

# Cueva del Río La Venta

An underground dream



On cover:

El Hongo, Cueva del Río La Venta - Cintalapa, Chiapas, Mexico

**Cueva del Río La Venta**

An underground dream

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## An underground dream



*The Salón del Teatro*







«In Chiapas, we have twenty-six totally native tourist destinations; the recent Adventure Travel World Summit gave us a unique opportunity to introduce them to the world, in order to strengthen the economy of these communities and proudly show the new face of “Adventure Chiapas”».

**Lic. Juan Sabines Guerrero**  
*Constitutional Governor of the State of Chiapas*





# CERVECERIA<sup>del</sup> CENTRO

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For the past 21 years, the governments of the State of Chiapas has promoted and supported the actions and efforts of one of the most important scientific and speleological associations in the world, which operated in the Canyon of Río La Venta and in the Selva El Ocote Biosphere. Their aim was to make this fascinating territory known to the international community. The geographical features of this territory are symbiotically joined to human activities, so much so that they appear to be inseparable. This is a region that, starting from the ambitious eco-tourism project “Time Arch” promoted by Governor Juan Sabines, has begun to show signs of a glowing future and of a new source of sustainability for many local communities.



Amongst the many caves they have explored, La Venta Association has focused its work on the most beautiful and important cave in our territory. The Cueva del Río La Venta was discovered in 1990 and is now considered one of the ten most interesting and fascinating caves in the world, thanks to features spanning a wide range of disciplines: geology, archaeology, paleontology and hydrology. The book you are holding is hence homage to the Cintalapa Municipality and to this underground beauty that, unfortunately, cannot be easily admired; the technical challenges it poses make it inaccessible except to the most expert speleologists. This is why in 2009 La Venta Association organised a large photographic expedition and its results are presented here.

“Cueva del Río la Venta, an underground dream”, together with “*El Arco del Tiempo*” and “Río la Venta, treasure of Chiapas” is part of a trilogy of invaluable, collectable books, dedicated to exalting the spectacular beauty and mysticism of a region that presents many attractions for what is now the most sought after type of tourism in the world: adventure tourism.

No matter if you are not a speleologist, geologist or archaeologist: I invite you to plunge inside these pages to enjoy a magnificent visual journey, enriched by the stories of those who lived it in first person. And once you will have been captured by these emotions, I invite you to come visit us, to see in person the new face of Chiapas and of the many Chiapanecos who will be glad and honored to host you.

Maestro José Guillermo Toledo Moguel  
*Constitutional President of the Cintalapa Municipality*

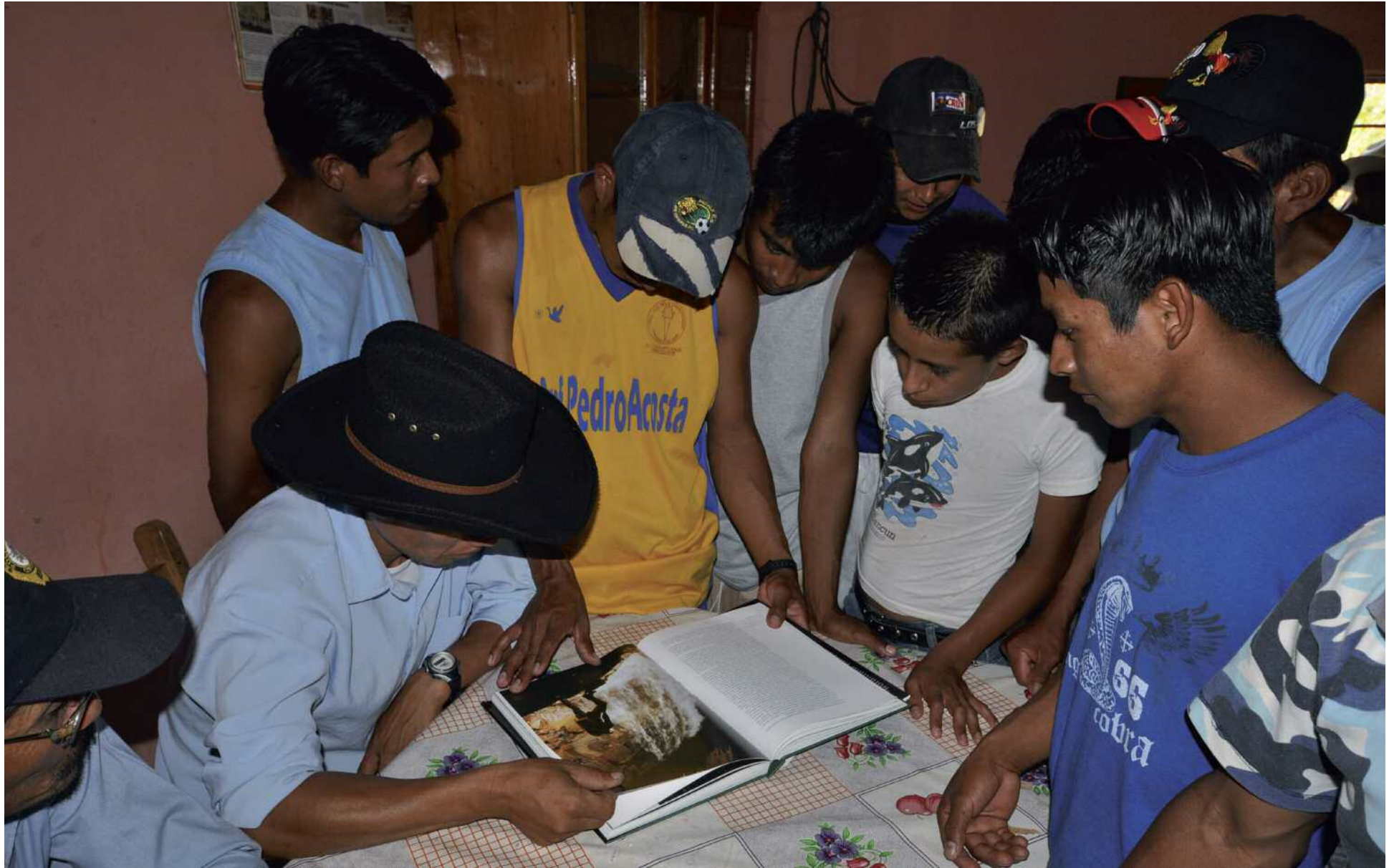






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# Introduction

After spending 21 years doing research in the Río La Venta Canyon, one of the most beautiful places in Mexico and on the whole planet, it is time to tell everybody, all around the world, about the extraordinary geological underground phenomenon we named Cueva del Río La Venta.

During the lengthy and demanding explorations which we have carried out in the past years, we speleologists had realised how beautiful this cave was but we did not have a clear and complete idea of what was really hiding down there. Then, in 2009, La Venta Geographic Association organised a large photographic expedition, aimed specifically at revealing the wonderful landscapes tucked away in the darkness. At the same time, it was decided to completely equip the *Cueva*, so that speleologists from all over the world could safely descend into it.

The images of this book represent the final result of that particular expedition, while its texts aim at conveying the personal experiences of the dozens of people who have participated in the various expeditions during the past twenty years.

*“Cueva del Río La Venta, an underground dream”* is a due tribute to a wonder of Nature; on the other hand, it is an invitation to get to know it, both for speleologists, hoping they will go see it in person, and for all the other people, who will be able to “visit” it through the pages of this book. We also wish that all this will be a source of pride for local populations, Chiapans and Mexicans alike, as well as a stimulus to become aware of the need to preserve and protect the underground world.

Should this happen, Cueva del Río La Venta will naturally become the

driving force of a low-impact, sustainable tourism, at present the only alternative to deforestation. Being able to enter from the plateau and then exit, after a fantastic journey, at the bottom of the canyon is a powerful attraction for cave lovers worldwide.

For the making of this book we have relied on many authors, speleologists and non-speleologists, to try and provide an exhaustive perspective about the *Cueva* and its karst region. Indeed, here we are dealing with a very peculiar area, whose underground treasures could very well be defined as the “Río La Venta Karst Park”.

Such richness does not come from gold or precious metals, nor from archaeological remains (that do exist, actually), but simply from the landscapes, the shapes, the large reservoirs of fresh water, from its peculiar biological ecosystem and, last but not least, from the events in human history that took place inside the caves. For this reason the book also contains diary-like accounts, in which the explorers recount some of the important moments they experienced there.

Besides photographs and texts, the book also contains a three dimensional map of the *Cueva*; its making required a considerable effort, and we hope that it will be able to convey a feeling of just how large the cave actually is.

We hope that this book will become a useful learning tool for the local population, for students, for the public at large and, of course, for speleologists from Mexico and anywhere else in the world.

*Tullio Bernabei, Antonio De Vivo, Francesco Sauro, Giuseppe Savino*





# The origins and development of the Río La Venta karst system

*Marco Mecchia*

At the exit of the Cueva del Río La Venta, after many hours spent doing the challenging underground traverse, you reach the bank of the river at the bottom of a majestic canyon. Just a quick look and the relationship between the cave, the river and the canyon seems evident and in line with what has already been established in similar situations in other parts of the world. What else is there to learn?

## ***The limestone Sierra and the Río La Venta***

The Río La Venta begins at the rocky crest of the Sierra Madre, a mountain chain that begins to the north-west of Oaxaca and cuts through Chiapas to Guatemala in the south-east. The imposing massif made up of ancient granite and metamorphic (Palaeozoic) rock rises like a barrier for the monsoons from the Pacific, which are forced to discharge torrential rain on its summit. The water courses that are created on the west side of the Sierra Madre reach the Central Depression of Chiapas, which is also cut into a granite basement, and flow through it. The wind, at this point dry, blows over the Depression, a savannah of bushes and xerophytes plants able to face long dry spells. The water that forms the Río La Venta lazily finishes in the Depression and

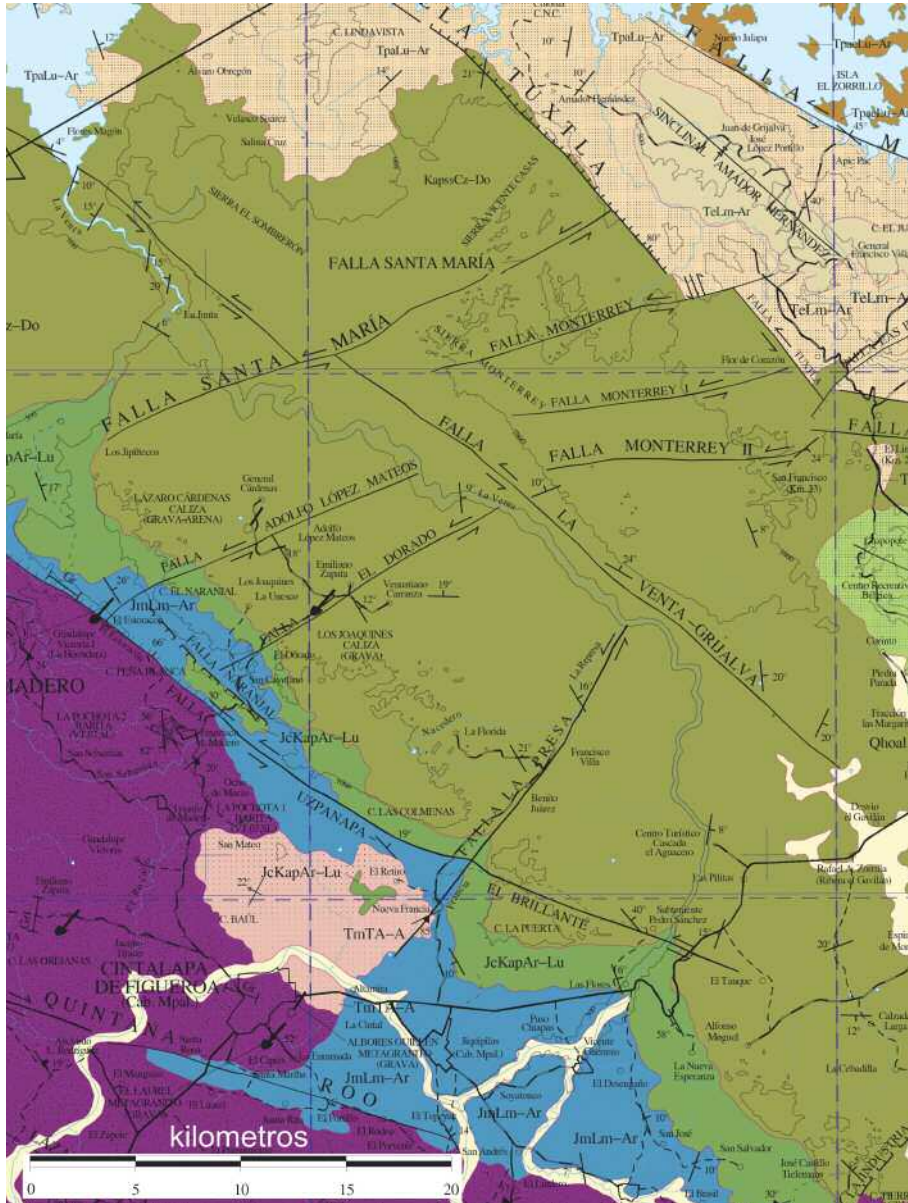
reaches the small city of Cintalapa. Other rivers to the south carve through the area, parallel to the Río La Venta, feeding the imposing system of artificial basins of the Río Grijalva, the most important hydroelectric power plant in Mexico.

Continuing the journey east, the water of the Río La Venta meets a new mountain chain with a distinctive look: the calcareous Sierra. We can instinctively imagine the presence of large faults, named Quintana Roo and oriented north-west to south-east like the axis of the valley, which are responsible for the abrupt change in the landscape. Geological studies have demonstrated that blocks of the Earth's crust along the fault were already moving during the Jurassic era, 160 million years ago. At that time and until the end of the Mesozoic era, around 60 million years ago, a warm, shallow sea, in which layers of mud accumulated over time becoming ever more calcareous, extended from the eastern part of the Quintana Roo fault up to the Yucatan coast. Under its weight, the mud became more compact expelling the water inside. The internal pores rapidly cemented themselves, transforming the deposits into a hard rock. Layers of thousands of metres of limestone formed in this way and today rise up in front of us forming the Sierras of northern Chiapas.

Following the Río La Venta we reach the entrance to the valley which leads us to the limestone outcrop. The river moves on another kilometre towards the northeast, between the steep slopes of a gorge, up to a

*Left: the karstic Sierra is raised by large faults, leading to the formation of high rock faces*





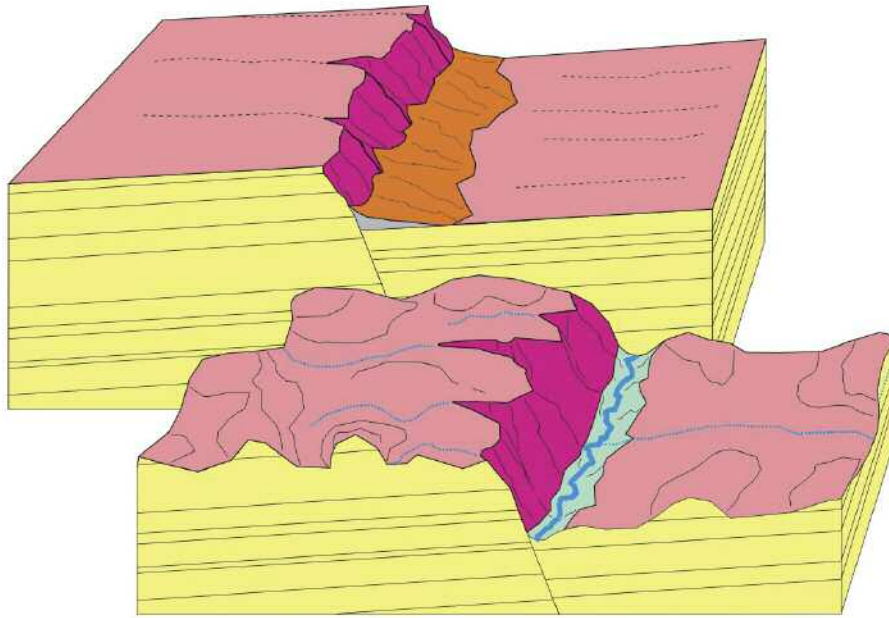
MIOCENO		Toba Andesítica - Andesita
EOCENO		Fm. El Bosque Limolita-Arenisca
PALEOCENO		Fm. Soyaló Lutita-Arenisca
CRETÁCICO	Superior	Fm. Sierra Madre Caliza-Dolomía
	Inferior	Fm. San Ricardo Arenisca-Lutita
JURÁSICO	Superior	
	Medio	Fm. Todos Santos Limolita-Arenisca
	Inferior	
TRIÁSICO		
PALEOZOICO		Macizo de Chiapas Metagranito - Metagranodiorita

*The geological map of  
Río La Venta (by Servicio  
Geológico Mexicano, 2005)*

*Right: the vertical movement  
of the La Venta fault  
generated the escarpment  
(upper drawing) along which  
the Río was forced to flow  
(lower drawing)*

*Side page: the Sumidero del  
Sauce, near the Lazaro  
Cárdenas Colony, is one of  
the swallows holes from which  
water begins its path towards  
the bottom of  
Río La Venta canyon*





sharp curve. The deviation is forced by the presence of another important fault, called La Venta, like the river. A long time ago, before the Sierra rose up and the canyon was carved out, the north western fault slope of the massif generated a difference in elevation on the topographical surface, forcing the paleo-Río La Venta to flow into the valley at the foot of the escarpment. The fault line, which cuts through the plateau above the walls that border the river on the right side, is evident in aerial photos and still today a change of altitude indicates its existence. Like the other faults, and the blocks that make up the Depression and the Sierra, the La Venta fault is also oriented north-west to south-east, the direction which, the river from this point on follows for more than 40 kilometres until it reaches the Malpaso artificial lake. Already during the Jurassic era, and at intervals of time in the millions











of years that followed, the imposing system of faults described above has fragmented the upper portion of the Earth's crust in the region forming large, elongated blocks. Over the course of the geological history of the region, the tectonic push have forced the blocks to shift laterally one against each other, probably for several kilometres. The La Venta fault, which cuts the limestone Sierra in two, seems to be the key for explaining the differences between the karst systems of the plateau to the hydrographic right side of the Quintana Roo compared to the caves of the plateau on the left. On the plateau on the left side of the plateau, which includes the area that gets its name from the small settlement called López Mateos, the layers of limestone form a large monocline with inclined slopes of a few degrees towards the north. The water which has given life to the caves has followed the easiest path, penetrating underground in fissures and breaks into the layers, following the maximum gradient and directing with regularity towards the north to the Río La Venta. The water must have formed a series of parallel underground systems; among these the Cueva del Río La Venta represents the section that has been most explored to date.

