



## HISTORICAL EXHIBITION

### *“PALPABILIS”*

**THEME:** The time line and its impact on life, as well as how today we can touch unimaginable things.

**BY:** TOMÁS AUGUSTO ROMERO ZÚÑIGA



Panamanian artisan with more than 16 years of experience in the transformation of materials such as thread, metal, leather, semiprecious stones and fossils. He has presented his work throughout Panama and Central America. In October 2016 his pieces were selected for the collaborative project "Mas allá de lo tangible" (Beyond the tangible), conformed by three artists in the cultural house of Spain: La Casa del Soldado. The international aid organization TECHO auctioned one of his works for the project "Juntos en Esto" in 2017. It was through the multicultural contact with other artisans in the aforementioned places that has allowed him to obtain much of the raw material used for the creation of the works presented today. At the same time, this contact helped him to develop a peculiar taste for fossils and stones related to the history of the earth and its different civilizations.

#### **General Objectives:**

- To present selected pieces of historical value obtained from different regions and periods of the earth`s history.
- To show each of the works in a chronological timeline to help the viewer understand at what time in earth's history these were on earth.



## INTRODUCTION

The work of a craftsman dates back to the time when nomadic peoples had among their members a maker and repairer of multiple utensils as part of their daily life. The artistic community where I have developed, travels worldwide; routes such as Argentina-Mexico, Alaska-Chile, Mexico-India and others, making the protagonists of this lifestyle have influences from many cultures, which makes us more sensitive to the conditions of life, impacting directly on our art.

In context, it is about supporting with scientific documentation according to the origin, each piece and its history. Already complemented with the artistic part and concepts (themes), that the artist wants to give it according to his feeling at the time of its elaboration and transformation.

Indirectly, we also seek to encourage the enhancement of unconventional crafts that are also part of the varied multicultural range of Panamanian handicrafts. The mixture of techniques used in these works are existing concepts that mixed in some different way create something fresh to the eye of the beholder. In this case we will see works elaborated in macramé, filigree and leather, hung on a frame (without glass), from which the work can be dismantled to be used whenever the owner wishes.



## 1. Nombre de la Obra: Heteraster

### Erizo de Mar *Heteraster oblongus* tejido con Unakita

Sea Urchin, *Heteraster oblongus*, according to historical data comes from the Lower Cretaceous. It ranges from 145 to 100 million years old. From the phylum: Echinodermata, class: Echinoidea, subclass: Euechinoidea, suborder: Atelostomata, order: Spatangoida, suborder: Toxasterina, family: Toxasteridae (website described in the references).

Among its morphological characteristics are that it is very similar to the genus *Toxaster*<sup>1</sup>. It is an exocyclic echinoid<sup>2</sup>, slightly oval and heart-shaped, that means that it has a truncated posterior face and a depressed frontal face, it has a biserial apical system<sup>3</sup>. The petaloid<sup>4</sup> type ambulacral system is open, the frontal ambulacrum is semi-petaloid, (the ambulacrum in front of the madreporite<sup>5</sup>, clockwise in motion, other parts are coded, it is called the bivium<sup>6</sup> while all the others are collectively called the trivium<sup>7</sup>). Formed by a regular alternation between rounded pores, in the form of short and long grooves, the ambulacra forming the trivium being considerably longer than those forming the bivium. Its mouth is in anterior (lower) position and anus in supramarginal position. Lack of periambulacral fasciola.

It is an exclusive genus of the Lower Cretaceous, which extended from the Barremian to the Albian. It is a widespread genus in the Iberian Cordillera and the Pre-Pyrenees. The fossil used for the work was obtained in Europe, which reaffirms the information described above.

## 2. Nombre de la Obra: Florquesa.

### Turquesa, en diseño floral.

Turquoise or calaite is a mineral of class 8 (phosphates), according to the Strunz classification, with a bluish-green color. It is a phosphate of aluminum and copper. Its formula is:  $\text{CuAl}_6(\text{PO}_4)_4(\text{OH})_8 \cdot 4\text{H}_2\text{O}$ . It is a relatively rare mineral, and, when compact and of good quality, it has been highly prized as a precious and ornamental stone for thousands of years because of its unique color.

