their daily life. From a western point of view, the central space of the classical maloca is a waste of valuable space¹⁶; the classical maloca, put at the service of present necessities, results in being too dark;

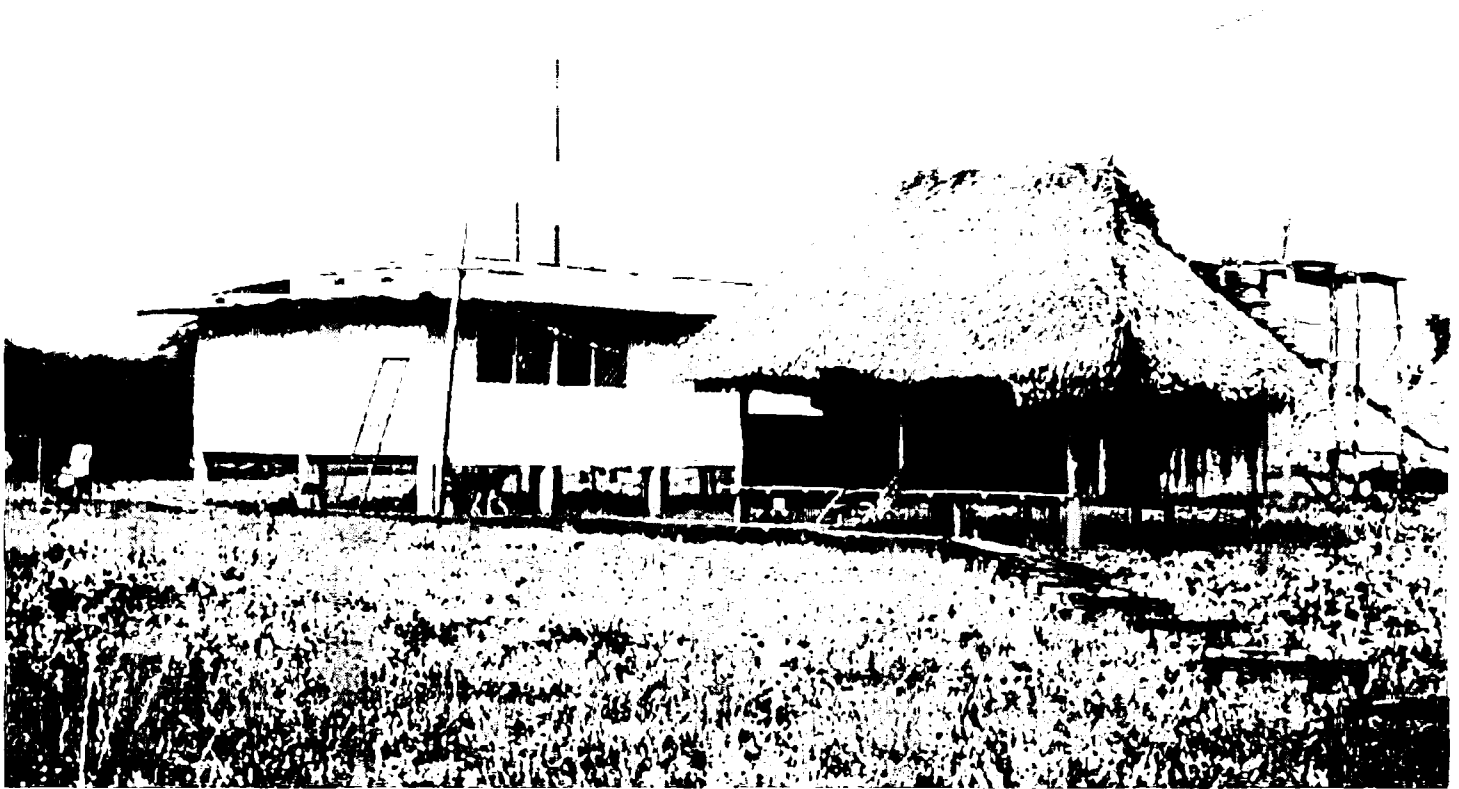


Fig. 6. Maloca. New motifs for a theme.

and today, even in the Amazon, more exact means than a sundial for measuring time are necessary.

In recent years, lights of hope have appeared in the way of vindicating the architectural principles of the classical maloca for improving the life conditions of new indigenous society. International organizations such as the United Nations are starting to look more carefully into the cultural problems that environmentally critical areas such as the Amazon Rainforest are facing. The Monterrey Consensus of March 2002 is one of the most recent declarations in which the governments of the world reaffirm the commitment of enhancing the overall effectiveness of development programs in areas of forests, according to the internationally agreed upon goal of eliminating poverty through systems of social and environmental protection that include sustainable development, gender awareness and ethnical inclusion.