On the hydrographic right side of the plateau, at the Selva El Ocote, the tectonic stress has shaped the limestone layers making them like ample waves. This system of gentle folds is cut by successive faults that are easily visible in aerial photos. Because of the impenetrable nature of the virgin forest, exploration of the underground world in the jungle

*The canyon comprises wide meanders, reflecting the original river path before the rising of the mountain range*

*Side page: the plateau is characterised by cone-shaped hills, particularly in the areas of Selva El Ocote and the upper part of the López Mateos basin*







is still minimal. Among the karst caves thus far discovered there are large shafts, at the base of which it has not yet been possible to find a passageway which leads to any important depths. The difference in the geological structure of the two plateaus could be explained by the role that the La Venta fault had before the deposition of limestone mud, in the Jurassic era. In fact, at that time the fault seemed to represent the limit of a large marine basin, which extended from the fault east to the Yucatan and north to the Campeche Gulf, in which, because of strong evaporation, accumulated saline deposits <sup>[1]</sup>. Millions of years later, through the tectonic activity, these light deposits, lubricating and easily malleable, allowed the folding of the above layers of rock – the limestone of the Selva El Ocote – while to the west of the fault – in the López Mateos area – in the absence of saline deposits the limestone layers behaved in a more rigid manner, less plastic, breaking and maintaining a more homogenous feature in the block.

In the Miocene era, about 12 million years ago, movements along the fault caused the area to the south of the Lago de Malpaso to emerge from the sea. Along the coastal escarpment the debris due to the strong erosion accumulated at the foot of slopes, creating deposits that today occur at the bottom of the artificial lake. From that time, the region has remained emerged. Even if we know little about the time immediately after the emersion, we can imagine that because of the contact with the atmosphere, the ancient sea bottom began being beaten by the rain and carved by streams and rivers. The deposits that covered the limestone rocks were eroded leading to the denudation of the bedrock.

*The Sueño Blanco in the Cueva del Río La Venta: underground tunnels are aligned along bedding planes that allow their widening due to the karst erosion*

Upon the limestone outcrops, the evolution of the rock landscape evolved and with a successive lifting of the region the process became even more active and extended to the entire denudated area.

Over time, presumably in humid, tropical climatic conditions that were not very different from today, the spectacular landscape was produced made up of a “sea” of cone-shaped hills, at the bases of which rainwater formed water courses which were suddenly swallowed underground. At a certain moment, which we are unable to define, a river, which we can call the paleo-Río La Venta, began to flow. As a result of the combination of the water, climate and wind action, the surface topography progressively lowered, trying to find a dynamic equilibrium with the river, which acted as base level, reshaping the sharp, young landscape to more gentle landforms. Some hundreds of thousands of years ago, the karst hills, maybe more isolated than the current ones, were distributed on a slightly undulated surface, inside which the paleo-Río La Venta flowed with wide meanders. This is a typical representation of the “mature” evolution of the landscape. As a result of erosion, collapses in the tunnels and the filling of channels with mud and the debris transported by the streams, the caves of that time probably no longer exist, or are just the caverns that can be seen today on the slopes of the karst hills, at a certain height from the base.

Presently, however, the bed of the Río La Venta does not occupy the original plain, but flows entrenched in the rock, hundreds of metres lower, at the foot of vertiginous walls. Throughout the entire planet, the incised meanders typically are developed when the region in which a river flows is raised with respect to the original course of the water. If the river has a strong erosional power it can even carve vertically into the bedrock, even if the rock is hard, and conserve the course it had before the uplift. This is probably what happened to the paleo-Río La Venta. Suddenly, perhaps some hundred thousand years ago, unconstrained from the adjacent area, the block of the Sierra began rapidly rising and, in response, the Río La Venta began carving a rill in the

more ancient beds, trying to balance out the rising. Under the impulse of the increasing rising of the area, that has been continuous up today, the Río La Venta has reached the present position conserving the outline of sinuously designed meandering curves, which it has had as a paleo-river that flowed hundreds of metres above. The uplift amount of the Sierra compared to the source area of the river, the block of granite of the Cintalapa, should correspond approximately with the depth of the canyon. The speed of the rising/deepening process presumably changed over time, even with long interruptions. Naturally, the birth and timing of development of the caves in the plateaus that border the river must be closely connected to the formation of the gorge. Thus, the knowledge of the temporal progression of the incision would be important to define the evolution of the karst.

The study of satellite images and aerial photos has indicated the existence of the remains of an ancient area that is almost a plain situated 420 metres higher in altitude than the present river bed<sup>[2]</sup>. This area, which is on the part of the plateau that borders the canyon, is probably what remains of the ancient plain upon which the paleo-Río La Venta flowed, and depicts the final phase of the landscape in to the epoch of “maturity”. We can, therefore, assume that the vertical rising of the sedimentary block, due to the sliding along the large fault which delimits the west, corresponds with the change of elevation between the actual river bed and the ancient area, that is about 400-450 metres. The process of rising, moreover, is still occurring, as the earthquakes of notable intensity which have hit the region even in the last century demonstrate. In an attempt to establish the age of the incision, a dating of two samples of concretion was done, taken from the lower part of the canyon, just above the present river bed. The laboratory analyses, however, produced very different values of the possible rate of deepening of the Río La Venta<sup>[2]</sup> and therefore not permitting a valid interpretation of the results. We must consider that the highest river incision rates measured in the Himalayas, in the most extreme cases indicate 15 metres in 1,000

years, but one metre every thousand years is already considered rapid. The values of the most frequent deepening of river valleys in karst areas are between 0.1 and 0.4 metres every thousand years. The range of possibilities is therefore ample and today it is not possible to give a precise age to the canyon, which could be from several hundred thousand years to more than a million years old.

At the same time in which the canyon was deepening, the karst area was subject to the ordinary process of chemical denudation, due to the diffused effect of the rainwater and runoff on the limestone surface. For an estimate of the effect of this process, and considering the lack of measurements for the Sierras of Chiapas, we can consider what happened in other tropical regions with similar rainfalls<sup>[3]</sup>. The denudation, in fact, is related principally to the availability of water, but also to climatic conditions, that is the efficiency of evaporation and the transpiration of the vegetation. Using rainfall data and the temperature in Chiapas published by the Mexican Institute INEGI, we can calculate a value of denudation from between 4 and 7 centimetres in 1,000 years.

### ***The evolution of the underground karst system***

The Cueva del Río La Venta is part of the large López Mateos karstic system, into which the waters of the hydrographic basin, delineated by an underground watershed, flow. The catchment area extends some 13 to 14 kilometres with an average width of about six kilometres. The rain on the ridges that border the Sierra from the south-west, drains onto the surface and in the network of caves following, generally speaking, the dip of the layers in the limestone monocline, towards the canyon. In the lower part of the drainage area the water feeds the Cueva del Río

*Karst landscape between the López Mateos  
and General Cárdenas colonies*





La Venta and finally re-emerges and joins the river at the base of the canyon. The expeditions organised by the La Venta Association over the past twenty years have led to the discovery of about twenty caves, segments of the underground network which drain the water of the hydrographic basin, with a development of about 20 kilometres of explored passages. Based upon the influence of the canyon deepening on the development of the underground passages, it is possible to distinguish the lower sector of the catchment area, down valley from the López Mateos village, from the upper sector.

### ***The upper sector of the hydrographic basin***

On the basis of the distribution and the characteristics of the segments of the underground network discovered up to now in the upper part of the basin, up to the López Mateos village, it seems likely that the effects of the water flow towards elevations decreasing over time, due to the deepening of the canyon of the Río La Venta, have not yet reached this area, situated more than five to six kilometres from the river.

The landscape is made up of a labyrinth of cone-shaped hills typical of humid tropical areas, once densely covered by the vegetation of the jungle, with the sides often steep and reliefs up to 100 metres. At the foothills there are small trapped closed depressions and winding corridors filled of sediments that has been transported by the water and that are the inheritance of ancient valleys. The streams which sometimes pass through the depressions disappear into the bedrock, swallowed by caves, normally under rock walls. After their underground courses, that are more or less lengthy, the water re-emerges on the opposite side of the hill feeding different streams.

At 760 metres, in the Cueva del Naranjo, an underground stream runs in a tunnel slightly dipping towards north, following the dip of the strata. Towards the valley, at 750 metres, the water runs in the Cueva Ejidal, it comes out and after a few dozen metres in the daylight returns

underground in the Cueva del Cafetal, and then in the Cueva Monterosa 3. The water that re-emerges from these cave-streams flows through passages that converge to form the Río Osman. The stream, with an average discharge a few hundred litres of water per second, reaches the flat bottom of the closed depression which, at its limit, takes us to the López Mateos village, at an altitude of a little more than 700 metres.

The upper part of the basin is therefore characterised by a landscape of hills perforated by a network of horizontal underground tunnels that are well integrated with the hydrographic network above. No practicable passageways were discovered below 700 metres. Apart from the disappearance of the jungle vegetation due to deforestation, the present landscape is probably similar to that which was seen hundreds of thousands of years ago, before the initial carving out of the canyon. Naturally the rock has faced the usual chemical denudation process and consequently the surface is not the same of that time, so the presently outcropping limestone is a little older. The underground passages active at the time of the paleo-Río La Venta, being well integrated into the hydrographic network on the surface, must have been higher than where the passages are today. The chemical dissolution of the limestone was significant even underground where the stream water deepened the floors of the tunnels. When, however, the conditions of the source changed or the



*Cross-section of the Cueva Ejidal, showing both the active and the “fossil” tunnels*

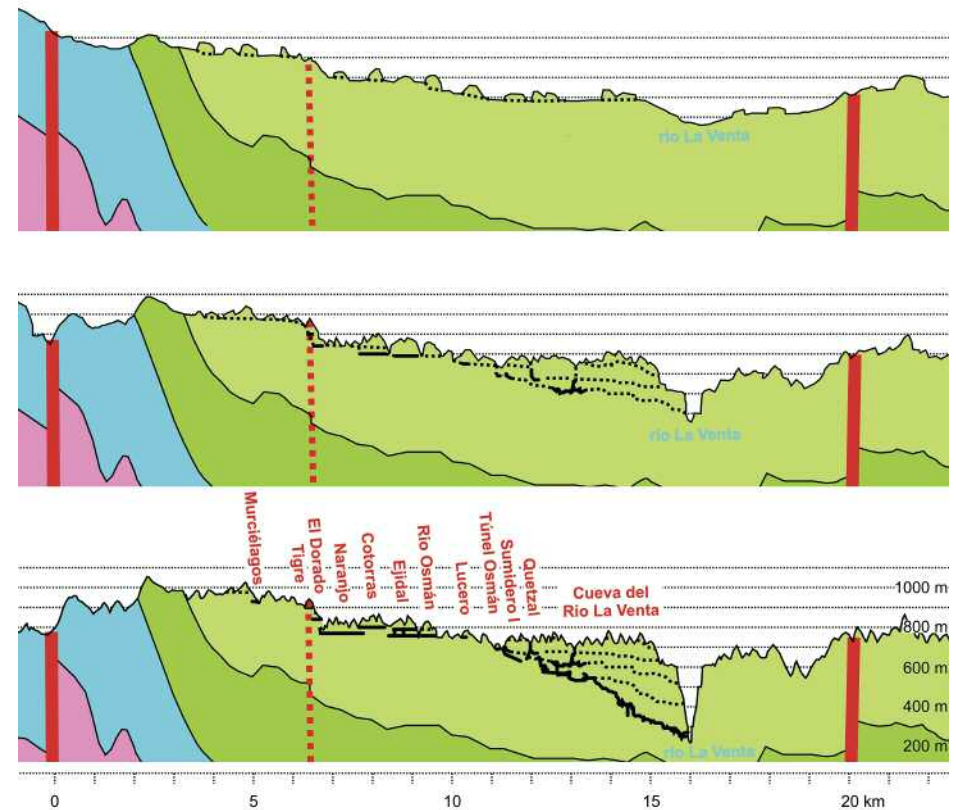


lowering of the upper surface was more rapid than that of the floors of the cave tunnels, new underground courses at lower levels resulted with the opening of cracks and the abandonment of existing passages. In some caves there are still signs of this development. For example, in the Cueva Ejidal a passage that was abandoned by the water was explored. It was horizontal for more than 600 metres, positioned 17 to 20 metres above the present tunnel. On the basis of the lowering rate of the topographical surface previously indicated, we may tentatively presume that the upper tunnel represents a segment of the underground drainage network that was active between 250 and 500 thousand years ago.

### ***The lower sector of the hydrographic basin***

From the López Mateos plain to the canyon, the effects of the rejuvenation of the underground karst system, caused by the incision of the Río la Venta, are visible and increasingly more important. The Río disappears in the Traforo de Osman, at 680 metres. From here on, it is entirely subterranean until it reaches the stream in the Canyon del Río La Venta. The underground river appears again in the Sumidero I, where it flows to a fissure situated at 630 metres, and finally, 100 metres ahead enters the Cueva del Río La Venta at 570 metres. The course of the underground water is then entirely practicable with an exciting descent of almost seven kilometres, guided by the air that blows in the large tunnels that are on average about ten metres wide alternating with larger areas of more than 20 metres. At an altitude of 250 metres the water disappears in a cave room situated close to the canyon, to then re-emerge through cracks and merge into the Río La Venta at an altitude of 227 metres.

A working hypothesis of the evolution of the karstic system is illustrated below, with a representation of three “stages”: the present situation state, the intermediary stage and the time of the paleo-Río



*Three evolutionary stages of the López Mateos karst system*

La Venta surface. The diagrams were created on the assumption that the Sierra mesa uplift corresponds to the depth of the canyon. The section indicates all the known caves (continual line) and the hypothetical caves that have not yet been discovered or have disappeared (dotted line). The underground galleries were developed over time





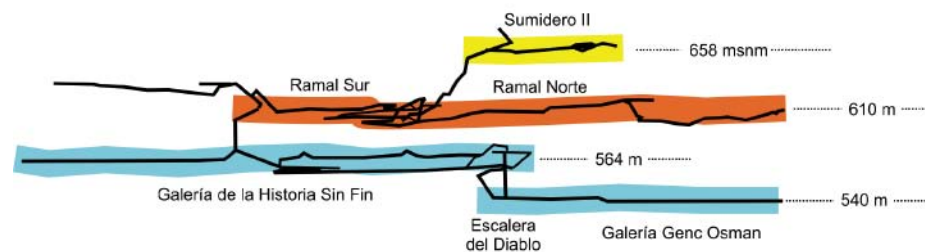


at ever lower altitudes in an attempt to reach the base level without, however, ever being able to keep up with the lowering of the canyon base. Moving away from the canyon, the active passages are increasingly higher above the base level compared to what normally occurs in the karst regions and, at a distance of five or six kilometres, there seems to be no influence of the river lowering out whatsoever.

All the water collected in the hydrographic basin, with an average volume of about one cubic metre per second, flows through the Cueva del Río La Venta and at the end of the underground course are captured by small conduits through which they re-emerge in the canyon. The exit conduits, which are very steep and totally flooded, are not practicable and, notwithstanding the large flow of water, seem to be rather small. From the underground cave room where the water disappears, it is possible to climb up until reaching a horizontal gallery, which comes out of the canyon wall, 50 metres higher than the river bed. The exit conduit, which is six to seven metres wide and three to four metres high, is no longer active but, for a long period of time, must have held the role of an active resurgence.

Keeping in mind that the widening of a passageway requires a certain amount of time, the small dimension of the existing active resurgence passage can be explained by the rapid deepening of the canyon. To have an idea of the time necessary for their formation, we can consider the speed of the widening obtained in laboratory tests, theoretical studies and evidences obtained on site by observing the newest caves that have formed. The information as a whole in-

dicates that in limestone rock a period of 10 to 20 thousand years is necessary to widen the tiny space of a fissure to the point of achieving a “critical dimension” which corresponds to something like a centimetre which makes the widening a more rapid process. If the water filters in through soils that are rich with carbon dioxide, as is typically the case in the humid tropical climate, once it has reached the critical dimension, a totally flooded passage can widen up to one metre in 1,000 years and six to eight metres in less than 10,000 years. With the widening of the section, more volume can pass through; the maximum amount depending on the size of the hydrographical basin. At a certain point in its evolution, the passage will become too large related to the available water and the upper part of the tunnel will be in contact with air while the stream runs in “free air”. By the contact with the atmosphere, the pressure of the carbon dioxide in the water will diminish finding a new equilibrium, the dissolution of the limestone will be less aggressive, and the speed of the widening of the passage will noticeably decrease. In general, a period of 50 to 100 thousand years is sufficient to produce the main passage of a cave<sup>[4]</sup>.



*Left: the underground river flowing upstream Lago de los Perezosos; its ceiling is the bedding plane onto which the tunnel began to form*

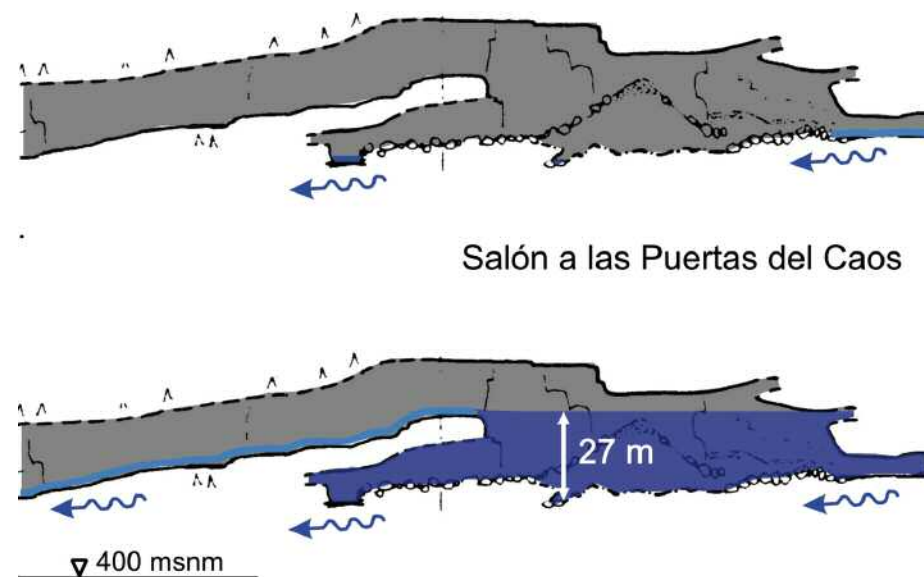
*Cross-section of Cueva del Río La Venta, showing three sections of superimposed galleries*

On the basis of these data, we can presume that the amount of time available for the current exit conduits of the Cueva del Río La Venta was sufficient to widen beyond the “critical dimension” but not sufficient to produce a tunnel, around not more than 10 to 20 thousand years. The upper gallery probably stopped being the principle resurgence after the lower passages reached the critical dimension, thus a maximum of some thousand years ago, and was probably abandoned in recent times. For the upper tunnel to reach its present dimension several tens of thousands of years were required.

Signs of these phases of rejuvenation can be observed in the higher part of the Cueva del Río La Venta (*fig. page 27*). In this area of the cave, moving as the crow flies for a distance of approximately three kilometres from the canyon and directly to the upper entrance of the cave (Sumidero II), you can find three “segments” of the tunnels overlapping almost horizontally: the two upper ones are dry and in the lower one the underground Río flows. Elevation drops of some tens of metres separate the different segments. The lower one, that is the actual active stream, is divided into two branches from the *Escalera del Diablo* waterfall: on the mountain side the *Galería de la Historia Sin Fin*, at an altitude of about 560 to 570 metres, and on the valley side the *Galería Genc Osman*, which can be found at about 540 metres.