The word "turquoise" derives from the French *pierre turquoise*, meaning "Turkish stone". It is thought that this arises from a confusion, since there are no turquoise deposits in Turkey, but they were traded there, and so the gem was associated with that country.

## 3. Nombre de la Obra: Bicam.

**Ammonite en bruto con diseño en Alpaca y bronce, cadena en punto peruano.**



#### 4. Nombre de la Obra: Radiant.

**Ammonite pulido tejido en colores naranja y amarillo.**

#### 5. Nombre de la Obra: Renacer.

**Ammonite en bruto revestida en resina, con granate rojo y tentáculos de alpaca y bronce.**

The Ammonites, existed from 400 to 65 million years ago, in the Lower Devonian and extended population in the Early Jurassic; space in time that is represented as JURASSIC PERIOD. It was characterized by being found in Alpine domains. Among its relatives are squids and octopuses; similar to what we know today as Nautilus. Even so, we know that they are distant relatives. It moved in the oceans thanks to air chambers that it kept in its shell (jet propulsion). The shell is divided into two parts: the "fragmocone", where the gases that control the buoyancy of the animal are stored; and the "inner chamber" that housed its body or soft parts. Their diet included small fish and crustaceans; however, there are X-ray studies that have yielded results on the consumption of plankton. Ammonites became such an abundant and diverse part of the marine fauna that they are used by paleontologists as index fossils to determine the relative age of Mesozoic marine rocks. In addition, deposits are known in America, in Colombia.

"Subsequently, Karsten goes on to Colombia and reaches the north of Ecuador. Based on the recognition of the rocks and in some cases with the fossil content, Karsten elaborated the first geological map of Venezuela, Colombia and northern Ecuador (Karsten, 1858, 1886, 1947; Aalto, 2015) including Panama, which at that time was part of Colombia".

"This taxon, *Paralenticeras leonhardianus* (Karsten, 1858) comes from Barbacoas (Morán municipality, Lara state - Venezuela)."

Its name, among so many curiosities, was given in honor of Ammon, "If you notice, the shape of the fossil ammonites is reminiscent of the horns of a ram. This resemblance is what led Pliny the Elder, a Latin naturalist of 2,000 years ago, to call these fossils "ammonis cornus" (horns of Ammon), referring to the god "god Ammon", nickname of the Roman god Jupiter, who was represented with the head of a man and horns of a goat". Apart from America, it was found in the areas of the Sea of Thetis, what is known today as the Mediterranean Sea.



## 6. Nombre de la Obra: Helicoidal.

### Geoda de Ágata en alpaca y cadena en punto peruano.

A geode (/ˈdʒiː.ɒd/; from Ancient Greek γεώδης (*geóðēs*) 'earthlike') is a geological secondary formation within sedimentary and volcanic rocks. Geodes are hollow, vaguely spherical rocks, in which masses of mineral matter (which may include crystals) are secluded. The crystals are formed by the filling of vesicles in volcanic and subvolcanic rocks by minerals deposited from hydrothermal fluids; or by the dissolution of syn-genetic concretions and partial filling by the same or other minerals precipitated from water, groundwater, or hydrothermal fluids.

Agate is a variety of chalcedony. It belongs to the trigonal crystallization system, is of volcanic origin and owes its color to the multiple inclusions that have been deposited during its growth.

Once polished a section of agate, we can appreciate its growth by the different circumcentric lines that we find, which are the different layers of inclusions and that give it different colors. The agate balls can be hollow inside, and quartz or amethyst can be crystallized in the central part.

## 7. Obra: Vida *post mortem*.

### Diente de *Prognathodon* tejido en blanco con piedra de citrino.

## 8. Nombre de la Obra: Convenientemente roto.

### Diente de *Mosasaurus* segmentado y trabajado en alpaca.

Mosasaurus, animals of such great size that not even my imagination allows me to see myself in peaceful coexistence with them. Of this extremely imposing being, *Prognathodon*<sup>9</sup>, *Mosasaurus*, *Plotosaurus*<sup>10</sup>, *Tylosaurus*<sup>11</sup> are known. For our work we have half a tooth of *Prognathodon* and a whole specimen of *Mosasaurus*.

