Pre-Columbian Asceticism: the Tuza-Piartal morphological expectation from its ocarina CRIA-269

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If the production of aerophones by the Tuza-Piartal, inhabitants of Colombia’s southwestern plateau, 1250 and 1500 AD, is found within the morphological expectations of this ocarina, it could be stated that the formal experimentation of its craftsmen met a musical exploration. Morpho-Acoustics, rather than a strictly plastic aesthetic experience, as in Tumaco-La Tolita- [Buitrago, 2010], is intended.

1. Morphologic expectation in Ocarina 269

Iconic consideration exposes several representation levels in human creation [Villafañe, 2006]. These levels are present in a context of extreme figurativism (memesis), in which human beings created images reproducing immediate reality or, conversely, radical abstraction (arbitrary abstraction). Where, if there were a reference, this one had been overcome for the intellectual game of the craftsmen. We found that in this opposition, it could be explained the relations that human has established with images, in an practice of transformation and establishment on their territory.

If Gombrich [2007] and Huyghe [1977] are right, we may say that the aesthetic functions of these artefacts has been gradually reached, almost on the same pace en which pre-historic human settle-down on a territory. Although this kind of relationship with these artefacts was present before, it is the awareness of this concept, what we just recently called aesthetics, that aroused with the gradual transformation human in a sedentary beings.

Music archaeology is a research field looking for answer questions about mankind’s intentionally produced music, on the basis of archaeological finds. Is the design of a sonorous object suggesting its potential function? Does the form of a piece follow an specific organization related to its use as a tool or as an “operation object”? Does the form of a piece reveal specific functionalities that require certain improvement in the description of its form, to which its configuration responded? In spite of the enormous coincidences among the different types of human material production, the generalization of this precept it can be interpreted as conceptual abuse, taking it to the realm of the ethnocentricity. Perhaps this is the reason why Gombrich posited that the entire history of art it is not a history of progress and technical achievements, but a history of new ideas and demands [Gombrich, 2007, 44].

In several cases, the form of the objects elaborated by agriculturally-based communities— or their immediate antecedors, followed the cristalization of the natural references presented in the context in which they inhabited, probably, as scholars posit, with the goal to appropriate their metaphysics attributes by mean of the reproduction of their forms: from thrusters carved in bone with realistic reproductions of a bird through pottery trumpets elaborated by the Tuza-La Tolita II craftsmen, in detail manufacture resembling the shell of the cassidae snail, a frequent specie in the southwestern coast of the Pacific Ocean. In each one of these cases, the manufactured artefacts documented, recorded in their forms and structures, a social sense of taste, referring to Bourdieu [Bourdieu, 2010], and, in strict sense, are evidence of the thoughts and demands ruling societies every moment, everywhere. To understand the universe of images belonging to a society, means to visit their deepth mind pillars, to contemplate the foundations from where their identity is built. [Gruzinsky, 2010].

In this general frame of conceptual strain is exposed, the social relationship between practical function of the artefacts designed by human, classifiable as prestige goods, tools or instruments, and the iconicographic complexity to which they respond, as a copy of a surrounding reference in a collective or individual frame.

If the collection of aerophones in the Tuza-Piartal ceramic production responds to the morphological complexity by the ocarina CRIA—269, it is possible to suggest that this indigenous community reached the concept of musical instrument, and, that the formal experimentation seems to answer specifically for the quest of quite precise acoustic records. Although in other indigenous ceramic collections, as Tumaco-La Tolita II— with an admirable pottery production,– there are reproductions of animals, veg-
etables of human beings, even their respective formal fusions, the creation of “sound” when blowing by their mouthpiece, their design, individually or, as a collection, does not seems to seek for musical structure.

The contour of the ocarina CRIA-269 may suggest the abstraction of a snail-shape. It is a first lecture to the object that, after a glimpse to its external form, can not be denied. Nevertheless, after a more careful observation to its morphologic complexity presented in the quality of the outlines shaping the contour, its external dimensions, the graphic impressed on it, its axially, or even the develop of the resonance body, the first representative impression of natural mimesis vanishes.