The forms of the passages lead us to believe that these tunnels were in use at a different time than the present underground river, with the same type of development. With the deepening of the canyon grows the tendency of the streams to move to deeper zones. Over time the water invades and widens tiny fissures in the rock at the base of the underground stream, linked to another intermediary stratum which favours the deepening. When the widening is sufficient, the “sink point” captures the entire flow through the new passage deactivating the upper conduit. In the initial phase, the water

occupies the entire space of the inter-stratum conduit, but with the widening of the passage the stream begins flowing with air contact in vadose tunnels like the present-day ones. In the three “segments” the dimensions of the tunnels are from eight to 20 metres wide and around the same height, indicating that the water passed through for relatively long periods of time. The ceiling of the tunnels is usu-



*Water rising during a flood in the hall of Las Puertas del Caos, in the Cueva del Río La Venta*

*Right: las Puertas del Caos, Cueva del Río La Venta. When the river swells, this large hall gets flooded and the overflow reaches the Cañón de los Sueños (its access is floodlit by flashes at the top of the rock face)*





ally the lower surface of the bed that guided these previous course. The local inclination of the strata is very little, two to five degrees, and explains the almost horizontal development of the tunnels. In fact, the deepening of the canyon was very rapid and it is possible



*The water that was swallowed by the plateau reappears directly at the bottom of the canyon, merging with Río La Venta*

that the evolution of the cave never reached equilibrium with the base of the river.

This process is continuous and affects all the caves, as is demonstrated by the many new active passages above which old abandoned conduits are often utilized by cavers to avoid the fury of the rumbling water in the active tunnels. Sometimes the active passages are very recent and are small in dimension. In this case, during the flooding the passage is not able to drain the excess water and rises above the narrow passage to an older one through which it can flow. For example, in the main flood periods the *Salón a las Puertas del Caos* becomes a large lake, the water rising 27 metres until it finds a large old passage which is activated only during floods (*fig. page 28*). Fortunately, nobody has had the misfortune of seeing the event live, but the traces left on the ground of the ancient tunnel which indicate the forceful passage of impetuous water are unequivocal. In conclusion, the data and evidences inside and outside the cave combine to indicate that from the time when the landscape was in a “mature” phase, the rising of the limestone mesa which forms the Sierra by 400 metres created the deep canyon where the Río La Venta flows. This had an effect on the river which was able to maintain the rhythm of the deepening imposed by the rising.

The underground López Mateos karstic system evolved in this context. The development of the passages, however, was not as rapid as it was unable to keep up with the position of the river. Today, at a distance of five to six kilometres from the canyon, the surface and underground network is probably similar to what it must have looked like hundreds of thousands of years ago. Moving closer to

*Right: Sótano del Quetzal. The underground system has been made accessible by the collapse of the ceiling of ancient tunnels*





the canyon however the effects become evident and the Cueva del Río La Venta is a witness to the energy released by the rising of the Sierra. The vitality of the environment is also tied to the humid tropical climate, influenced by trade winds which blow from the northwest filled with humidity and covering the Sierra with 2,300 millimetres of rain per year, according to the averages of Lago de Malpaso. The abundance of water makes the underground river dynamic as it continually searches for shortcuts to more rapidly reach deeper levels in its race to achieve the river level. These conditions favour the highest chemical activity for the water in the dissolution of the limestone walls but also the maximum effectiveness in the mechanical erosion due to the power of the mass of water transported especially during the most devastating floods.

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*The canyon, as seen from the resurgence  
of Cueva del Río La Venta*











# Towards Cueva del Río La Venta

## A path through the doors of the underground world

*Francesco Sauro*

The plateau on the left bank of the Río La Venta is a kind of ‘karst park’, where many fine examples of superficial morphologies and cave types can be admired, culminating in the marvellous Cueva del Río La Venta which contains all the underground landscapes a speleologist could dream of in a tropical karst environment. Before looking more closely at the cave which is the subject of this book, it’s important to have a look at the landscape around it, both above and below ground. The ideal way to get to know these places is to slowly travel the road leading to the colony of López Mateos, pausing in a few fundamental spots, and, if possible, also visiting the neighbouring Unesco and Lazaro Cárdenas settlements.

Starting from Cintalapa, the road passes through the Francisco Madero settlement and climbs the steep southern face of the plateau. Once the pass is reached, at about 1,100 metres of altitude, an endless panorama opens before our eyes: a chaos of limestone cones covered with vegetation rises from the southern crests, descending to flat bottomed valleys which then dive over 500 metres into the Canyon del

Río La Venta. Beyond the river, the unmistakable profile of the Sierra Veinte Casas emerges from the green sea of the Selva El Ocote to join Lago Malpaso to the north-west. The entire plateau is made up of calcareous rocks, so every spot could potentially contain caves and underground waterways.

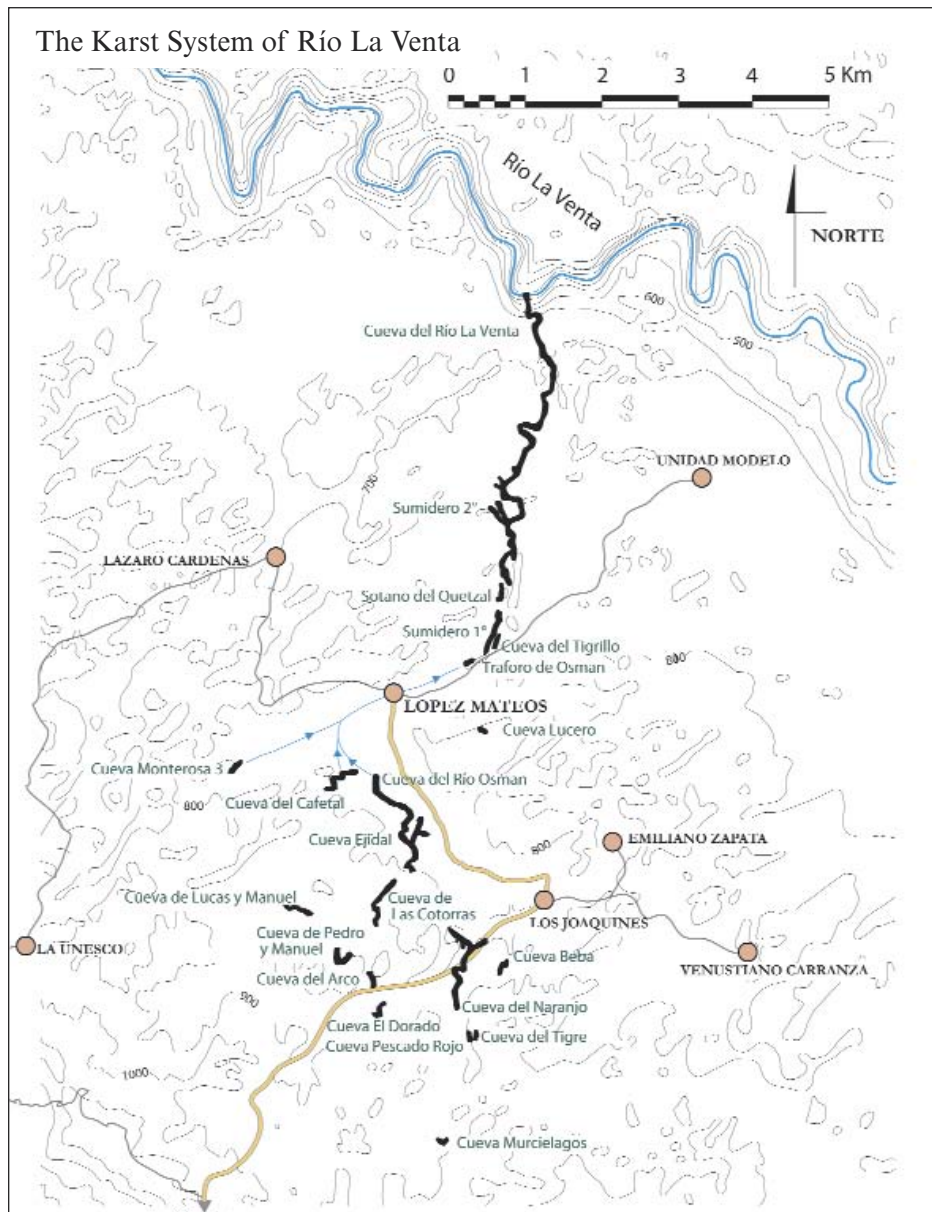
From the pass, it is possible to notice how the southern part of the plateau (the part closest to us) has a rougher structure, with deep valleys enclosed by frequent rocky peaks, while the area closer to the canyon, which contains the López Mateos and Lazaro Cárdenas settlements, has wider and shallower valleys which are often crossed by surface streams.

### ***The road towards Unesco and Lazaro Cárdenas***

A little beyond the pass, one meets the junction which leads first to Unesco and then to the Lazaro Cárdenas settlement. Taking that direction, one can travel along an extensive part of the summit crest and while remaining at altitude enjoy a wide view over the entire area. This is followed by an endless series of climbs and descents, which are a good reflection of the rough nature of this sector of the plateau.

In the area around the Unesco settlement many cavities have been explored. The entrances are at the bottom of closed valleys over-

*The road from Cintalapa is a vantage viewpoint towards the plateau. Sierra Veinte Casas can be seen on the background*



looked by impressive limestone cones. For the most part they are large holes that connect several closed basins. The largest cave in this area is the Cueva Tulipanes, a nice crossing of about 1.5 kilometres, traversed by a large stream which forces us to swim in several places. Continuing down the road towards Lazaro Cárdenas, one reaches the junction for Rancho Montecristo, which is the access point to the westernmost part of the plateau, towards the area of the Junta (connecting point) between the Canyon del Río La Venta and the Río Negro, which is reachable only after a long day's walk. Also in this sector several cavities were explored, but others still need to be properly investigated, especially in the area of the Rancho Valle Acosta.

Continuing along the main road, one finally reaches the colony of Lazaro Cárdenas. This is where the most recent exploration campaigns carried out by the La Venta Association took place, always in cooperation with the landowners and the settlement inhabitants. In total, 71 caves were explored, some of which were over 1 km long, such as the impressive Cueva del Clarin system, the Cueva de la Neblina, and the Cueva Escondida: three cavities which, even if not

*A map of the Río La Venta karstic system. On the hydrographic left, twenty-something years worth of exploration allowed to discover and document more than 170 caves, for a total length of about 40 kilometres of underground tunnels*

*Right: Cueva Escondida is one of the many caves that open in the western part of the plateau*





connected, speleologically speaking (in the sense that a person cannot pass directly from one to the other), they are traversed by the same underground stream through at least 4 km of large galleries. The streams which leave the resurgences in this area then throw themselves into two large sinkholes (Sumidero del Río Chiva and Sumidero del Sauce), where they certainly head towards the bottom of the Canyon del Río La Venta, passing through one or more as yet unexplored hydrogeological tunnels.

The long path which leads to the Arco del Tiempo, the huge and famous tunnel through which the waters of the Río La Venta flow for nearly 400 metres, also starts at Lazaro Cárdenas.

### ***Towards the Rancho El Arco***

So let's leave this area for future explorations and go back to the junction between the road to Unesco and the main road to López Mateos. From here one descends into a valley whose bottom hosts a stream which quickly gets swallowed up by the Cueva del Arco, the first cave explored in this area back in the 1990's. After only half an hour's walk from the road, one can reach the large Cueva de Pedro y Manuel and the nearby Cueva de Lucas y Manuel. Both cavities each about half a kilometre long, consist of large galleries located above the valley floor and therefore now empty of the stream's water. Precisely because they are now isolated from flowing water, they contain spectacular concretions and calcite formations. The Cueva de Pedro y Manuel is especially easy to visit and could in the future become one of the eco-tourism attractions of the area.

Continuing onward, our road first passes the Rancho El Dorado (with its homonymous cave of about 300 metres in length) on the right. Immediately after, to the left, is the Rancho El Mercadito: from here, about half an hour's walk to the north, is the gigantic Cueva de las Cotorras, over a kilometre long and whose bottom contains a

stream which further down joins the main karst system, probably then flowing into the Cueva Ejidal.

Immediately afterwards, still to the left, a wide depression in the ground can be noticed: we've reached the Rancho El Arco, which was used as a base camp by many speleological expeditions. Just below the road is one of the area's most important systems: the Cueva del Naranjo. To the south of the Rancho, a small stream which exits from the Cueva del Tigre's resurgence is quickly re-swallowed, feeding the Naranjo's large galleries. This cavity has 5 entrances and is a nice through-cave with a total extension of over 2.5 kilometres. Half way through it, one meets a notable tributary which can be followed up to a large siphoning lake.

In the territory of the Rancho El Arco there are other examples of karst formations, like for example, a nice natural bridge (the origin of its name) which is the relic of a large underground gallery which has been uncovered by erosion, and a small sótano, a deep hollow into which the waters of the Cueva del Naranjo re-emerge. It is therefore possible to take a beautiful walk along the hidden paths which lead to the cave's several entrances, passing through small holes and breaks in the rock and observing a great number of karst morphologies. The place is ideal for holding speleological education and training courses.

### ***The Cueva Ejidal and the area around López Mateos***

The water from the Cueva del Naranjo's stream gushes at the resurgence in the small sótano and flows along the surface only for a few hundred metres, before being swallowed once more. In order to find the water again, we have to go to the Cueva Ejidal, another important system with multiple entrances having a development of over 2 kilometres. Avoiding going through the fields, which are sometimes infested by ticks, we continue by car along the dirt road and, having

passed Los Joaquines (with a junction to the right towards the settlements of Emiliano Zapata and Venustiano Carranza), we cross the wide flat valley which finally leads to López Mateos. At the height of the first houses, following a path to the left, one reaches the main entrance of the Cueva Ejidal. This cave is made up of two superimposed levels, the higher one being inactive and very large and the lower one traversed by a stream formed by the confluence of sev-



*The upper part of the Cueva del Naranjo boasts a tunnel with magnificent concretions*

*Right: the rock bridge after which Rancho El Arco, the logistic and didactic headquarters of La Venta's Association, was named*







eral underground waterways. Given the ease of access, the landowners, together with the settlement authorities, offer tourists the opportunity of visiting the cave, which is without doubt one of the most beautiful of the area. From the lower entrance, it's also possible to follow the stream along a short canyon which soon goes into the Cueva del Río Osman, another transition cave where one can enjoy a short traverse which includes many swims in the deep underground lakes.

### ***The eastern sector of the plateau***

From the López Mateos, turning to the right, one can continue along the road next to the stream, which soon dives to the left into Sumidero I, starting its long underground journey through the Cueva del Río La Venta. Continuing on, one reaches the Colonia Unidad Modelo where the road ends.

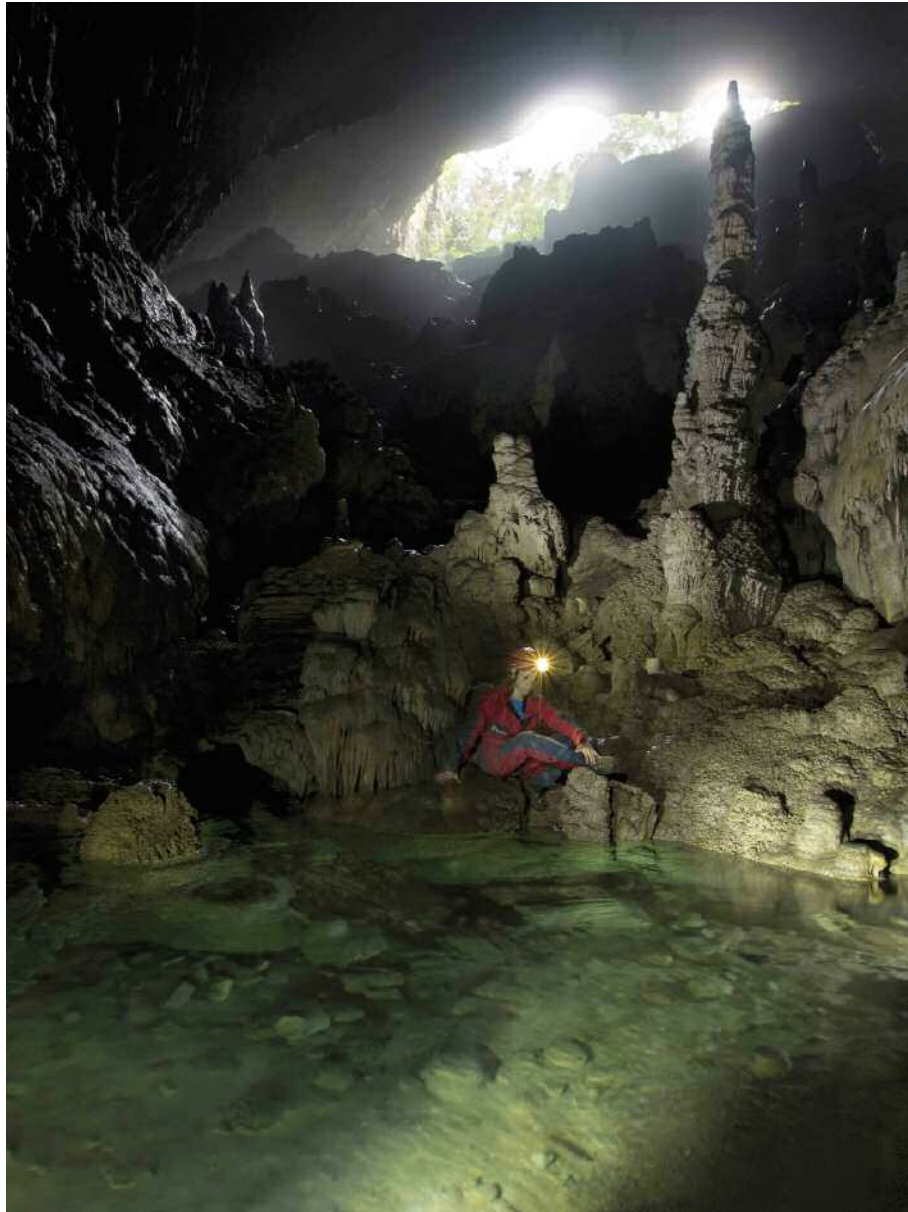
This entire sector of the plateau is still barely explored. The last research expeditions noted the presence of two more streams which cross the area with the typical above and below ground alternation. Further to the east are the settlements of Nueva Jerusalén, La Florida, Mirador, and Castillo, which are connected to the town of Jiquipilas by a road which climbs the Canyon del Vertiente. Here too, the investigations have only just begun and there are certainly many caves waiting to be explored. After the discovery of the Cueva del Río La Venta in the 1990's, speleologists began to dream about finding other underground rivers parallel to the known one. There are many indications that both the eastern and the western (towards Lazaro Cárdenas) sections probably contain other large karst systems. In the forthcoming years the goal is to find them, opening up new hidden corners of this wonderful territory.



*The furthest areas to be explored can be reached only through very rough paths; along them, the aid of transport animals to carry the equipment is indispensable*

*Right: concretioned halls in the Cueva de Pedro y Manuel*









# The Cueva del Río La Venta, a long journey

*Italo Giulivo*

## *The descent*

Since the 70's the area of Río la Venta has aroused the interest of numerous caving expeditions, mainly Italian and French, and these have highlighted the enormous potential of the karst. The Malpaso, Río Negro and the Selva del Mercadito areas have been the preferred destinations, with some sporadic episodes to the Cintalapa and Ocozocoautla zones and to some areas of the Selva El Ocote.