Mosasaurus were the most successful marine reptiles of the last 25 million years, appearing in the Cenomanian 83.6 million years ago (Polcyn et al., 1999) and disappearing at the end of the Maastrichtian that spanned from 72.1 million years ago (Rusell, 1967), in the biological crisis of K-Pg<sup>12</sup> (event 66 million years ago) *Haasiasaurus gittelmani* (Polcyn et al., 1999) is the oldest known mosasaur to date. Its remains were found in the Lower Cenomanian from a site in Israel. During the Turonian they diversified rapidly, inhabiting niches vacated by other marine reptiles



such as ichthyosaurs<sup>13</sup>. At the end of the Cretaceous they reached a worldwide distribution. Their remains are present on all continents, including Antarctica (Ellis, 2003; Everhart, 2001, 2005). They probably originated in Africa and, 100 million years ago, expanded their distribution to Europe and North America, coinciding with an eustatic rise<sup>14</sup> (Ellis, 2003). In the Mediterranean Tethys (Tethys) the remains that appear in the early stages of diversification of mosasaurs were found in the Cenomanian<sup>15</sup> of France and the Turonian<sup>16</sup> of Morocco (Bardet et al., 2003). However, mosasaur fossils found in the Iberian Peninsula are very scarce, having appeared only in the Upper Cretaceous (Campanian-Maastrichtian) of the Lusitanian Basin, the Basque-Cantabrian Region and in the Valencian Community (see Bardet et al., 2008, 2013). This paper will summarize the findings to date concerning mosasaurs in the Iberian Peninsula.

#### **9. Nombre de Obra: Chavín.**

**Ópalo Andino trabajado sobre alpaca y cadena con detalles verdes tejidos.**

Opal is a mineraloid of group IX (silicates, tectosilicates). It has a composition similar to that of quartz from which it differs because it has water molecules in its interior. Its chemical formula is  $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ . It is very often found filling cavities in sedimentary rocks. There are numerous varieties of opal that have different appearances.

#### **10. Nombre de la Obra: Terror cosido.**

**Diente fósil de *Carcharodon carcharias* (tiburón blanco) con detalles en cuero y cadena en alpaca.**

#### **11. Nombre de la Obra: Carenero.**

**Diente fósil de *Carcharodon carcharias* con detalles en coral negro y cadena en punto peruano.**

#### **12. Nombre de la Obra: Brillo ancestral.**

**Cristal de ametrina con detalles en filigrana sobre Diente fósil de *Carcharodon carcharias*.**

Great white shark: *Carcharodon carcharias* is the modern white shark that is linked to the great *Carcharodon megalodon*, through its ancestor, the *Otodus obliquus*, which is what many paleontologists claim. The curious thing is that this *Otodus* was



only about 10 centimeters long. They were around since the Miocene, however, in the Pliocene is when their numbers increased, it is said, as for the *Carcharodon carcharias* that it was due to the decline of the great megalodon. The predecessor of the white shark is *Palaeocarcharodon orientalis*, which lived around 61.7 to 55.8 million years ago, during the Paleocene<sup>17</sup>. And it is one of those that we will use for the creation of the works.

### **13.Nombre de la Obra: Descubro.**

#### **Cristal de *Quantum Quattro* con detalles en tejidos verdes.**

Quantum four is the trade name of a mineral that is a combination of shattuckite, diopside, malachite and chrysocolla on smoky quartz. Its appearance is a mostly opaque mixture of blue, green, turquoise, white and gray colors.