2. Contour and symmetry

The general contour of the ocarina presents fortyy arcs delimitating its form. An main observation is that one of these arcs, thats seems to be quite rational – like the one connecting to the right both substructures (cone and sphere) is described by four arcs relatively equivalents in radio (From top to bottom: 49,7: 32,9 y 37,5, fig. 2), as well as for six endogenous arcs5, which configure the inner curvature of the piece (seeming as a belly in the lower part of v1, fig. 4). These elements indicated that it does not exists a geometric precision that in detail describes them as western-related figures or volumes, besides what the object seems to pretend to be a regular formal register of a natural reference.

An important detail to highlight is the change in the direction of the arcs that configurated the perimeter, and that are reveled to the craftsman, once he or she founds the necessity to build the mouthpiece of the ocarina6.

Nevertheless, given the form tendency to configurate itself through endogenous arcs, the change in this behaviour seems to look for the comfort of the performer with the instrument, and the efficiency to produce a desired sound register. This manifest an approachment to form that allows the creation of intentional sound production, as a knowledge consolidated during long periods of morpho-audiositics explorations.

If the aime of the craftsmen were to created a reproduction of a snail shape, the facture of the aerophone would have copied the infinite amount of formal variations of the natural referent, without any concern about delimiting the number of segments in the configuration of the contours. In this case, design intention leading to more straight lines suggests certain asceticism. Furthermore, this is the evidence of intentional sound production. If in any moment the initial idea was to reproduce a natural setting, it is clear that finally it becomes an abstract representation of the form with other functional goals [Buitrago et ál., 2009].

Furthermore, the exercises of symmetry applied on the perspective of a formal unit, reveal the presence of three-dimensional substructures within the ocarina morphology.

In this sense, it is necessary to observe the three-dimensional domain suggested by the specular symmetry [fig. 3, B and C]. This do not only reveals a symmetric precision in the form of the piece, but also a clear intentionality behind it. In addition to the evident difference related to the form of the mouth piece, due to relative “phase displacement”, related to the deformation the lateral-down of the shape in v1 (silueta V1, fig. 4), these two shapes do not result been the same. It is uncertain if this dif-

5 Responding to different radial and cords.
6 Reading, in a clock-wise lecture of the perimeter, for the more “straight” segments perceived from the half part to the bottom in the left side view (fig. 1), before the beginning of the lower curve of the piece.
ference is attributable or not to a mistake in the transformation process. What it is true is that the indicated deformation is found over the supporting side of the artefact, without necessary been this one the pursued function [It is not easy to balanced position of the piece over a flat surface].

This specimen presents specular symmetry as a whole but also from different angles, (fig. 3). If every substructure is studied independently (sphere and cone), each one would reflect its own axis, from every point of view. These are patterns from where the form of this globular flutes emerges.

![Figure 4](image4.png)

**Figure 4.** CRIA 269. Comparison of the symmetry top view (silueta v2) and side view (silueta v1) (graphic by Juan Camilo Buitrago)

3. **Volumetric issues: axially and aural proportion**

The ocarina 269 characterizes by its morphological complexity and asceticism. The perimeter of the globular flute contains two main substructures. The top view (fig. 3, A) reveals two axis and the two volumes covered by them. On a reductionist view, the upper part resembles a cone, while the lower part approaches the form of the sphere. In resume, it is a co-axial structure.

In the general proportion of the perimeter it is observed that the contour of the front view (fig. 5) could be inscribed in a perfect square, since the minor of its dimensions [height] multiplied by 1, 12 is its width. Finally, when this last dimension (10 1/8x, fig. 6, A) is compared to the length of the contour (16 2/3x) the resultant pattern is its division by 1,613; a number approximated enough to the golden ratio (1,618).

![Figure 5](image5.png)

**Figure 5.** CRIA 269. Front view (graphic by Juan Camilo Buitrago)

This proportional relation is not only present there. Among several cases, in the left side view of the piece (fig. 5) it is manifested a 1,5 relation between what we could understand as the trajectory by the truncated cone (10 01. fig. 6), and the vertical distance of the half of the sphere [6 2/3x8].