Outlined as a building method that involves education, environmental and social consciousness and a fusion between ancestral and modern technologies, Ethnoengineering was proposed by the Inter-American Development Bank in 2001 as the way of doing State building within the Ecuadorian Amazon Rainforest. If this attempt succeeds, in a near future the image of the public

building in the forest will no longer be the one of concrete and asbesto cement, but something more related to the traditional architecture. The ethno-building program considers that, from now on, communities must be consulted about the cultural pertinence that architectural designs proposed by the State have to observe in their places. The system considers also that, through the consultations, communities can make suggestions and participate in the design and construction process of the new public buildings.

This is a unique opportunity for indigenous communities, to put again on the table the most transcendent values of their traditional architecture, proposing them as an alternative for the present times of crisis. Do they remember those values? Do they appreciate the wonderful possibilities of their traditional alternative technologies, the local materials, their ancestral techniques and their old beliefs as to include them in the new proposed buildings? Now it depends on them to make a critical decision on the destiny of their architecture. This is the moment in which the four young men, now mortal, but still obstinate, again face the decision to go back, or not, to ask the grandfather...

NOTES

- ¹ Maloca is a common name given in Spanish to the indigenous sacred house from the forests in the Great Amazon Basin. Although it is possible that this word originated in one of the many indigenous languages of the zone, perhaps the Arawak, it is related to the old Latin-American Spanish and defines such that negative thing like *maldad*, evil intention. *Maloquear* meant to go to the indigenous settlements, fire their houses and take people as slaves. For some reason, intentional or casual, the word that was used to destroy the house historically ended by defining the house itself.
- ² Refers to the ritual dance meetings. These are secular group sessions that constitute the core of social life in the Amazon Rainforest; a type of group therapy, where, with or without the help of sacred potions, the events of the day are recalled and processed in the collective vision. Cosmological as well as practical explanations emerge from these meetings and are incorporated into the group and individual living experience thereafter.
- ³ In this tale, communitarian life is characterized as one step beyond and more evolved than individual life. That is the reason why a good maloca must be a communitarian house, not an individual one.
- ⁴ When speaking about Amazonian Architecture, I am alluding to the Architecture of the bio-geographical area of the Amazon, which also includes other forests, Vaupés, Orinoco and Putumayo among them.
- ⁵ Referred by Von Hildebrand, Martín. "Notas etnográficas sobre el cosmos Ufaina y su relación con la maloca." *Revista Maguaré* 11-2 (1983): 193.
- ⁶ In some cases, even this basic principle varies. However, other constants remain, in materials, environmental aspects, symbolic relationship with the house, and the variation can still be easily identified as a maloca.
- ⁷ However, there are no separations to avoid circulation, other than the four columns indicating where the limits of a virtual circumference that encloses the sacred space start. One of the most distinctive aspects of this typology in its most classical expression is that, no matter how big they can be – some of them have enough capacity to house several hundred people – the malocas have no internal divisions.
- ⁸ Which is the period of time until the food supplies last in the area, at most 15 years.
- ⁹ The main structure of the house, columns and beams, represents the skeleton of the ancestral mother. Its ties, the veins and nerves of the mother, and the roof thatch, her skin. The floor is the chest and the weaving of wood pieces in the structures of the roofs and walls portray her ribs, much like a popular metaphor that compares the human being to a basket with a heart. A successful outcome in the basket formed by these Maloca parts depends on control, patience, care, self-confidence and other virtues that reflect those of the Maker.
- ¹⁰ Ideally, during the day everybody is outside hunting, fishing, or planting.
- ¹¹ The center of the natural life will be the exterior, which is consecrated to the solstice.
- ¹² The most currently highlighted feature in the existent studies about the maloca is the aspect of the ritual.
- ¹³ The first attempt to change the traditional semi-nomadic hunter – gatherer life of Amazon communities and establish with them permanent settlements came with the arrival of the Spaniards in the mid-16th Century. However, only since the mid-twentieth century towns were a successful enterprise and a common presence in the Amazon Forest. Many of the most important towns of the Upper Ecuadorian Amazon, such as Lago Agrio, were established in the 1960's and 70's, with their development linked to the oil industry.
- ¹⁴ It is not uncommon today to see how, in the process of changing from one communitarian maloca in an separate spot to several individual malocas in an urban organization, the individual houses appear surrounding the old communitarian one, that is only used during catholic or christian religious ceremonies.
- ¹⁵ It did not belong to them. Legislation in the country says that every resource that is found under the ground of private property belongs to the State, not to the owner of the property.
- ¹⁶ It corresponds to approximately 35% of the useful area of construction, in a moment in which the new towns of the Amazon grow in population and the value of space is getting more economical than symbolical.