### **14.Nombre de la Obra: Corte Mesoamericano.**

#### **Obsidiana punta de flecha y diseño de lanza con detalles en alpaca.**

### **15.Nombre de la Obra: Balance Desigual.**

#### **Obsidiana punta de flecha con detalles tejidos y diseño asimétrico. Cadena en punto peruano.**

Obsidian in the form of Arrowheads: the cult that was rendered to them is found in other regions of Mesoamerica, such as in central Mexico or in the highlands of Guatemala, where several divinities appear with attributes identified with obsidian. They are pieces of lava, rich in SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>, come out of the earth to the surface with temperatures between 600-800 degrees Celsius and with high viscosity. It has been used by multiple peoples in America, but it is known that there are dated finds in Africa. Its conchoidal fracture allows it to obtain sharpness and this gave it a place among weapons, long before steel. It is said that its name is due to Obsius, according to Pliny the Elder (1st century A.D.), this rock was also found in Ethiopia (from Latin *obsianus petra*, "stone of Obsius", name of the person who supposedly discovered it in Ethiopia (1601), the cultured word was created during the 17th century to qualify vitrified lavas (Webster's Ninth New Collegiate Dictionary, 1989; Oxford Latin Dictionary, 1982). In Mexico it has been used as a razor by barbers since 1803. Obsidian, linked to the earth, is associated with volcanism and mountains. For the peoples mentioned, volcanoes and mountains were sacred places where important cults were performed (Torquemada 1976; Sahagún 1981; López Austin 1973: 62-65; León-Portilla 1995: 296-297).



## 16. Nombre de la Obra: Glifo Mayan.

### **Jade guatemalteco en perfil Maya y trabajo en alpaca alusivo al Dios Kulkán.**

Mayas: Hunab Ku, the main God, (jun: one; Ab: diversity; Ku: divine harmony), Unity in diversity with harmony. Unique and true creator of the world and of all things. He has no figurative representation, but is present in everything. In a territorial extension of almost half a million square kilometers (km<sup>2</sup>), covering Mexico, Guatemala, Honduras, El Salvador and Belize, the Mayas created one of the greatest civilizations in history.

Among their great feats, they stated that the earth revolves around the sun in 365.2420 days; today the Greenwich year is 365.2422. They predicted solar and lunar eclipses, discovered the equinoxes and solstices, also recorded the synchronization of the cycles of different planets, calculated the year of the planet Venus (584 days), use of the mathematical concept "zero". It is also worth mentioning that the term Maya would derive from Mayab, name that designated the Yucatan Peninsula. For the Quiché Maya, maya means "big". Ab can be interpreted as net, that is to say "Great Net".

For the Maya the epochs were divided as follows: Preclassic (1300 B.C. to 300 A.D.); period of the first settlements. There was not so much evolutionary development as a community, however, pottery and agriculture were among its main activities. Classic (300 B.C. to 900 B.C.); called the time of prosperity. Mainly due to astronomy and ceremonial buildings. Hieroglyphic writing and time calculations. Later findings showed that this period began 500 years earlier.

Postclassic (from 900 B.C. until the arrival of the Spaniards); the disintegration of the culture as such begins. This period is subdivided into three sections: early postclassic goes from 900-1200 B.C. and this period was crucial for the Toltecs<sup>18</sup>, they were the ones that predominated. The middle period was from 1200 B.C.-1450 A.D., here the predominance of Mayapán<sup>19</sup> stands out. And, finally, the late period that goes from 1450 to the end, in short, the arrival of the Spaniards and the conquest.

## 17. Nombre de la Obra: Amazoelefas.

**Representación *Megasoma elephas* (escarabajo elefante) con cristal de amazonita sobre alpaca y bronce.**





### **Amazonite and Elephant beetle (*Megasoma elephas*):**

It has a length of between seven and twelve centimeters, with the male being two to three times larger than the female. It lives in the rainforests of Mexico, Central and South America, where the adult feeds on fallen fruit. Two subspecies are recognized. This beetle has been the subject of a curious research project sponsored by the U.S. Pentagon: specialists from the University of Berkeley inserted electrodes in the "pupa" of this beetle, in order to "teledirect" the flight of the adults.

Amazonite, on the other hand, is a mineral of the feldspar family. This stone seduces by its particular color, which is subject to several hypotheses. It comes in several variations ranging from green to blue-green. Depending on the degree of crystallization, amazonite has a vitreous or pearly luster. It is not uncommon to find white albite veins in the amazonite crystal. Belonging to the triclinic crystalline system, amazonite has a hardness ranging from 6 to 6.5 on the Mohs scale.