![Figure 6](image6.png)

**Figure 6.** CRIA 269. General proportions (graphic by Juan Camilo Buitrago)

When observing the horizontal distance of the point that we suspect begins the transformation of one substructure in another [square on C, fig. 6], it is observed that this one is found related to the width of the overall perimeter by means of proportion 3.3 (10 x divided by 3 1/3x). This quantity is not just the doble of the proportional ratio between the width and the lenght of the object, but also the golden number (1, 618).

There are also proportional ratios in the design of the inner cavity of the object, which presents inside the two main substructures [sphere and cone], a sound box and a spiral with five revolutions.

The spiral segment has an ovoid shape and its trajectory turns
around a central axis. Because of this, it is perceived as a "column" passing by the center of the cone substructure in the ocarina. This is an spiral that draws in three-dimensions a structure similar to a truncated cone shape, since the base that intersects with the sound box (the spiral bottom) it is almost the double of the first revolution on the top. The spiral pattern of growth is regular (1,2 average), as the constant thickness of the body, which is almost 2 (fig. 7).

Conversely, the sphere is a transformation of the regular rhythm by the spiral, but also a modification of its spherical three-dimensional structure, since the inner design of the sphere is a hollow following a particular formal order, and that is difficult to understand it by means of an specific geometrical tendency. A look to the cavity as a unit (spiral-spherical form, fig. 8) reveals how it is located (vertical distance) from the top edge of the piece. In the same way, the distance to the bottom edge (1_3/4 left side and 1_2/3 right side, fig. 8). In the same way, it is appreciated the location in width, 1_1/2 from the left tangent of the cavity to the edge of the piece, and 1x from the right tangent to the respective edge. These four measurements correspond to the horizontal and vertical dimensions of the inner cavity of the ocarina (Top view, fig. 8, right side). They indicated a relative intention for keep the position of the hollow cavity of the object in an equidistance position to external surface of the ocarina. In other words, the exterior form of the artefact function as a case for the inner cavity, where it is succeed the mechanical production of sound.

Given the complexity of this cavity (exposed in some part), and the tide relationship between the formal tendencies of the piece and the resulting sound compass, it is worthwhile to points out that the external shape of the piece respond to a necessity to afford an accurate space for this internal acoustic mechanism, instead of pretend a pure plastic expression.

4. Ascetism in CRIA 269: ¿Tuza Ascetism?

The ocarina CRIA 269 is a globular flute that produces four fundamental tones (Buitrago et ál., 2009b). This flute has in the quasi-spheric substructure two holes. There is one in the top side and it functions as a mouth hole. The other is located opposed to the former in the bottom of the piece. This is a finger hole. In the cone substructure of the piece, and connected to the inner spiral, there are two minor finger holes (fig. 1). There is also a vent hole located in the left side of the sphere. This is an auxiliary hole often provided in wind instruments to tune a note or adjust the bell note.

This organological characteristic is evidence of the formal complexity in the conception of the sound box and the skilled hands who made it. It also highlights the morphologic independence of this acoustic structure with the external surface of the piece: a constant principle present in several ocarinas of the Tuza ceramic production.

Upon inspection of several characteristics in the facture of these ocarinas and the connections between them, it is uncertain to talk about manufacture aleatory results. There is a quality in the contours of the form, great symmetric coincidences in the ratio of the volumes, a frequency in which the pattern of proportions repeated in the entire configuration of the object, and there is also the intended transformation of a three-dimensional structure by another one that is only rule by very precise symmetric parameters. Overall, these aspects addressed a complex proportional tendency in the whole piece.

It is certain that the golden relation were not a conscious hability of the craftsman to work the clay in a numeric intended disposition, but nevertheless, this sonorous object approaches its aur-real proportions in its dimensions, in such a way that notions of formal balance and formal abstraction are already in the core of the aesthetics expectatives by the community of craftsmen that materialized this piece.

These observations on the globular flute, ocarina 269, suggest that formal experimentation in the Tuza craftsmen was probably directed towards the production of sound. They probably create this ocarina collection intending to explore morpho-acoustic experiences, beyond the formal imitation of the surrounding setting. They were actually creating musical instruments and
improving their concepts and techniques about these processes of creating sounds on clay.

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References


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