The Canyon del Río La Venta is an 80 km long gorge carved for more than 400 metres into the limestone. Majestically, the gorge cuts the forest in half: on the topographic charts of the INEGI, the blue line of the water traces long meanders into the green of the forest and then flows into the lake of the Malpaso.

Direct scheduled flights to Tuxtla Gutiérrez, capital of Chiapas, sometimes overfly the canyon. "Wonderful, majestic, incredible, mysterious, scary". Passengers, looking out of the portholes, search for adjectives

that do justice to their amazement.

And yet this gorge was explored only in January 1990, when a group of Italian cavers, taking advantage of the dry season, decided to go for the full descent. It was Tullio Bernabei, Gaetano Boldrini, Tono De Vivo, Matteo Diana, Marco Topani, and Marco Leonardi. They were armed with two canoes and the very bare necessities, well aware that natural

*The first descent along Río La Venta, in 1990*

*Right: the group that first descended along the canyon. Standing, from the left, are Matteo Diana, Gaetano Boldrini, Marco Topani and Tullio Bernabei; sitting, from the left: Marco Leonardi, Tono De Vivo*





obstacles or sudden floods could obstruct their way back. By studying the charts, they noticed that towards the valley end the river disappeared underground, to emerge after almost one kilometre: a karst tunnel, a tunnel in the mountain. It was impossible to know if there were any sudden drops, rapids or other dangers and the tunnel became one of the main worries for the six explorers.

During the descent they faced many difficulties, but they paid a lot of attention to the immense karst and archaeological patrimony of the places they visited. They marked on the chart the location of caves and other sites, thus using them as the only landmarks along the meandering river. After a six day descent, on the left bank of the canyon, they found themselves in an area of boulders, the result of a landslide, from which flowed an underground river. Despite the dry season, the flow was estimated at almost 500 litres per second. The cavers' intuition pushed them to climb a small valley, between boulders and thick vegetation, up to a calcareous wall almost 8 metres high. A large concretionary portal, called at first Cueva El Ocote, opened in front of them. They explored the first 200 metres and reached an enormous passage traversed by an underground river. They drew a quick map.

The desire to continue was strong, but time was running out. Furthermore, anxiety and uncertainty about the approaching tunnel was piling up. They must leave.

It took them 11 days to end the descent. The party of six came home with one thought and one thought only: to organise a second descent and explore the Cueva El Ocote.

*1994, the Primera Medusa*



### ***The beginning of a dream***

A picture of the descent of the canyon ends up on the cover of the Italian magazine 'Speleologia' (nr. 23, October 1990), and the wonders of those sites start to gain people's interest. A few months later a group of cavers from Sardinia made the descent of the Río and, in 1993, the French from the Club Martel focused their attention on the Tapesco del Diablo, a well known archaeological cave in the canyon that is easily accessible from the Ocozocoautla.

The exploration of the active resurgences in the very heart of the canyon, including the one of the Cueva El Ocote, was quite complex and it required specific organisation and detailed knowledge of the area which went beyond the occasional get together to accomplish yet another adventure. For this purpose, in 1991, Bernabei, Boldrini, De Vivo and Topani, along with Giovanni Badino, Italo Giulivo and Ugo Vacca, founded an association for geographical exploration. The experience of the descent was still very vivid, and that was why they decided to call it La Venta. And, looking for a logo that would convey the charm and mystery of exploration; they found it in the stone head of the Olmec site that goes by the same name in Tabasco. As green as the forest, it became the logo of the association.

Río La Venta Project was then born, a mix of science and adventure, which Antonio De Vivo presented to the *Rolex Awards for Enterprise 1993*, and won the selection *Exploration and Discoveries*.

In June and October 1993 the association accomplished two pre-expeditions, thereby creating solid bases for a systematic multi-annual research in the area. Bernabei, De Vivo and Giulivo spent a few weeks in Tuxtla Gutierrez to make contacts with local organisations and institutions. In Mexico City they acquired all the charts and the available aerial and satellite pictures from INEGI. They became bookworms to retrieve from the University each and every piece of scientific information useful on the hydrological area of the canyon and of the Selva El Ocote. An enormous

karst potential was discovered: hundreds of caves yet to be explored. Initial feelings were then consolidated and, finally, the Project could start.

### ***One expedition led to another***

In March-April 1994 the first massive expedition was organised, with a team dedicated to solely re-descend the canyon to explore and take pictures of the Cueva El Ocote. Having rediscovered the initial fossil tract, already explored in 1990, the cavers embarked on a fascinating but exhausting trip through waterfalls, lakes and underground sumps: Salón de la Cascada, Salón del Teatro, Salón Kinich Ahau, Rápidos de Chac, Salón Metnal, are some of the eloquent names assigned to the wonder



*The Primer Lago, in a 1995 photo*

which followed every exploration. The underground river was explored for almost 2.5 km, up to the umpteenth lake rippled by an irritating air current. The exploring team faced what every caver wishes for: the endless chance of discovery. However, the carbide for the acetylene lamps was running out and we had to head back.

The topographic survey clearly pointed out the origin of the underground river: the basin of absorption must be in the area of the colonies of López Mateos and Lazaro Cárdenas, on the orographic left side of the Río La Venta. Hydrologically, the cave had nothing to do with the Selva El Ocote, which extends itself onto the opposite side: so the cave was renamed Cueva del Río La Venta, the big cave emblem of the canyon.

From that moment on, cavers perceive that the cave must have some higher entrance in the forest, and so they decided to look for it as reaching the exploration area had now become very hazardous.

With the second expedition in October-November 1994, the attention was focused on the karst area on the orographic left side of the Río La Venta: some important access routes to the canyon become valid alternatives to the long and exhausting descent from the mountains. Different caves were explored near Lazaro Cárdenas and Unidad Modelo, which confirmed the karst potential of the area.

In April-May 1995 the third expedition took place and, after three days spent exploring, the Cueva del Río La Venta reached the considerable development of 7.5 km. Badino, Giulivo, Paolo Pezzolato, and Matteo Rivadossi searched the cave. To the segment explored in 1994, they soon added *Lo que el Viento se Llevò*, *Bella Durmiente*, *Lago Negro*, *Salón Sforza Italia*, *Corredor de los Tapires*, *Cañón de los Sueños*, *Salón a las Puertas del Caos*, *Galería Señales de Humo*, *Cascada del Viento*, *Barranca de Ollin*, *Salón de la Ciudad Perdida*, *Galería Genc Osman*, *Escalera del Diablo*, *Salón Murciélagos*, *Galerías de Knosos* and *Lago de los Perezosos*. Above this latter lake the ceiling of

the cave faded into darkness. A high chimney set an end to the exploring ambitions of the group.

### ***The junction***

A preview of the topography of the cave was published, along with other exploration results from the Río La Venta Project, in the magazine *Speleologia* (nr.33, October 1995). The cave was aiming directly towards the colony of López Mateos, where we decided to concentrate our efforts. It was now extremely important to find a higher entrance. In November-



*Campamento de la Cruz, the starting point on the river for the initial explorations of the Cueva, in spring 1995*

*Right: the approximately fifty-meter drop within the shaft of the spectacular Sótano del Quetzal*





December 1995 the portion of the plateau closest to the topographic underground relief was thoroughly explored. Also, one after the other, the Traforo de Osmán, Sumidero I, Sótano del Quetzal, Cueva of Tigrillo and many others, were checked in the search for a passage to the underground river. No luck: that sense of apathy and powerlessness already felt by the cavers in the Cueva del Río La Venta was back.

Then, finally, the Sumidero II was discovered. It was the largest and most beautiful cave found in the explored area, the one more similar, by dimensions and morphology, to the galleries explored from the bottom. A large gallery southbound, towards the canyon; it seemed to be the right one and was named *Sueño Blanco*. But a little way down the cave it was blocked by collapsed debris and the junction passage was hard to find.

The topographic relief however indicated that Sumidero II opened up right where the Cueva del Río La Venta faded into the darkness of the terminal chimney. The following day the cavers went back to Sumidero II. They checked every landslide, explored in vain all the holes. The air current, sign of a possible junction, was quite strong and it seemed to transport the odour of the cave, but it dissolved into the vast environment and vanished amongst the boulders that blocked the floor. The disappointment was high, and people started thinking that the topography was actually wrong. The dream called Río La Venta seemed to vanish, just like that, in a collapse hall.

Then Bernabei made one last attempt, he went back to the large landslide. From a small hole in between two rocks, only as large as a fist, a little air flowed out. Beating the rock and pulling it up with his hammer, suddenly a large sharp projection collapsed: the hole got bigger and the air increased. Bernabei was on his own. Manuals and common sense suggest not to proceed on one's own, especially if your team mates do not know where to come and get you. But Bernabei was in an exploring frenzy: he took off his harness and helmet and entered the narrow slit. Moving slowly between the rocks, he retrieved his helmet and with the only light







he had descended to a vertical slit from where the air flowed. Beyond, a short corridor unfolded, wider and wider, and the air got stronger and stronger. Then, all of a sudden, the darkness of a large pit.

Total emptiness, air, and far away the creepy sound of an underground river. That was her, the *Cueva*! And this pit was what, from the bottom, looked like a chimney. The long plunge of a stone spoke for itself: a 40 metres descent would be enough to reach, from above, the *Lago de los Perezosos*. That was it. The dream of the junction had come true. A key narrow passage connected the Sumidero II with the Cueva del Río La Venta, thus revealing more than 11 km underground system with a vertical difference of 405 metres, destined to become a classic crossing in international caving. The first full crossing, performed a few days later by De Vivo and Rivadossi, sealed the result of much hard work by the team La Venta. Rivadossi once again told about the crossing in the magazine *Speleologia* (nr.35, October 1996) and the echo of the discovery spread throughout the caving world. Many wanted to feel the emotion of this crossing and so, in 1997, it was Rivadossi himself who led a team of cavers made up of 4 Italians, 2 Americans and 1 Croatian.

### ***The roads of the water***

In the meantime, the association La Venta was dedicated to pursue its research in the area of López Mateos: from here, the water of the Río Osman runs through the plateau and flows into the tunnel to continue its journey towards the canyon through the Cueva del Río La Venta.

*Left: the large, fossil tunnels of Sumidero II, below which the underground river flows*

*Right: junction point between the two areas of the Cueva, explored until 1995*

Where was this water coming from?

Giulivo, Axel Kaiser and our inseparable guide Osman Enriquez went upriver in the Río Osman, across the whole plateau until they found the cone karst structures where the water came from.

Every fork of the river led to a new entrance of a cave and all of a sudden upstream of the plateau of López Mateos the system extends, cave after cave, up to the highest altitudes south of the mountainous structure. One after the other, following the underground river, the Cueva del Río Osman, Eijdal, Las Cotorras, Cafetal, Monterosa, Lucero, Lucas y Manuel, Pedro y Manuel, El Arco, El Dorado, Naranjo, Beba, Tigre, Pescado Rojo, Murciélagos. Many of these were massive, kilometre lengths of rare beauty that on their own would have satisfied the interest of far away explorers.

A unique and vast underground system extended for over 22 km in galleries with more than 24 entrances, which makes the colony López Ma-



teos the dimensions of a relevant tropical karst “park”. This meaningful result of the Río La Venta Project was disclosed in 1999 by publishing the book *Río La Venta, Treasure of Chiapas*.

The association went back to the Cueva del Río La Venta in April 2008 to accomplish a new crossing and to arrange the rig for rappelling in double rope, to ease up and secure future visits.

In April 2009 a photographic expedition was settled and the through-trip was made by 25 people: 17 Italians, 2 Romanians, 1 Spanish, and 5 Mexicans, with another party of 10 providing the external support. The cave was crossed at a slow pace, in over 60 hours, shooting 100 pictures and concluding the making safe of the rig and of the use of reflectors. In November 2010, Natalino Russo, Francesco Sauro and Roberta Tanduo, along with Kaleb Zárate of the Grupo Espeleológico Jaguar in Tuxtla Gutiérrez and 6 guys from the colonies of Lazaro Cárdenas and López Mateos, went back to Sumidero II to share the emotion of the visit to the underground river, at least in the first part of it. In accordance with the Reserva de la Biósfera Selva El Ocote and with the Municipality di Cintalapa, the first Introduction Class to Caving, dedicated to the inhabitants of López Mateos and Lazaro Cárdenas to, was arranged. Finally, in April 2011, some local guys, with the Italian cavers, made their first full crossing of the *Cueva*.

The exploration of this cave and of the great canyon is a long and fascinating journey in the streaming waters. To wade through them provided the cavers of La Venta with many opportunities to gain knowledge. They have learnt a lot about caves and the way of exploring them. They also learnt that they had not been the first explorers: archaeological evidence in almost all of the caves in the area has clearly demonstrated that the Zoques, ancient inhabitants of the region, would have been in the caves and understood their value. The caves cherish a priceless treasure: water, a symbolic and divine element from the *infra-mundo*, sacred in all the pre-Columbian cultures of Mesoamerica. And the water is the real character of this “underground dream”.



*Local guide Osman Enríquez led the explorers during their search of the high entrances near the López Mateos colony*

*Right: Salón Odisea, the exploratory limit towards the Sótano del Quetzal*







## THE EXPLORER'S JOURNALS

### January 1990, the discovery

by Gaetano Boldrini, Matteo Diana, Marco Topani

*Often, during our expeditions, the discovery of a cave is tied to memorable, almost epic, explorations. When talking about Chiapas, we remember a breathtaking 700 metre descent along the enormous walls of the Canyon del Sumidero to reach the entrance of the cave at the top of the famous Arbol de Navidad in 1993: one of the most visited places by tourists, but only from below.*

*Other memories are linked to hovering helicopters over 50 metres above the canopy of the forest, just like when we reached the Ombligo del Mundo in 1995; as well as exhausting marches, sometimes 15 days long, like the one we had to face a second time to the mysterious well in the heart of the Selva El Ocote, in 1998.*

*The Cueva del Río la Venta, on the other hand, decided to open up to us in a very gentle, discrete, intimate manner. Just like the Canyon del Río La Venta did. The decision to revisit it, to discover it, to tell about it, was almost inevitable; it grew in each of us and accomplished with no excessive outcries, in a natural way, almost as if it was something just for few intimate friends. The discovery of the cave is linked to a small decision that changed our history and that of many others.*

*It was early afternoon on the sixth day into the descent, it was January 16th 1990. A few months earlier, in September 1989, a hurricane had devastated the land of Chiapas and the pouring rains had created a massive flood. Despite the fact that three months had gone by, we could still see the sign of its passage almost everywhere. The canyon walls had been cleared of their vegetation up to 20-30 metres high, as if a gigantic razor had shaved them. Large sand banks would suddenly appear on the river's sides, as a fortunate shelter and set up for a base camp.*

*We were with our canoes on dry land at a loop in the river. We cannot remember why. Maybe because we simply wanted to rest. Gaetano was enjoying the warm sun rays on his face, while, lying on the dinghy, he freed his thoughts. Tullio and*

*Marco were consulting the aerial pictures and marking our position on the map. At that time there was no GPS, so we used the compass and decided with a rough guess.*

*Matteo was wandering nearby instead of staying with us, and went a little further downhill. A small brook coming out from the orographic left side of the Río caught his attention, one of the many resurgences we had encountered up to that moment. The sight of that water pushed him to make, almost absent-mindedly, a small but fundamental choice: instead of going back, he went upstream for a few metres. He raised his head and saw, or rather he glimpsed, something high up in the thick vegetation. Or maybe, he just thought he saw something as he later confessed. When he returned, he told us that a cave opened up about 10 metres high in the wall of the canyon.*

*We had already seen and glimpsed many caves during those days and this one was just one of many. Gaetano got up almost reluctantly: he was, or rather we were all, very tired and with very little food inside us; he pointed out that even a small deviation from the original path could have compromised our supplies, time and energy. The exit from the Río was still quite far and we had no idea of what to expect, except for the certainty of having to enter the mysterious tunnel (in fact all the major difficulties had yet to come). He was perfectly right, but we were somehow drawn by that possible discovery, and we decided to go and look.*

*We picked up the lights and a 15 metre rope. We climbed up the landslide and we soon found ourselves on very slippery boulders. While we were putting our hands in every sliver of the wall, to climb up the canyon, we were trying not to think about all the hypothetical, but very likely, spiders' nests, scorpions and snakes.*

*All of a sudden, the cave was right there, in front of us; we could all see it. About 10 metres above us we could clearly see a huge dark hole. We slowly moved on the right and set the rope to make the climb easier. After a while a wonderful fossil portal about 3m x 5m stood out in front of us. Fossil, because the water flowed below, from the rocks. As soon as we entered we realised we had found something interesting: the ancient and majestic shapes of the gallery we were crossing were eloquent enough, but there was also the strong air current that blew in our faces and the peculiar and indescribable smell that only a caver*



*knows. The smell of a big cave!*

*After a few hundred metres, we got to the edge of a pit that overlooked enormous dark spaces; in the distance we could hear the underground river, maybe a waterfall. It was impossible to go on, we needed time and exploration gear. Once we got back to the dinghies, we marked the cave's position on the chart, and we noted it as a very promising one: a place to go back to see, no doubt*

*about that. We had hopes, but we could have never imagined that it would be the beginning of an extraordinary adventure. The story of one of the most impressive underground explorations ever and that even today, after 21 years, is not yet over.*

*Taking a break during the first descent along the canyon*



## **The first time**

by Antonio De Vivo

*The diary of those days unfortunately got lost. Time has erased many memories, thus opening up to losses, like water eroding the stone. The speed and fatigue of that first crossing have contributed to make things fade, but not everything is lost. Hard to say why some moments are carved in our memory whereas others vanish into semantic atoms, but this is what happens. Frames shattered in space and time, intense and indelible*

### **One afternoon, end of November 1995**

*I remember we were happy, this is an undeniable fact. A few days before, Tullio had found the passage we had been looking for, the last piece of a puzzle we were desperate to finish. The last white spot in the tableau and the river had been filled with a few metres of passages touched by the caves' breath and filled by the big Salón Odisea. We were trying to light up the immense darkness that surrounded us to make it describable and communicable. We were shooting pictures with the memory of the past with no certainty about the future. The photographic records were probably the most critical aspect, something that would leave us in a state of anxiety until the moment in which the lab changed the memories and pictures into images and colours. With maps it was different: if you were careful (and not lose the logbook) you would bring home the precious work with no anxiety involved. The day when technology would allow us to see in real time had yet to come. We thrust ourselves forward up to the highest spot of the debris line in the large hall, still very determined to find a passage towards the Sótano del Quetzal or maybe towards the Sumidero I. In Quetzal our elbows and knees had been completely worn out from crawling into a very narrow passage - named Galería de la Virgen de Nüremberg — in a desperate attempt to enter the Cueva from the Sótano. Then came the Sumidero II and the junction, but the dream to join together all the pieces on top of the system had not yet abandoned us.*

*I remember that in between pictures Pota had the idea not to leave Sumidero II and go for the whole nine yards. Not everybody of course, there*

*was a lot of equipment and we could not carry it all through the cave. We also had a very important meeting to attend, the following evening, in Tuxtla, that we could not miss. We were quite doubtful about the whole thing, and we figured it was better to give up.*

*After a while, while we were regaining our strength and fixing our equipment, Pota got back to the subject. It would have been great for sure, the first full crossing ... I had lots of doubts and I was also very tired, but my eagerness to leave was so obvious that Tullio said "Ok, you two. Be in time for dinner tomorrow".*

*It was a gift to me: he should have crossed the mountain first. He who solved the enigma and found the key to the passage. We both knew that I would leave him with a pile of bureaucracy to deal with; but Tullio was (and still is) like a brother to me and this was his way of showing it, just as he did in the past and he would do many times in the future...*

*The crossing had not been planned and we had to get ready with what we had available. Carbide, batteries, food and a little technical gear. We all climbed down to the Lago de los Perezosos; we said goodbye and left. A long night was ahead of us. We had no idea how long it would take us. Pota was more optimistic than me. We only knew that we had 20 hours tops, we could not rest, nor set up a camp. We did not even know the hydrologic conditions in the cave or how the floods had changed the morphology. I remember we started our race towards the Río and that I could hardly keep pace with Pota, who was actually flying, caught up in an uncontrollable enthusiasm.*

*We had to run, but we could not afford to hurt ourselves: the path was treacherous and a simple sprain could have turned our underground journey into a nightmare. It was just the two of us, too few really, for such a crossing. Over 12 km ending at the side of a hollowed river in between high cliffs, from where it would have been hard to send out an SOS message. We had no radio anyway, and cell phones were still in their infancy. Little by little I was starting to feel the draw of the cave, fatigue and worries vanished, soaked up by the darkness and wonder of the emptiness all around us. The dark waters of the Lago de los Perezosos had already become a memory when the walls of the Salón Murciélagos surrounded us without our real-*



ising it. Our steps and voices were soon drowned by the roar of the water that takes a huge plunge into the depths.