The amazonite is linked to several chakras. With the throat chakra, amazonite promotes verbal and emotional communication. Linked to the heart chakra, it brings harmony and positive feelings that promote happiness.

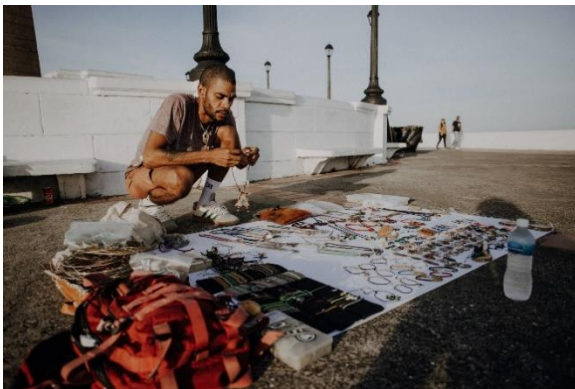
The etymology of the term amazonite comes from the great Amazon River in Brazil. But it seems that this name is the result of a misunderstanding, because this type of stone does not exist in the river in question, but would have been confused with a similar stone. Some attribute the name of the stone to the legendary warriors of Greek mythology, the Amazons. The latter thesis suggests that amazonite was known from antiquity. Amazonite is mentioned in Babylonian, Egyptian, Greek and even Navajo legends of North America. The stone was often used as jewelry or ornamental object.



## **ACKNOWLEDGMENTS**

**Being this document written before the event, I can beforehand let you know how grateful I am to the people who believe in this visual, artistic, didactic and functional project, believing faithfully as Schopenhauer mentions that art is to some extent that escape from our tangible realities.**

**Since it is not only something that we can see filling spaces in places, without offending other artists, but it can also be used as a piece of clothing with a priceless story that somehow will always draw attention to the places where it arrives...let's look for more, let's go for more, always! For more art in the streets, with love...Tomás.**



**Photo by Anne Pfund.**



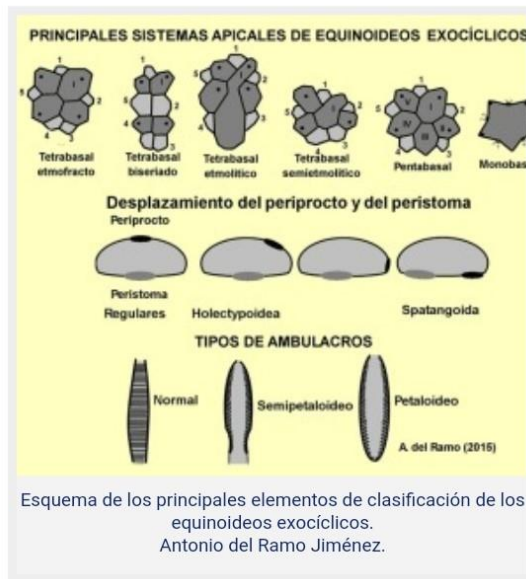
## GLOSSARY

**Toxasteridae**<sup>1</sup>: An extinct family of sea urchins.

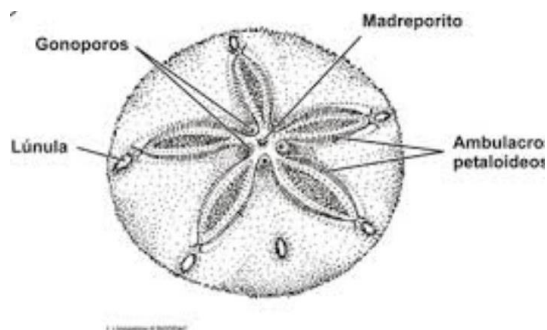
**Exocyclic**<sup>2</sup>: located outside the annulus. Another definition of exocyclic is having the anus located outside the apical disc.

**Biseriate**<sup>3</sup>: arranged in two whorls, cycles, rows, or series

**Petaloideo**<sup>4</sup>:



**Madreporite**<sup>5</sup>:



**Bivium**<sup>6</sup>: a part of an echinoderm, made up of a pair of ambulacra

**Trivium**<sup>7</sup>: definida en el texto anterior.



Nautilus<sup>8</sup>: Nautiloids are a group of cephalopods (such as ammonites, octopuses, cuttlefish, and squid) with outer shells divided into chambers.

Prognathodon<sup>9</sup>: is an extinct genus of mosasaurid sauropsids that lived during the Upper Cretaceous, in what is now North America, Europe, and Africa.

Plotosaurus<sup>10</sup>: was a medium to large mosasaur. Its tail was almost half the total length of its body and it used it to swim, moving it from side to side as if it were a fish. To control direction it used its powerful fins.

Tylosaurus<sup>11</sup>: is a genus of mosasaur, a large, predatory marine reptile closely related to modern monitor lizards and to snakes, from the Late Cretaceous.

K-pg biological crisis<sup>12</sup>: the Cretaceous mass extinction.

Ichthyosaurs<sup>13</sup>: lived about 205 million years ago and measured up to 26 meters long, almost the length of a blue whale. are large extinct marine reptiles. Ichthyosaurs belong to the order known as Ichthyosauria or Ichthyopterygia ('fish flippers' – a designation introduced by Sir Richard Owen in 1842, although the term is now used more for the parent clade of the Ichthyosauria).

Eustatic<sup>14</sup>: relating to eustatism, a term for global sea level and its variations. Related to changes in sea level.

Cenomanian<sup>15</sup>: or Cenomanian is a division of the geologic time scale, the first age or floor of the Upper Cretaceous, second epoch of the period.

Turonian<sup>16</sup>: or Turonian, a division of the geologic time scale, is the second age or floor of the Upper Cretaceous, second epoch of the Cretaceous period.

Paleocene<sup>17</sup>: The Paleocene is a division of the geologic time scale belonging to the Paleogene period; within this, the Paleocene ranks first preceding the Eocene. It began about 66 million years ago and ended about 56 million years ago. The epoch is bracketed by two major events in Earth's history. The K–Pg extinction event, brought on by an asteroid impact (Chicxulub impact) and possibly volcanism (Deccan Traps), marked the beginning of the Paleocene and killed off 75% of species, most famously the non-avian dinosaurs. The end of the epoch was marked by the Paleocene–Eocene Thermal Maximum (PETM), which was a major climatic event wherein about 2,500–4,500 gigatons of carbon were released into the atmosphere and ocean systems, causing a spike in global temperatures and ocean acidification.



Toltecs<sup>18</sup>: they were a nomadic people that had also included the ancestors of the Chichimecs. The Toltecs conquered the city of Teotihuacan in approximately 750 A.D. and then settled there, their population and culture. was a pre-Columbian Mesoamerican culture that ruled a state centered in Tula, Hidalgo, Mexico, during the Epiclassic and the early Post-Classic period of Mesoamerican chronology, reaching prominence from 950 to 1150 CE.<sup>[1]</sup> The later Aztec culture considered the Toltec to be their intellectual and cultural predecessors and described Toltec culture emanating from *Tōllān* [ˈto:l:ã:ŋ] (Nahuatl for Tula) as the epitome of civilization.<sup>[2]</sup> In the Nahuatl language the word *Tōltēcatl* [to:t' te:kaf] (singular) or *Tōltēkah* [to:t' te:kaʃ] (plural) came to take on the meaning "artisan".<sup>[3]</sup> The Aztec oral and pictographic tradition also described the history of the Toltec Empire, giving lists of rulers and their exploits.

Mayapán<sup>19</sup>: The archaeological site of Mayapán was a Mayan city of the post-classic period. It is located in the northwest of the state of Yucatan. Mayapan was the political and cultural capital of the Maya in the Yucatán Peninsula during the Late Post-Classic period from the 1220s until the 1440s.<sup>[1]</sup> Estimates of the total city population are 15,000–17,000 people, and the site has more than 4,000 structures within the city walls, and additional dwellings outside.<sup>[2]</sup>

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