We tried to climb down the *Escalera del Diablo* without getting wet, but without much luck. There was a lot of water and we wondered what to expect ahead of us. The deeper we climbed the stronger the feeling of profound solitude would get. We were far, far away from everything. The long flooded tunnel of the *Genc Osman* took us to the *Salón de la Ciudad Perdida*, where the carbide lights struggled to light up the path, reflecting onto the halo of vapour that moved along with us. I remember we would walk



*A bivouac in the canyon, January 1990*

incessantly and we were slowed down by the sharp, slippery and moving edges of the *Selva de Piedra*. I remember them well: deadly. It is really dangerous there: inside and outside of the water. Everything moves and everything slides. No sprained ankles, just a few scratches cleaned by the water we dipped in.

As if in a state of trance, we walked through the amazing passages we explored a few months earlier. *Arroyo Blanco*, *Señales de Humo*, and *A las Puertas del Caos* would run next to us, while signs of mud, fatigue, hunger and drowsiness appeared on our faces. The *Cañón de los Sueños* and its shiny walls, carved by those tumultuous waters during the floods, woke us up. It is hard to describe the almost alien beauty of that place, a true jewel, right above the river.

We descended towards *Lago Negro*, remembering the steep slope that the previous April we managed to pass. We then calmly proceeded towards the flat gallery of the *Bella Durmiente*. In April, while exploring it, we kept on asking ourselves where we were, what place we had reached, incredulous, exhausted, and enthusiastic.

At the *Rápidos de Chac* I remember we were shivering both from cold and excitement just at the thought of what we would have done if we had found the *Primera Medusa* passage flooded. Given our situation it would not have been the best conditions to find, but the cave helped us; maybe it wanted to reward our unconditional love for it, not to act cruelly on our fatigue, and had left a narrow passage open between the water and the large concretion. We just made it. Cautiously moving with the water up to our necks and avoiding sinking into the quick sands at the bottom.

From that point on I only remember the way out. Mud and fatigue, hunger and drowsiness blended with the smile that arises from the cave and seeing the daylight.

We climbed down the *Río* and got back up to the *Campamento de la Cruz*. It was not over yet, we knew that. The path was a mud slide, and we encouraged each other not to sit down and simply pass out. I cannot remember how long it took us to reach *Lazaro Cárdenas*.

I only remember we got to *Tuxtla* on time for dinner.

*Tullio* greeted me with a hug.

## **Cueva del Río la Venta: connecting a dream**

by Tullio Bernabei

*What does it mean to connect, or join, two caves? It means finding a passageway that allows one to pass physically from one cave to the other, hence demonstrating that the two are actually one. It could almost seem trivial, if it wasn't for the fact that often, some specific circumstances make it one of the highlights or most symbolic moments in speleology.*

*The first of such factors is that when two caves are joined, their sizes are combined mathematically, since they are now considered one single cave. The histories of their explorations also become as one, and the longer and more troublesome they are, the higher the value entrusted to this kind of final act. In particular, the longer and the harder people have worked to search for the connection, the stronger the feeling and symbolic strength of the moment of success. It is a true stroke of luck, an enlightening moment that happens rarely in the life of a speleologist, sometimes never. It has happened to me.*

*The area is that of the colony of López Mateos; the date, November the 25th 1995. For several days we have been searching the plateau for caves that could take us to the Cueva del Río la Venta, the large underground system that we had discovered in 1990 during our first descent along the canyon. It is a universe that must be explored climbing upwards. Since then, all the expeditions, the long stays in the underground base camps, the dangerous climbs, the wandering through immense collapsed chamber, the endless topographies, all this was aimed at nothing but getting up there, at the beginning of everything, reaching the surface through some water sink in the middle of the forest. Doing so would mean achieving a great dream of ours, making the very essence of the idea of cave real, while connecting the plateau to the bottom of the canyon through a fantastic journey almost 7 kilometres long, with a drop of more than 400 metres. One of the most impressive "traverses" on Earth.*

*However, all attempts from the bottom had eventually run into a large, dark lake, the Lago de los Perezeros with its ceiling fading into the dark, simply out of reach. Hence, we intensified the search from above, trying to find the "good" hole that would allow us to enter inside the system from there, guided by the precise topographic charts we had drawn in the previous years. To no avail.*

*Trafo de Osman, Sumidero I, Sótano del Quetzal, Cueva del Tigrillo and many others; each time they all seemed to be the right one, in the right place. Yet, the passage was not there. The Cueva Sumidero II del Río La Venta, which we reached thanks to Manuel Pérez, was no exception. It was the largest yet, with the best orientation, and when it came to morphology, closest to the tunnels waiting for us further down; but the passage was not there. Once the maps were properly positioned, following magnetic declination, they told us that the Cueva del Río La Venta had to be underneath our feet, 50 to 60 metres below us. We could almost smell its perfume, but we could not enter inside it. There was no sign of any logical passage.*



*On November the 24th, 1995, explorers made it through the junction after passing a landslide*



*On the second day of exploration we were disappointed. The cave was gorgeous (its initial part is called Sueño Blanco, White Dream) but at that point we did not really care.*

*“It looks like our topographies are wrong, big time”. The doubt grew more and more intense, while we rested, all sweaty, on some heap of stones. Yet I felt inspired, blessed by that fortuitous state of hyper-sensitivity that at times grab one’s mind while underground. I already had a stroke of buena sorte when I had found the continuation at the top of a flowstone, beyond which a couple of kilometres of large tunnels blocked by large rock falls were waiting for us. We checked them all, one by one, slipping into every crack. Nothing. The air stream, a main sign of a junction, was intermittent: the spaces were too large to be able to feel it. Nothing. And then it happened.*

*Were in the final hall, partially filled by a large heap of debris. After completing the umpteenth verification my pals give up, and decide to head back in order to carry out some more topographic survey. I am just about ready to follow them, thinking how, once we had gone, nobody was going to be back here for years. That is the way it normally works, and even more so when dealing with places so difficult and extreme. This area of the cave is going to be stamped as explored and that would be the end of it.*

*It was at this point that I heard my voice telling my friends “I’m going to give it one last try. I’ll catch up with you in half an hour, at most”. Once again, I throw myself into the large rock fall and almost immediately spot a small fissure, about ten centimetres wide, between two boulders. A faint draught blows in my face; I stop, pondering for a moment. It is not much of an air stream and it would take a lot of digging: it is not really worth it. Maybe.*

*Inexplicably, I decide to drop my backpack and continue surveying for a while, lighter, as if I wanted to delay the final decision, to force myself to pass by that spot once more before leaving. I continue creeping through the large heap of debris; at times proceeding on all fours, at times climbing up and down between huge boulders –which are stable enough, luckily for me. Nothing at all.*

*After twenty minutes I am once again out of the rock fall, tired and sweaty. If it wasn’t for the backpack, I would just leave to join the others, who by now are getting worried. I am longing for a cool cerveza.*

*I go back to pick up my backpack and of course I pass by the fissure, which was*

*now blowing air more forcefully. Still not much, but it was something, or at least that is what I fool myself into thinking; being sweaty, it is only natural to be able to better feel the breeze on my face.*

*The hole is nowide than a fist, but this is the last chance: I my gut feeling tells me that I must not, I cannot leave now. I start hitting with my hammer, leveraging onto the boulders, but the rock is very hard. Suddenly, a large spike gives way and widens the hole and my sweaty skin is cooled by a stronger gust of air: not it is real. I double my efforts and the passage slowly yields; half an hour later I am looking at a narrow cavity underneath which I can make out a vertical tract, a small pit. The air is really blowing through, now.*

*Manuals and common sense dictate that one should never try and force his way through a passage when alone, even more so if your companions do not know where to go look for you. But I am in a sort of ‘trance’, something that has happened to me only two or three times during my 25 years of caving. I feel secure, lucid, just my heart pounding too hard in my head. I take off my rigging and my helmet, as the hole is really tight; the acetylene is also too bulky and has to go. I go in.*

*I slip slowly through the rocks and spread my legs in the well, then I grab my helmet with the headlight; a thought crosses my mind: “I really hope that the bulb won’t die on me right now...”. I begin chimneing down and after a few metres I can see the bottom; it appears to be closed. “Damn, it’s a blind sink”! However, once I reach the end I spot a vertical fissure, tight but large enough to let me through; air is flowing through it. I push in, the helmet in my hands, after taking a good look around to remember my way back... A rock fall can be like a maze.*

*A short corridor gets wider as I proceed; cool, strong air on my face. I quicken my pace, heart pounding hard in my head... then, darkness. All of a sudden, I almost fall into the darkness of a large shaft. Total emptiness, air, and the low rumble of an underground river coming from afar. It is her, the Cueva del Río La Venta: I know it. The long flight of a stone tells me that a 40-metre descent will be all it takes to have her. I turn my small light off and I sit down.*

*My heart shows no sign of slowing down, but I take my time to savor the fatigue and the joy, including that which I will give to my pals of a lifetime. I can see all their faces down there, on the shore of the Lago de los Perezeros, looking up. I can see myself shouting: “Hello my friends, I am up here! We made it”! A dream- the instant of crossing. One instant- worth a lifetime of dedication.*

## **Campamento de la Cruz, Río La Venta, Spring 1995**

by Matteo Rivadossi

*It is a clear message the one you can perceive, almost breathe, along the canyon, interpreted through the apparent quietness of its waters, the magical energy forced between the unreal white walls and the sides of a forest that is just too green to be tropical, all without apparent difference because the void left by the Río is closed in a box with transparent embankments of a remote history in which we wanted to plunge, agreeing to gently close its cover behind us. Behind the precipice, the entrance opened on the Cueva, or rather, that was the material proof of my idea of Cueva: Yeah, because the rest was already in my head, three-dimensional descriptions and impressions that I only needed to compare once entered. Only details, at this point. At the entrance of the temple, an vital breeze blows, a wind that is the story of a river carved in the rock, in the darkness and in men of the past. This represents a long heritage for which respect is mandatory. You just have to wait, wait and listen out until the swirls of raw impressions align with you sense of balance, that here, like in front of a mirror, you must drop to start a new life, all over again: this is the ticket to the theater of our illusions. Even the longest journey starts with the first step, I think, as I gather the first information entering swiftly the space of the first leg. The Cueva begins shortly after we dispose of the Histoplasmosis masks. We have no more excuses, we must accept that force around us in order to live among such a grand magnitude. "it's too hot... we are taking too many skids... if we only had brought carbide from Italy instead of this powder ..." this was the maze of phrases that really endangered our entering the intimacy of the mystery of those places. False comments of awe and deep admiration followed, before the brightness of the geometry, colors and shapes that incredibly, we were going absorb, trivial excuses to stand still, to breathe, and not be lost. Salón de la Cascada, Salón del Teatro, Medusas, Rápidos de Chak, Lago Terminus '94: seen that, been there... okay, where do we want to go now? We are granted permission to ascend, it's Giovanni, Fox (Paolo) and myself. Enduring, wading pools and climbing around amazing flowstones, we manage to consider regular even the frightening violence of a gust that continues to carve tapering impressions on the walls, settling only in the silence of the Lago Negro: it's late now, but our thoughts have already spotted there, above the dreary room, a chance in which to still believe. There are times when, at the camp, the rain helps us meditate and, in the cave,*

*choose the most opportune moments to think about the hard price of a defeat, because backing off may sometimes feel like losing. Finally I rise fastened to the usual rope, like many times, like one of the many climbs, matching the emotions I had mentally tasted in the tent. Confident steps alternated with a couple of strings blend the delicate moments of determined concentration. In next to no time, I find myself planting the resting pitons, a booty of sweat and satisfaction. The cave there, above us, opened with the same very key that we still deserve to possess, perhaps. Countless times we dreamed of such extensions, huge pipes, pits, and halls, imagined in fantasy and now suddenly real: we need to reflect on the reasons why everything, does not yet vanishes in the practice of shrewd experience, in the rush. We must remember that we wandered among the blocks in Las Puertas del Caos,, within ourselves, we are in those huge portions of space, like the astrolabes in a universe of thoughts, only partially defined. Behind, the path we crossed is the same as the water's and the air's that, once again, chose to flow together. A deep rumble beneath our feet, finally, begins to shake our progression. Untranslatable words of clear confusion: we are the elected, chosen to go up the Arroyo Blanco, of the Cascada del Viento up to the Ciudad Perdida. We feel almost like the Young Osman's proud warriors. No, we will just continue and face any obstacle we may encountered, perhaps far from here, that might block the passage but, between beaches and convenient troubles, it is really hard to imagine something that can force us back. Not even the Escalera del Diablo, with the power of its river, over difficult passages immersed in wind lashed waters, seems a tough enough obstacle to convince us to give up. It is not an insight but a frantic determination that leads us to climb the steep cliff, boldly challenging the roar of thundering waterfalls. Climbing softly and going a little further, in the vastness of another portion of darkness: another step forward for a journey that has already been written. You can really be moved and weep like the shrieking of those many bats that darken the wall on our right. They smell of wildness, typical scent of the surface fauna, but now, we are under the ground, almost ten kilometres away from the furthestmost idea of forest. This really means so much to us. Still in the belly of great, regular and quiet galleries, while the clock reminds us that it is morning outside, we walk in disbelief, searching for light, an output to our many thoughts. But it is still no time to go back to our base camp. Even magic tricks would be valid expedients to get to the latest upper branches, we lack material, so we proceed fingers crossed, hoping this would be enough to trick our unconscious mind. A gentle breeze blows from the hall we can only peep, resigned,*





*A moment of the May '95 exploration: acrobatic ascent above Lago de los Perezosos, just discovered*

*because of the water level up to the throats, beyond that untrustworthy lake, with its bottom made of mud and many doubts, and perhaps, behind the corner, there really was a ray of sunshine. Is our selfishness a journey without a destination? Every so often we must also accept to be unready: Giovanni, Fox, and myself, none of us had ever been so further inside a mountain before, and this seemed to be the best place so far.*

#### ***My Home, Brescia, September 2011***

*Sixteen years later, I read this piece and I still find it relevant. It is beautiful to lose yourself in a few minutes in the memories of those wonderful expeditions. In that distant spring of 1995, the stop was imperatively set above the Lago de los Perezosos. Now, beyond all common sense, with the only certainty of being in a dream, and the difficulty of coming out. Helplessly leaning over the threshold of the window, we left the imagination in that room, beyond that dense black lake, beyond the brittle shores. We needed a rope but we could not unarm the path behind us! It would have been helpful, for example, if it had been morning outside so to see the light of a possible open pit. Undoubtedly, more time would have been useful. Just the time to figure out what was left there between us and the surface, mathematically, not too far, but still enough to contain miles of that maze. We were alone. Sarcastically only 50-70 metres below the forest outside, but 10 km from the exit. We were three brothers wrecked in front of a sign made with the heart. Then the great return, mapping back like robots, to the distant camp that was lying on the brilliant calcite. There we saw our forgotten companions: Italo, to whom I told, while hugging me, that that was not a beautiful trip in the cave but, rather, a real journey through space. It had been like to penetrating in a glacier with no end in sight. Infinite, timeless. I was on my first expedition to Mexico and I could not imagine I would have done another dozen in the same country. Not even could I know I would collect 250 km of exploration all over the world. I could not think that, maybe, I would not have met a new Tullio, who would chose the right place at the right time for me. And not even new Ugo and Chiocchino who pampered me like a mascot, while preparing the only chicken in the village to the light of the carbide. I would not have been 25 any longer. Since then, I have never cared that the Cueva was metrically surclashed by many others, more difficult and convoluted and much longer complexes, in which I have consumed myself. I was living for her in exchange to those great days that will last forever. For this reason I was and I will be a privileged.*







# Through-trip from Sumidero II to Cueva del Río La Venta

*Francesco Sauro*

Recounting a cave like the Cueva del Río La Venta is not an easy task, given that it is often difficult to find adjectives that are not excessively celebratory or exaggerated to describe the several and great underground scenarios. The only way to really understand its beauty and attraction is certainly to see it in its entirety but, given the difficulties, both technical and physical, not everyone can be so lucky. Thus, the purpose of this chapter is to take the readers by the hand and guide them through this underground world, stimulating the imagination with an ample selection of photographic images, which document the most significant scenes in the entire route. A voyage that begins where the light of day ends and that finishes in the Canyon del Río La Venta, where a river of the night once again returns to reflect the rays of sunlight.

## ***The beginning of the underground journey***

The true protagonist in this journey is water. A stream which, after uniting with different tributaries coming from the south-east and

south-west of the colony of López Mateos, shoots out into a large gorge, the Sumidero I, from which it begins its long underground voyage towards the bottom of the Canyon del Río La Venta. In reality, this water already has a strong propensity for “speleology”: above the neighbourhood the various streams come out of large cave springs, passageways and proper underground caves like the Cueva del Naranjo, the Cueva Ejidal, the Traforo de Osman and many others. But it is in the large entrance of the Sumidero I, where its longest underground journey takes place into the heart of the plateau.

Unfortunately, speleologists can only follow it initially for just a few hundred metres in a grand gallery called *Escape a la Victoria* just because it was believed that from this point, the exploration limit that was reached from below in spring 1995 could be easily achieved. But man cannot always pass where water does and in fact at the end of this passage a sump blocks further exploration. It is evident that the stream must go for a few or tens of metres through water-filled conduits, to re-emerge in other air-filled galleries extending towards the north, until reaching another large cavity from below, which opens at the surface: the Sótano del Quetzal. It is a large abyss created as a result of the collapse of a tunnel underneath where the river flows. The giant blocks of the collapsed vault ob-

*Entrance to Sumidero II, entry point to the underground journey*



*Entrance to Sumidero II*

*Right: the Sueño Blanco conduit*

*Page 64: the large, fossil gallery left behind by the river, which now flows 50 metres below*

*Page 65: the first drops lead to the ancient flow conduit of the underground river*

struct the passage towards the valley but, when the river is full, it is possible to hear its noise, a few dozen metres below. Inside the sótano, sunlight creates suggestive light effects united by the beautiful play of reflections near a large pool of concretion that opens up to the south. From the cone-shaped debris towards the north instead, you enter the *Galería de la Virgen de Nuremberg*, a fossilised crawling passage mill that gets ever narrower allowing the sound of the underground river that runs below to lose itself again in unknown tunnels that have not yet been explored. In this way, the Sótano del Quetzal represents only a window to the river, without ever allowing the explorer to definitively have access to the flowing river.

### ***The acces gate***

But water has left open other old pathways allowing speleologists to discover its secret route through a large cave that opens even more above the underground river: the Sumidero II del Río La Venta. This is the entrance that allows one to rejoin the water flow and follow its path without insuperable obstacles, for almost 7 km with a 400 metres height difference until the Río La Venta.

The entrance to Sumidero II of López Mateos is a large, 7-8 metres wide cavern which opens up at the end of a large closed valley, a few kilometres northeast of the Sótano del Quetzal. From the vast first room you follow a low tunnel to the left until you reach a junction. Keeping to the left you enter a series of tunnels which rise and quickly close onto flowstones. To the right you access the magnificent *Sueño Blanco* passage, characterised by a peculiar phreatic morphology with rectangular section, which continues with extreme regularity for about ten metres. It seems incredible that such a gallery has been created by nature and is not an artificial tunnel made by man. Special conditions in the rock mass (parallel vertical fractures and horizontal strata joints) guided the water into forming



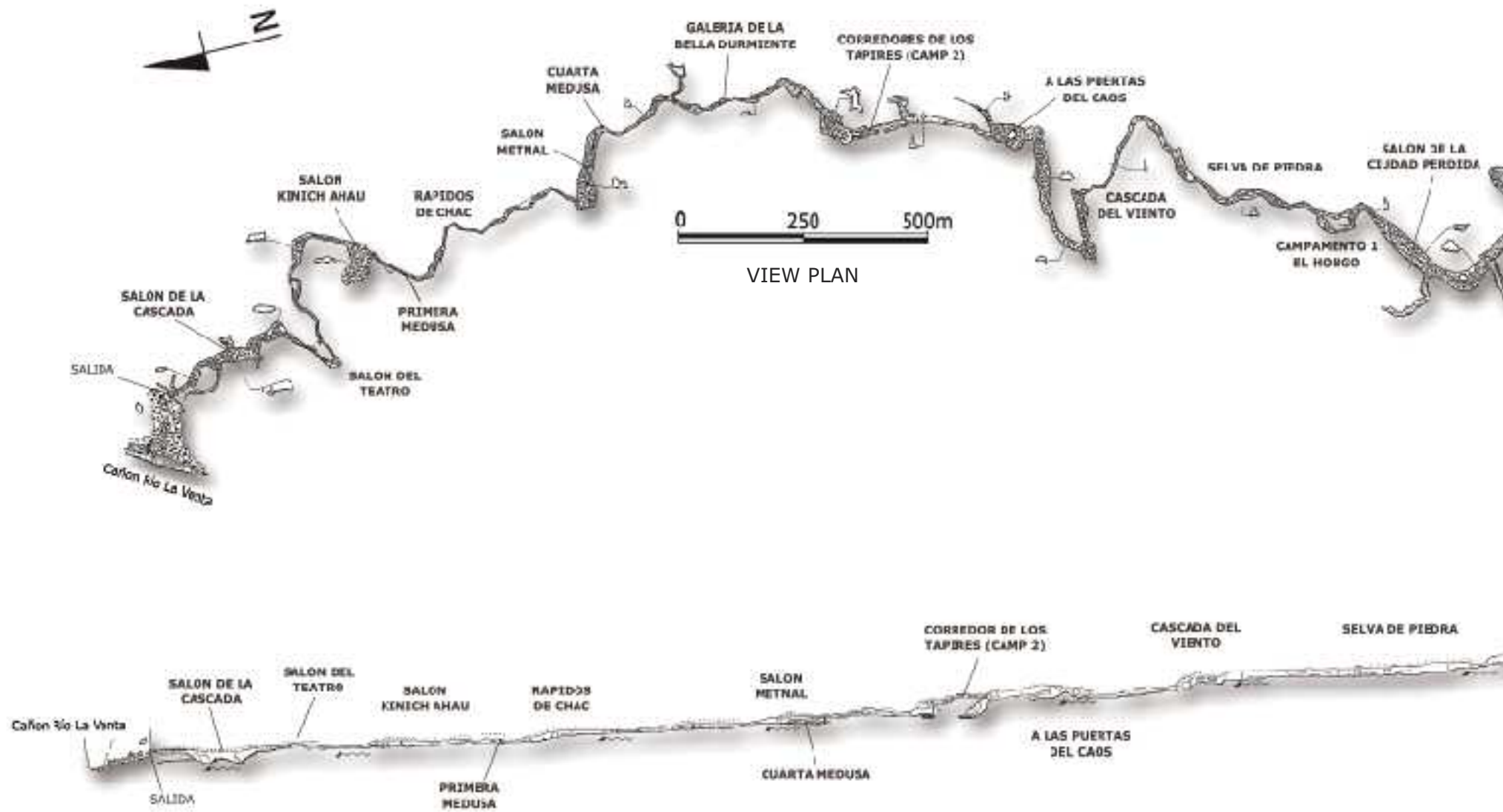




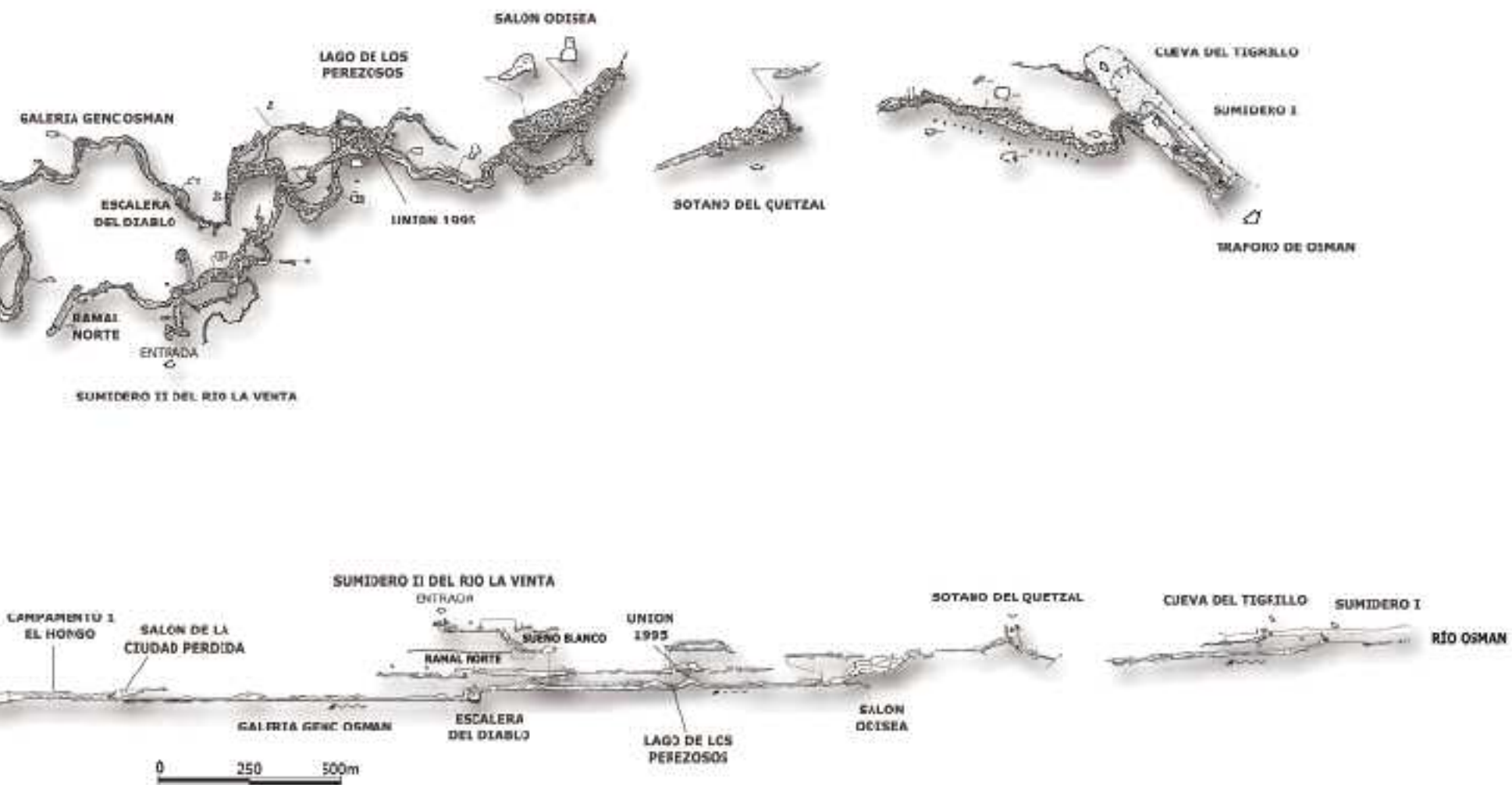












VERTICAL SECTION VIEW





these geometric tunnel. Once beyond some slippery rocks we arrive at the first vertical pit in the traverse, of about 15 metres. Other two pits follow, 10 and 15 metres deep respectively. Further on, it is still a white polished, rock environment full of cupolas, suspended bridges, and similar lateral passageways formed in paleo-phreatic conditions, which means when the cave was once completely submerged by water. At the base of the last pit, with an ulterior descent of three metres, there is a lovely course with a rock floor which leads to a ledge overlooking a much larger tunnel (20x20 metres). We have reached the ancient tunnel where the underground river flowed, which is now 50 metres below this level. Following this ancient level towards the valley (the *Ramal Norte*, which is to the left) the tunnel becomes a spectacular canyon that, after 200 metres, is interrupted by a beautiful flowstone. This gallery also hosts the biggest colony of bats in the cave with an estimated population of some tens thousand.

At the junction, descending to the right, towards the south (*Ramal Sur*), the ancient tunnel is blocked by an enormous flowstone which you can pass over by using a rope through columns and stalagmites. Once you have passed a few low passageways, the main tunnel becomes large again allowing you to walk easily for about 400 metres, through areas of breakdown deposits and floors with concretion pools (gours), often covered in a fine film of mud.

After numerous rises and drops, you arrive at the largest part of this branch, a large cavern filled with debris and with an imposing

cone of rubble in the centre. It is here that in November 1995 the efforts of explorers were concentrated to identify a passage that would join with the Cueva del Río La Venta below. It was evident on the topographical maps that at this point the two caves were one over the other, but that the flowing river ran some ten metres below this fossil area. Initially the southern end of the cavern was searched following the natural continuation of the ancient tunnel, but the exploration had to be interrupted due to landslide debris, without air currents that indicated where to continue the search for the underlying river. In the end, the good way was discovered through a complex path among the blocks of rock, between the cone debris and the left wall of the cavern.

Following numerous small “stone-men” and reflectors you reach quite quickly the small pit of the junction, a narrow perpendicular passage of about 5 metres. Here you will find the carvings of the explorers to celebrate the 24<sup>th</sup> of November 1995. The jump leads to a large crack which, after a few metres, looks onto a dark chasm at the bottom of which you can hear the gurgling of the river.

### ***The underground river towards the Escalera del Diablo***

With a spectacular free-rope descent of 35 metres you land in a vast cavern full of rockfall blocks. A large block in the centre has the following written on it: “On this beach, so we never forget”, in memory of the first explorer who reached the river from above. Descending from the pile of debris towards the north you reach the shore of the dark *Lago del los Perezosos* from which the river water runs down valley in the direction of the Canyon del Río La Venta. Descending the debris fan towards the south you reach a flooded gallery that allows you to move up-river against the current for about 200 metres, until you reach a huge cavern, about 80 metres wide and almost 200 metres long: the *Salón Odisea*. Through the

*A large fossil tunnel through which the ancient underground river flowed*

mass of blocks of this large cavern, the stream coming from the colony of López Mateos filters through after it has been swallowed by the Sumidero I and passed under the Sótano del Quetzal, whose tunnels are about one hundred metres from here, separated only by breakdown sectors that have not been passed so far, but which could be cleared, maybe with not too much effort, to allow access to the two joining caverns.

Returning to the bottom of the rope, on the edge of the large *Lago de los Perezosos*, it is necessary, unless you want to take a swim, to climb up an inclined cable towards a window which provides access to a fossil passage, which is about 15 metres above. At this point the exploration of 1995 ended when, with a 5-days bivouac, entering from the lower access at the Río La Venta, the explorers pushed along more than six kilometres of passages below the plateau, finally stopping at this descending wall as there were no more ropes to allow for a safe descent. In memory of this amazing exploration the following is written on the wall: “A dream called Río La Venta”, along with the initials of the explorers and the date of the expedition from below and the subsequent junction from the Sumidero II.

The tunnel can be followed for about one hundred metres going beyond another sink-pit and entering a fairly complex area of fossil passages, named the *Galerías de Knosos*. It is sufficient to follow the reflectors and arrows to reach the large tunnel which shortly is transformed into a spectacular canyon which comes out beside the huge *Salón Murciélagos*. The name of this area is due to the fact that the explorers who were coming up from the river, upon reaching this point, saw many bats and imagined that another opening to the cave had to be near.

Crossing the cavern, a slope of rocks allows you to descend to the river level. You follow the stream along slippery rocks for about 200

metres keeping to the left until you ascend to a rocky ledge on the right. Squeezing through a passage among the rocks you meet up with the stream again which, after a few metres, spews out in the rumbling *Escalera del Diablo*. It is a spectacular 30-metre-high waterfall where the water bounces against the walls, rendering it a highly humid area.

The violence of the current makes it impossible to descend under the waterfall and it is therefore necessary to get beyond this obstacle through a long passage with fixed ropes leading through two successive droops into drier environments. From the bottom of the rope it is possible to observe the two waterfalls (another river as yet unexplored seems to join the known one from the right side) which drop into a large seething lake. All of this intricate descent was explored from below in 1995, thanks to a difficult and complex ascent that come out from the intuition of the younger caver of the expedition, Matteo Rivadossi.

### ***Ciudad Perdida, Selva de Piedra and Barranca de Ollin***

At the base of the *Escalera del Diablo* the river grows calmer and continues for about one kilometre to the vast *Genc Osman* tunnel. Following the river, you walk along a sandy edge where possible; otherwise you are forced into waist-deep water several times. Once you have passed a couple of big sandy bends you enter the mag-

*The large junction sink*

*Page 72: Lago de los Perezosos is passed using a rope-way*

*Page 73: reaching the river at the bottom of the Salón Murciélagos*



















nificent *Salón de la Ciudad Perdida*. It is an enormous room, 200 metres long and more than 50 metres wide, with a flat ceiling, developed as a result of collapses along the bedding, and with a floor strewn with giant boulders which make it very difficult to understand the right way. At the beginning of the cavern is an enormous pillar-like concretion, named *El Hongo*, above which is a large sandy square often used as the first base camp of the traverse. We are now about five or six hours from the entrance and only one third of the way through. The next part is one of the most challenging in the cave and so it is a good idea to face it in the morning, after a good night's sleep. Continuing along the cavern you leave behind, on the left, the not always evident fossil branch of the *Huerta de las Pequeñas Alcachofas* and follow a descending route almost to the river level. When the tunnel gets narrower, you go beyond an ascending passage and begin following the smaller, slippery tunnel *Selva de Piedra*. At this point, for more than a kilometre, you are forced to continually balance yourself on very slippery dark boulders and go over unstable edges in both air and water which are torture for legs and ankles. Half way through the passage you reach a short drop where the rope is often washed away during the seasonal flooding. At the end of the *Selva de Piedra* and once beyond a collapsed area of boulders the size of houses to your right, the tunnel becomes a high gorge with deep lakes and fast-moving white water: the *Barranca de Ollin*, also known as the *Arroyo Blanco*.

The river runs violently below forming whirlpools and deep pot-holes. To continue you often must wet yourself completely. The rumbling becomes ever more deafening until the stream shoots out through the imposing *Cascada del Viento*, a spectacular drop of about 20 metres, which you pass on the left and allows you to descend fairly removed from the water jet.



*The waterfall at the base of Escalera del Diablo*

*Left: the beginning of the long transverse at the top of Escalera del Diablo*

*Page 76: following the river inside the vast Galería Genc Osman*

*Page 77: almost in the middle of Salón de la Ciudad Perdida*







### ***Puertas del Caos and Cañón de los Sueños***

From the bottom of the waterfall, where the vapour and the wind is unbearable, you continue ascending giant blocks covered with calcite. You then descend on the other side through a couple of small jumps with pre-fixed, reaching a magnificent fossil bend with a concretion floor, where the base camp was set up during the 1995 exploration from below. Once you have passed the 180° curve you reach the lovely: *Señales de Humo* tunnel which is about 20 metres wide with the characteristic “arched-cross” section, full of clastic deposits under which the stream runs. At the end of the tunnel you find the river and move beyond a giant hill of rubble about thirty metres high which leads us to the *Salón a las Puertas del Caos*: an area characterized by mud deposits. During seasonal flooding, the downstream sump in this area is not able to get rid of all the water and ends up filling this large area, forming a giant lake with a surface area of several hundred square metres.

To find the passage you must be very careful not to go to the end of the cavern (towards the sump) and look for a rope on the left wall instead, for an ascent of about thirty metres (indicated with a reflector). Once at the top of the wall you access the splendid *Cañón de los Sueños*, an incredible passage carved by water which, during floods, allows the water from the lake to violently pass through this giant, normally dry canyon. This is certainly one of the most intriguing places in all the traverse, a gorge suspended between two pools, incredible for its lack of clastic deposits and the ‘scallop’ that cover the walls and the ceiling offering a marvellous play of reflections and shadows. The gorge descends for one hundred metres and ends up in a beautiful forty-metre shaft that is closed at the bottom by a sump lake named *Loch Ness*. Before accessing the drop you must find a rope on the wall to the left which, after fifteen metres allows access to the dry passage the *Corredor de los Tapires*. It



*From Barranca de Ollin, the river crashes with a deafening noise, forming the Cascada del Viento*

*Opposite: at the entrance of the Salón a las Puertas del Caos*

*Pages 80 and 81: along the Cañón de los Sueños*



















is a very decorated tunnel where stalagmites and columns emerge from a sandy floor creating a magical location. Of particular interest is a large stalactite that is at least three metres high, which, having detached from the ceiling, rises like a nail into the sandy centre of the tunnel. In this area it is possible to set up the second camp, very comfortably, but with a stronger air current than in the *Salón de la Ciudad Perdida*. At this point we are two thirds of the way through the underground route.

***Between crystalline lakes, frozen jelly fishes and giant rooms***

To continue it is sufficient to follow the wind until you reach a drop of about fifteen metres which leads to the large *Salón Sforza Italia*, also characterised by enormous sandy deposits and spectacular speleothems. Here you avoid going into the cavern but closely following the left wall passing through a few low passages and a “rolling mill” that you must crawl through with angel hair-like concretions. You then reach a giant debris-filled slope that leads to the edge of a shaft of about 40 metres which descends into a cavern characterised by a giant mud fan. At the base of the cavern you see the edge of the impressive and gloomy *Lago Negro*. You must stay to your left along the passage, where the water is shallower, but anyhow you are forced to have a full bath for about ten metres. The profile of this section of the cave is greatly modified by the flooding and so it is possible that over the course of time these areas are filled with sediment or become deeper making the swimming part longer

*Right: in the tunnel Lo que el Viento se Llevò*

*Left: an inner camp inside the Corredor de los Tapires*



or shorter. Once you've past this point you reach the *Galería de la Bella Durmiente*, characterised by mud and sand deposits for about 300 metres. You then enter the *Galería Lo que el Viento se Llevó*, along which there are alternating deep crystal pools, gours, and lakes from which magnificent and complex concretions rise. In the narrower parts there is a strong air current which forces you to proceed without pauses as you are already totally wet. You descend a small drop of a few metres and then after some hundreds of metres of lakes, passable staying on the left wall, you reach the summit of a flowstone wet by the stream, the *Cuarta Medusa*. The river comes from under the concretion forming a large lake in the marvellous *Salón Metnal*. A giant stalagmite, the *Tercera Medusa*, lies in the centre of this room. You cross the cavern walking initially on the right and then on the left until you reach a narrow gorge which leads to an area characterised by dangerous quicksand. You then reach another giant concretion, the *Segunda Medusa*. Once you've past a few more lakes you will hear the rumbling loud of the river that falls down through the *Rápidos de Chac*. The tunnel becomes narrow and loses about 20 metres of height resulting in two very risky rapids. You descend the first part following the right wall and then ascend on a ledge on the left side and from here descend with a rope for about ten metres. In periods of low flow you can also carefully descend directly into the river, maybe with the help of a rope. In the event that you are carried away by the current it is very difficult to stop yourself because the water violently enters a narrow passage at the base of the ramp.

A little after the rapids you pass through a vast semi-flooded tunnel that brings you to a lower ceiling from which an intensive dripping occurs. The strong wind that ripples the water indicates that the passage is open. In fact, the giant concretion called the *Primera Medusa*, occupies almost the entire cross-section of the tunnel

which, in case of flooding, can easily be water-filled blocking this passage. You proceed passing other lakes ascending among boulders until you end up in the large *Salón Kinich Ahau*, characterised by a large rockfall and a network of columnar concretions which hide the flow of the river. Once beyond this vast underground space, keeping to the right, you pass through a tunnel characterised by a large lake, the *Segundo Lago*, which leads to a bend where you begin to ascend a long wall keeping to the left and passing near a magnificent columnar dripstone. You reach a tunnel that you can pass through at different collapsed levels taking the intermediary level which is more accessible. We then move down to the river level, crossing a large lake (*Primer Lago*).

### ***The giant Salón de la Cascada and the exit passage***

At this point the traverse becomes very complicated and the water enters narrow passages. Close to a curve to the right you must go into a small tunnel on the left which leads to the *Salón del Teatro*, where the scenery of speleothems is spectacular. You ascend through the concretions and descend along a lovely tunnel passing over some rock-plates that are heavily eroded by water, until you reach a beautiful room full of fallen boulders. You pass through

*Inside the large Salón Sforza Italia*

*Page 86: the shore of Lago Negro is covered in sand and mud*

*Page 87: descending from Cuarta Medusa into the Salón Metnal*

















this to the left staying mid-height to then descend on a series of inclined blocks until you reach a large flowstone to be descended using a 25 metres long rope. We are crossing the giant and articulated *Salón de la Cascada*, with its immense flowstones.

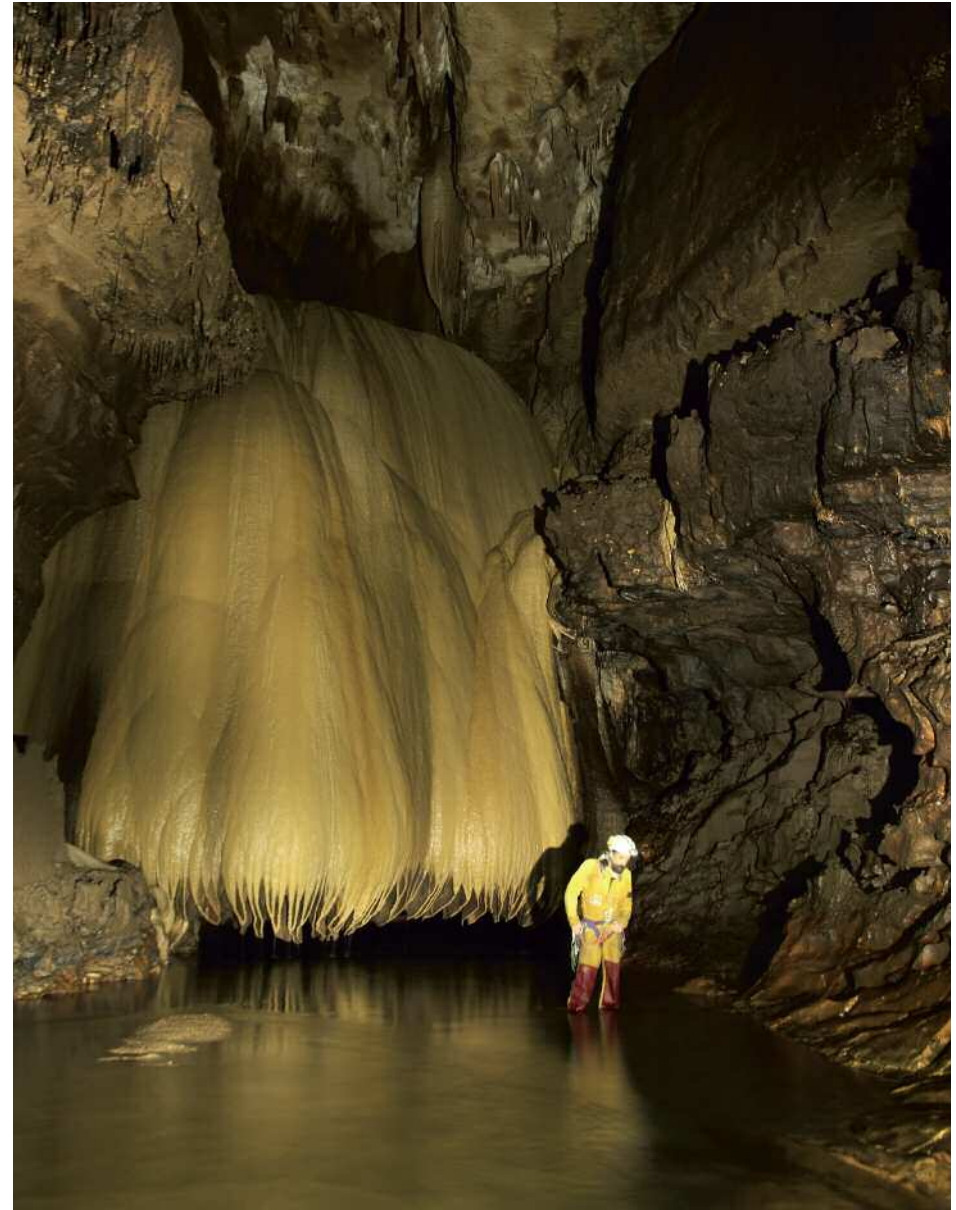
Once you reach the bottom of the drop you can proceed northward through this huge room passing a waterfall that loudly throws more than 500 litres/second of water into this cavern, creating water vapour over a large area. You ascend and descend a slope full of rubble characterised by an enormous stalagmite until you end up below an impressive flowstone which descends from the left wall. You climb up five metres of wall with a fixed rope and continue to ascend around 20 metres along a spectacular stairway of dry rimstone pools. At the top you reach the exit tunnel, with numerous bats indicating that the outside is close. You follow about 200 metres of the passageway filled with large powdery concretions until we glimpse the daylight in the Canyon del Río La Venta. The exit is a nice opening of 8 by 10 metres where stalactites and lianas intertwine descending from the ceiling, while the walls take on the green colour of the jungle's lichens.

### ***Back to reality***

The trough-trip is finished. The underground river returns to the light of day 60 metres below the cave entrance, flowing from in between fallen rocks on the bank of the Río La Venta.

*In case of flooding, the tight passage underneath Segunda Medusa can close off, siphoning*

*Left: Salón Metnal*



But for speleologists there is still a very challenging part, the return to the plateau after hours or days of tiring walking underground. Immediately after the exit you must descend eight metres to reach the channel below. You continue along the little valley for about fifty metres until you arrive on the banks of Río La Venta. You walk upstream along the river for about fifteen minutes until you arrive at the *Campamento de la Crux*, situated on a vast sandy slope on the left of the river, from which you can see a green wooden cross stuck in the beds of rock about 15 metres up on the opposite side of the river. From here you must follow an ascending trail climbing first some rocks up. The trail goes up the steep side of the canyon for more than 500 metres, until you reach the edge of the plateau. From here we have to continue to the first ranch some hundred metres from the canyon edge. You must then follow the well-marked trail for several kilometres until you arrive near a drinking basin on the right. A hundred metres beyond this point you must leave the better marked trail (it goes to the colony of Lazaro Cárdenas) and follow a path on the left which is nonetheless visible. You follow that for another 40 minutes until, immediately after a series of fences, you arrive at another junction where you must go to the left. After about a kilometre you will be near the entrance of the Sumidero II once again, and from here you must keep to the right towards your departure point. There are, however, many offshoots that could deceive you. This is why we believe it is very important that you have outside support from a local guide, with whom you can also organise a fish barbecue when you leave the cave and are on the bank of the river.

It is an unforgettable experience, despite the difficulties and many challenges. This through-trip is a long journey through a cave difficult to describe, with a vastness and beauty that are unique. But it represents, more than anything, an adventure tracking an under-

ground river with the intention of following its mysterious route from where it descends into the ground to where it finally returns to the light of day. All of this in one of the most intriguing parts of Mexico, the Canyon del Río La Venta and the surrounding Selva Zoque mountains.

Bon voyage to those who want to face this cave with the certainty that you won't be disappointed!

*Right: the starting point of Los Rápidos de Chac*

*Page 92 and 93: Salón del Teatro*

*Page 94 and 95: Salón de la Cascada*

*Page 96 and 97: Salón Odisea*

*Page 98: the large flowstone leading to the exit tunnel*

*Page 99: the entrance of the Cueva del Río La Venta is the last leg of the crossing*





































## Technical Notes

by Francesco Sauro

*All the information needed to visit the Cueva del Río La Venta, entirely or only partially, together with all the useful material and practical notes can be found in the website [www.cuevariolaventa.info](http://www.cuevariolaventa.info).*

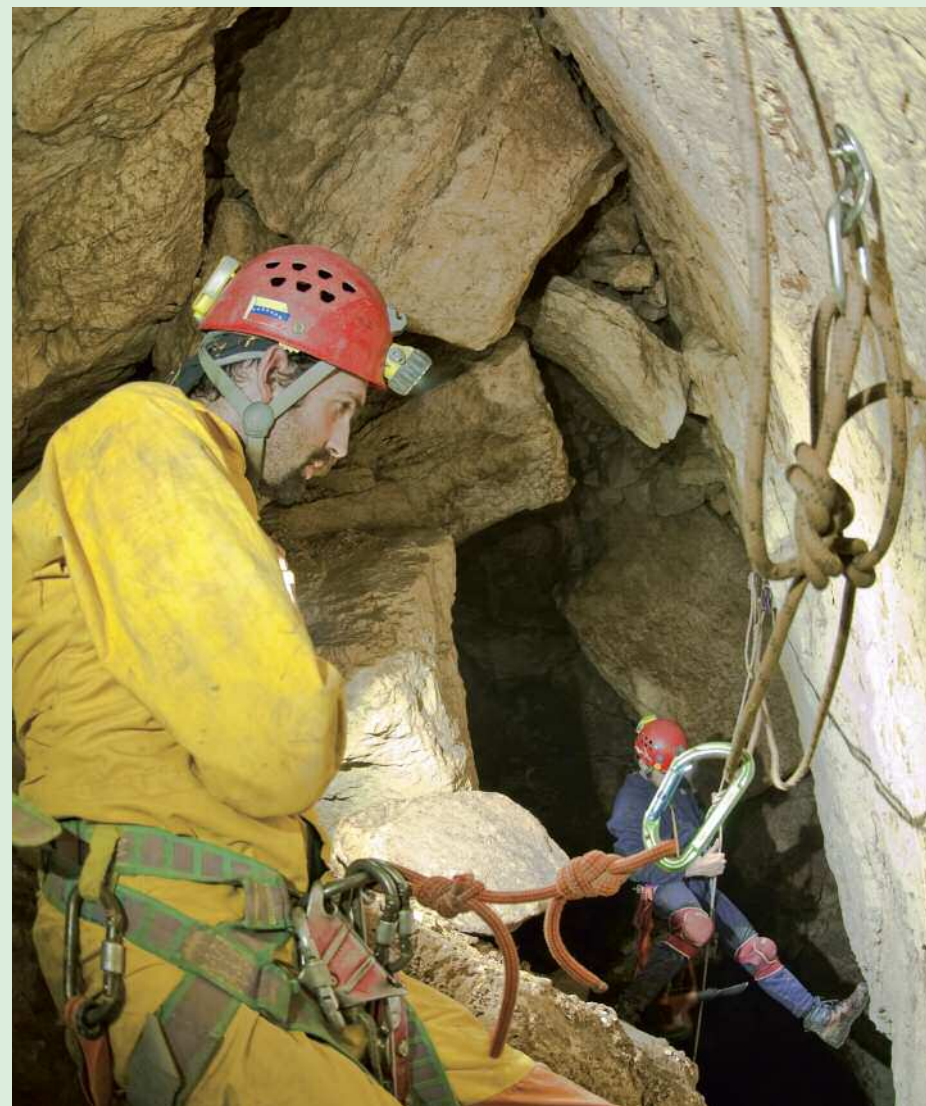
*Because of the length and the challenges offered by the cave, and also to avoid the overlapping of too many cavers and to minimise the impact on the underground environment, the landowners have decided to allow the entrance to the system only to one group of cavers at a time. To undertake cave expeditions, both national and international ones, it is thus necessary to make a reservation for the desired period beforehand (normally an expedition period of one week is enough). The cave will be exclusively available to your exploration team for this week, and the landowner will give the needed logistic assistance. The website allows to make reservations or to contact the landowners.*

*The transverse of the Cueva del Río La Venta comprises a long list of risks not to be underestimated. The most insidious is certainly represented by the constant difficulty in finding a path through big rooms, numerous landslides and lakes, often made dangerous by the presence of quicksand.*

*From the entrance of the Sumidero II to the exit of the Cueva del Río La Venta in the canyon, you walk for over 10 kilometres in length and 405 metres of altitude difference, passing through a sequence of underground scenes of rare beauty and grandeur. A trip of this length and complexity can be faced only by physically and technically well prepared and experienced cavers. We must always remember that once you haul the double rope up from the pit of the Lago de los Perezosos, any attempt to turn back becomes impossible.*

## Access

*The entrance to the Sumidero II is located in a private land owned by Manuel Perez Diaz, a resident of the Colonia López Mateos. Before approaching the cave, it is imperative to contact him and ask for permission from local authorities (Commissioner of Ejidal of the of López Mateos).*



*In order to proceed safely, the shafts are rigged with modern materials*



*Manuel himself or other experienced and fully trained local caving guides, may accompany you to the entrance and perhaps also during the entire expedition.*

### **Shafts and equipped parts**

*Along the trail, from the top entrance to the exit of Río la Venta, we find, in succession, 15 pits and 3 ascents. The maximum height difference is 40 metres. The main shafts are mainly equipped with Raumer Full Time type stainless steel anchors that, being equipped with plate + ring, have demonstrated to be particularly suitable for double rope descending. The longest drops were equipped with Full Time type double-anchor chains.*

*The traverses to get to the descents have been equipped and re-armed with new fixed ropes.*

*Unfortunately, the cave is periodically affected by floods that can inundate the grand halls, making the water level raise up to 10 metres. It cannot, therefore, be absolutely certain that the anchorages on site (particularly the fixed climbing ropes and traverses) will stay in place after long periods. It is thus recommended, for those interested in repeating the trip, to bring along a drill and anchors to resolve any technical difficulties along the route.*

### **Practicability**

*The cave is crossed by a stream that, in the final stretch, has a flow of 500-1000 liters per second in the dry season. Many are the flooded sections, already starting with Lago de los Perezosos in the first part of the cave. It is impossible to stay dry in the second half of the cave. Fortunately, the temperature is high, being a tropical cave, and if you remain in motion you will resist the cold and will dry fast. Hence, the use of wetsuits or similar equipment, is strongly discouraged. The best solution is to wear lightweight and easy to dry clothing underneath the caving suit.*

*During the crossing of flooded galleries you must pay attention to quicksand, sometimes difficult to spot, which can cause serious problems and waste of time and energy.*

*The path through the big chambers is well marked by reflective triangles in the first part, while in the final chambers you will only find a few cairns of*

*stones, frequently overthrown by the floods, so you will have to try and follow the description and identify, possibly with powerful flashlights, the best route. A compass can be useful.*

### **Exploration time**

*Exploration times can vary between 18 and 30 hours, depending on the number of members of the group and the conditions of the cave and the fixed equipment. On the top of this, we need to add 5-6 walking hours to return to the starting point. Of course we must take into account an almost obliged camp at the exit of Río La Venta.*

*In order to enjoy the cave in all tranquility, you should make one or two subterranean camps and complete the expedition within two or three days spent inside the cave. There are two camping points of particular beauty: the Salón de la Ciudad Perdida (a third of the route) and the Corredor de los Tapires (at about two thirds of route). It is not necessary to bring along tents and warm clothing for camping, it is however necessary to bring a complete change of dry clothes with you.*

### **Equipment**

*The following technical materials are essential to the trip:*

- No 3 ropes of 40 metres in length
- No 1 ropes of 20 metres in length
- At least one 30-meter rope to be abandoned for eventual re-anchoring;
- Drill, anchoring bag, several anchors and some locking carabiners.

### **Warnings**

*The crossing is permitted only and exclusively in the dry spring season - from March to May or in November - and only after prolonged periods of drought and stable weather conditions.*

*In case of flooding, some rooms become gigantic lakes, anchors and ropes are swept away by the violence of the flows, while many passages become sumps making the way out downstream impossible. You must be, therefore, well informed about the weather forecast and never risk to face the cave during abundant rainfalls periods.*





# Drawing the caves

*Giovanni Badino*

The history of geographic explorations in the world is comprised of a series of journeys aimed at finding riches, treasures, and commodities. Still, even from ancient reports one can see that quite often what the single explorer was looking for was not treasures but the novelty, the unusual. The quest for richness was often only the plausible excuse to justify the efforts and the expenses, paid for by unaware – and sedentary – listeners. In other words, even in the ancient times treasure hunting was just a way to tell the story of the risks and efforts of explorations without being seen as a fool...

In the past two centuries, and even more so in the last century, the official motive of searching for riches has just about disappeared and exploring has become a goal in and of itself, venturing into environments that had never before been studied because they were considered “useless” and unfit for human life. Deserts came first, then very high latitudes, mountain tops, the Poles... And into caves. Actually, of all these unexplored environments caves are still the most mysterious, because they have become an object of interest only recently and also because they are indeed

hostile places. And, perhaps, because it is really hard to imagine that one could find real treasures down there...

Caves are not suited for humans, they are the water's kingdom. Water that at times still flows in the dark and at times has abandoned them millennia ago, leaving behind its clear marks: dry torrent beds, flood levels, sediments of dry mud. For humans, caves have worked as shelter, especially near their entrances, water sources, burial grounds and for food preservation. Still, darkness is not for men and therefore caves were never perceived as part of the territory, just as it happened centuries ago for high mountain areas.

This is not the case anymore, now we study them as geographical elements. Any geographical exploration has at its foundation a representation of what has been explored: a summary, a draft... in a nutshell, a map. Speleologists are no exception to this rule and therefore, besides having teams carrying out the actual exploration, there are teams in charge of ‘drawing’ them.

Drawing consists of two phases. During the first phase, the shape and main dimensions of the cave are measured; in the second, these data are processed in order to create a representation that could make it ‘readable’ by those who might be familiar with the territory but have never suspected the existence of an underground network that could be traversed by humans...

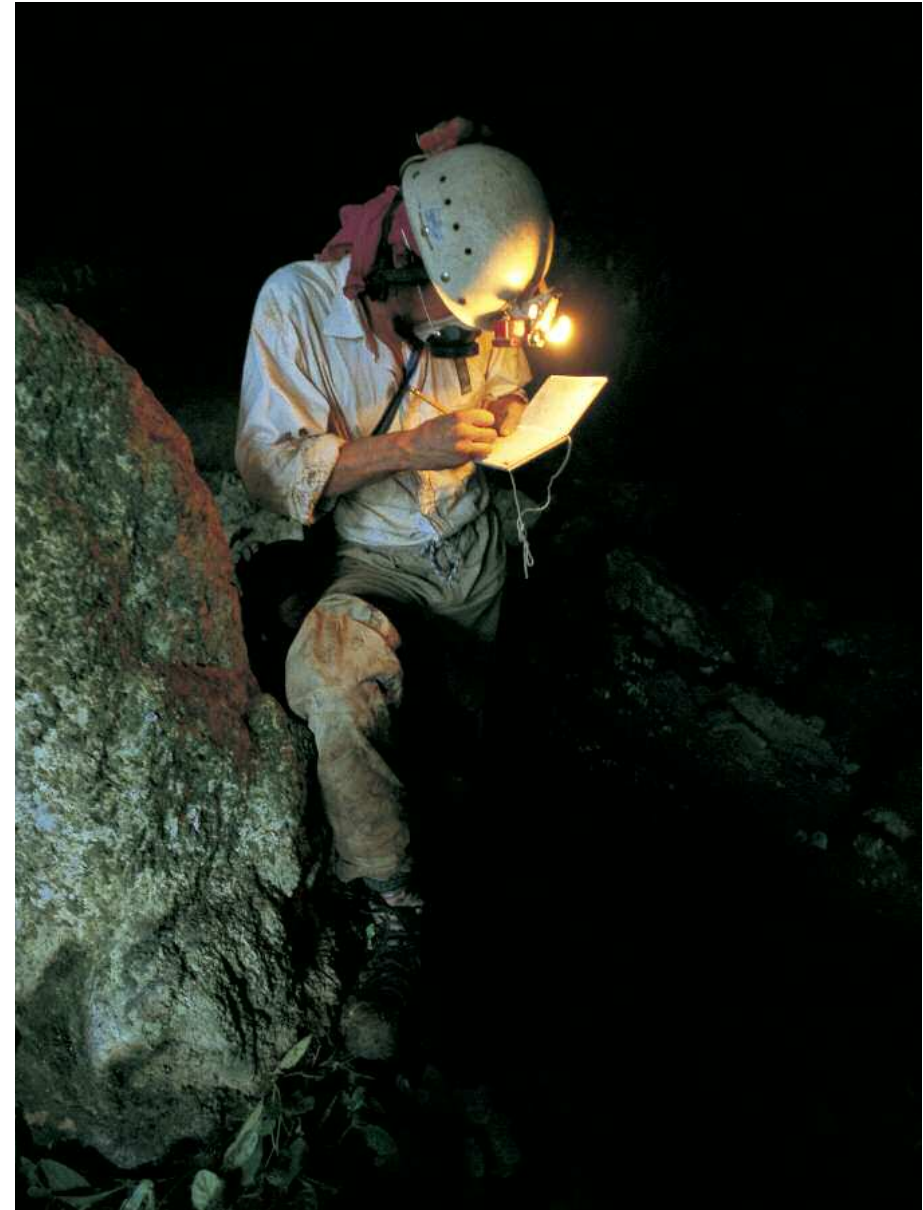
*Rancho El Arco. Gathering around the map of Río La Venta to plan the exploration*

As we mentioned above, measurements generally take place at the same time of exploration, because the former completes the latter and makes it communicable.

Measuring methods can vary, depending on the habits of the topographers, but the general procedures are as follows. Two people must work at the same time; one stands on what will be the starting point of the survey (his/her eyes become station 0), while the other one moves away until he/she reaches the point beyond which he/she would cease to be visible, for example because of a turn of the tunnel. In general, it is a matter of a few metres, dozens of metres at times, but it can also be a few dozen centimetres in some instances. The second person then stays on the spot, his/her eyes now being station 1.

At that point one must measure the coordinates of the imaginary line running through the space between the two persons (such line is called leg or shot in speleological jargon). This means measuring the length of the line with a measuring rope or a telemeter, its tilt angle with a clinometer and its direction with a compass (which, works perfectly fine underground, since the rocks are 'transparent' to Earth's magnetic field).

One of the two persons writes down the data –unless the team comprises a third person specifically in charge of taking notes– and draws three sketches: a plan view (how the cave would be seen from above), a vertical section view (how the cave would be seen from the side) and a cross-section (the section of the cave as it actually appears to the observer's eyes). Finally, the person takes extra notes describing impor-



*A moment of the 1994 topographic mapping*



tant features like air circulation (if any), presence of water, presence of concretions, types of rock and so forth.

Once the drawings are complete, person number one moves in the exact position held by person number two, at the same eye level (be careful of the differences in height between the two!), while person number two moves once again to the limit of visibility of person number one, creating station 2. Measurements and notes are taken, then once again person one takes the place of person two, forming station 3, and the whole process is repeated over and over and over...

Where the caves forks one must choose and map a physical station (such as a heap of stones, a mark on the wall or on the floor) and then proceed to map each branch starting from that position. The final result is a series of segments, joined and oriented together, and a several sketches describing the cave surrounding each survey shot.

It is a long, cold and boring job; yet, in the end also a gratifying one, because back home we will be able to draw a precise picture of how we entered inside the mountain.

Once the “field job” of data acquisition is completed it is time to transform them into an actual map. This can be done in many ways, especially now that software provides very powerful tools to depict territories; we will not go into the details of these techniques.

In order to render the three-dimensional shape of a cave onto a bi-dimensional sheet we usually create three distinct maps, which can be considered the least acceptable result of a speleological exploration.

The first map is the plan, which is the projection of the cave onto the horizontal plane; in other words, it shows what a hypothetical observer hovering at high altitude would see if the mountain was transparent and only the cave was visible. This type of map is quite useful to understand the extension of the cave with respect to the territory, because it can be overlaid directly onto the normal, ‘external’ maps.

The second map is the vertical profile; the whole cave gets ‘flattened’ onto

a vertical plane, as if it was a three-dimensional paper model that we wanted to flatten like a folding door. In this type of representation, the distances between different sections of the cave are lost but it is possible to get a general idea of the cave’s path; specific features, such as sinks, relative elevations of different tunnels and so on, can be appreciated.

The third map puts together, side by side, all the cross sections of the passages (one for each shot). Of course, in this type of map all information about spatial localization is lost, but its analysis allows reconstruction of the details of the cave’s formation as the shape of the tunnels provides plenty of hints about their genesis.

As we mentioned above, this is groundwork, the bare minimum required to be able to begin to understand the underground territory.

Only underground? Not quite, because the shape of the territory outside is linked to what lies below. Every time a cave is hidden below the surface, it also affects the shapes above it; a riverbed disappears against a rock wall, a large depression appears, a mountain range shows that erosion has acted less on the outside and more on the inside, and so on. Often these effects on the outside shapes have disappeared, eroded by millions of years of precipitations, but other times they are still there and studying the caves can explain their structure.

Hence, we can make inside-outside maps to associate the internal passages to outside structures, unraveling the mysteries of either one. Then we can prepare three-dimensional maps –axometric or perspective– to summarize their whole structure and, thanks to computers, rotate it in the space together with the external surfaces.

We can design maps of the air streams, to understand the underground winds of the cave and, importantly, use potential anomalies to infer the presence of still unmapped areas.

We can prepare hydrological maps, describing water streams, both past and existing. Then we also might prepare maps showing the distribution of underground animals, of temperatures, of humidity. There will be the





geological map, showing the emerging rocks, and the structural map, showing faults and joints. Another one will illustrate which areas were formed underwater and which were created by water flowing through open passageways above the water table.

The whole process resembles what is done with a geographic atlas, which contains images of the Earth seen from different points of view: populations, commerce, mountain ranges and so forth. Caves are worlds too, and they can be described in many different ways.

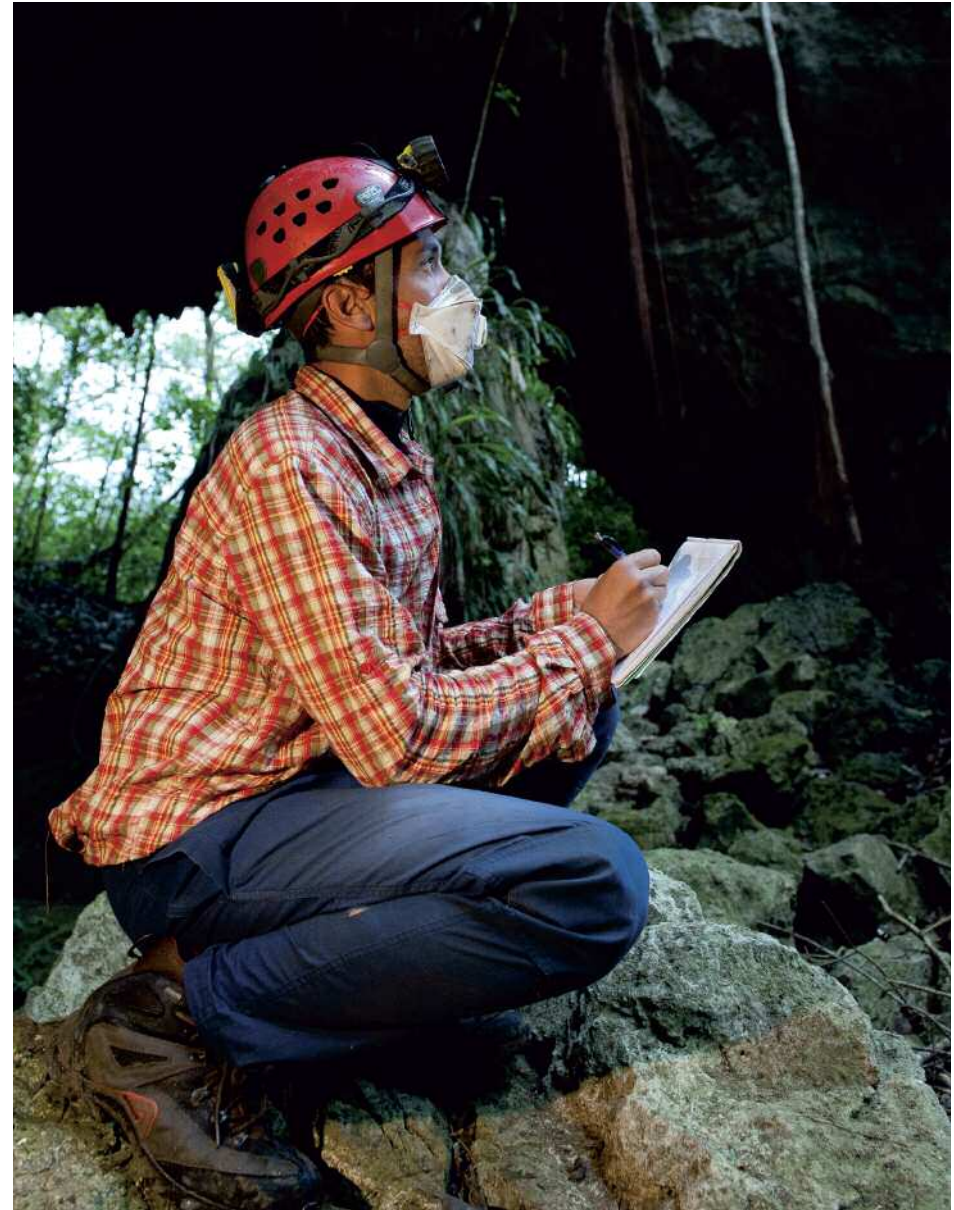
Our very idea of what a “cave” is has changed over time. Traditionally, we say that a certain area “has got many caves” and we catalogue and number them, but often this approach makes little sense. If we cannot cross from one cave to another, we consider them as separate entities; however, water does not need human-sized passageways and each cave is simply a fragment of the same structure. Hence, every karstic spring is the exit point of water that flowed through the countless branches of a single, vast cave, whose branches are pervious to water but closed to speleologists.

In our view, each “cave” is a word in the book that water has written in the depths of Earth during millions of years. Understanding and describing the single words is important, but even more so is to be able to read the whole book, the karstic system in its entirety.

This is the fundamental aim of what we call “drawing the caves”.

*Left: El Hongo underground camp;  
verifying the map before taking off again*

*Mapping a cave in the Lazaro Cárdenas colony*







# Photographing the caves

*Tullio Bernabei, Giuseppe Savino*

*Speleology is exploration.* This is one of the most immediate and almost instinctive definitions of a field of study which, by now, has a long history and many thousands of practitioners worldwide. But not only... speleology is also the sophisticated meeting point of a number of other fields, which make it a complete activity built on solid scientific and cultural foundations. The direct involvement of other fields of study is impressive, especially in the cases of geological and natural sciences, geography, history, anthropology and archaeology.

Additional products of the various research activities are documentation and communication. Communicating the discovery of a new cave, a particular scientific result or the evidence of ancient human presence is, often, an activity which requires a thorough photographic documentation. Producing that documentation underground is very expensive in terms of effort, manpower and equipment.

Photography is playing with light and shadow, perspectives and depths, though it has now also become detached concentration, experience, and especially, technology.

A cave is that place where the absolute darkness, if lightly 'painted'

by a ray of light, even accidentally, can become extremely fascinating. It is also the place where everything is more complicated and... precarious.

What does it mean to photograph a cave? In a cave, photography is a reckless passion; it is a sacrifice and, even more, participation. Like in all things humans love doing, passion together with reason are the two faces of the same medal, but which in caves, often combine to produce pure madness and recklessness.

Mad and reckless passion means taking sophisticated and delicate equipment to places far away which are both humid and muddy, and subjecting them to murderous thermal stresses and then mistreating them, often to the point of irreparability, because of the continuous knocks received while transporting, descending and ascending.

Photography becomes sacrifice when, along with yourself and all the technical equipment you need for rigging and progression, you have to bring everything needed for taking photographs. That could mean tripods, cameras, lenses, flashes and other lights with their batteries (which are often very heavy), cases, cables, connectors, accessories and more. It's sacrifice because you have to be alert and careful not to get the equipment muddy, protect it from sand (extremely treacherous in certain caves) and not get it wet (a real challenge that!).

Photographing in a cave also means being ready to extract and replace

*At the entrance of the Sueño Blanco tunnel*

the equipment from its bag dozens of times, even after having moved on only a few metres. Here we are again, the tripod, the cases, the flashes, the lamps and then the waterproof container... which needs to be opened and closed an infinite number of times in order to pull out the various accessories and cables and, finally, the camera. All this effort to take, if all goes well, a couple of images. Yes, a couple. And how much work is needed to get them!



*A photo shooting close to the first shafts in the Cueva*

*Right: getting ready to shoot. The high humidity can lead to condensation, making images foggy*

Writing about the various logistical difficulties which characterise speleological photography brings to mind other conditions and situations which, although belonging to other times, bear a certain resemblance.

The thought mainly goes to the first daring ‘exploration’ photographers: solitary actors in fascinatingly epic tales, such as Curtis and Scott Goff in the mythical Far West, who had to travel endless unexplored miles, loaded to excess with equipment, accompanied only by a mule. Or, to come to times closer to our own, the first cave photographers in the 1930’s, whose glass plates (often faded and chipped) are the only testimonials which have survived.

It’s an analogy which consists precisely in that clumsy, heavy and slow way of photographing, which often involves uncertainties and precariousness.

At least in a cave one isn’t alone, quite the opposite. The team work and the sharing of spaces, ideas and rhythms which takes place when you photograph in a cave is fantastic. It’s as though everyone is fluid and harmonic in their movements, to the point where all components seem to constitute a single organism.

The Cueva del Río La Venta, for the 68 hours we stayed there, meant all of that, plus the mud, water, sand, arduously tight passages and other extreme perils for the delicate equipment, characterised every moment.

We were divided into three photo teams and each was assigned a section of the cave, marked out on a map we had with us. The only moments we met were at the end of the day, back at camp for food and rest and in the morning when we took off to continue our work.

There were two camp meetings: near the beach of the *Ciudad Perdida* and at the *Corredor de los Tapires*. They were probably the most intense and involved moments we experienced. Yes, because we arrived starved and exhausted, but at the same time charged with an enthu-





siasm bursting from every one of us. This was visible in the way various groups of people frantically formed in order to compare and exchange, not only new ideas and techniques, perhaps just tried out for the first time a few hours previously, but also equipment, accessories and advice.

So, the *Cueva* had become a sort of laboratory, a bit unusual but very active and dynamic.

Our work group, who had entered last, started taking photos from the entrance, allowing the other two teams which preceded us to reach the inner parts of the cave for their own photo shots.

But what is meant by speleological photographic technique?

At various points in this volume, we referred to a technique called ‘painting’ or ‘brushing’. But what does ‘painting’ mean? It’s a recent development in photography for using light in very dark places and which has significantly reduced, sometimes significantly, the use of flashes. The factor which has revolutionised the old illumination techniques has been the advent of lamps (often self-built by speleologists) which, connected to transportable batteries, have allowed the lighting up of dark spaces with a painting action of the light on the cave walls. All this is carried out in the framework of not especially long exposures (a few seconds) during which time every member of the team – from the photographer to those who use the lamps – have a well-defined role and is an extremely functional and organic part of the whole.

In the Cueva del Río La Venta, therefore, we used the ‘painting’ technique, with some contributions from flashes. We also used, among others, led lamps which, thanks to their very white colour temperature, allowed scenes having mixed warm and cool lighting.

During the shooting sessions, the first part of the cave proved itself to be comfortable and dry, with a few small pits rigged with ropes and a couple of conduits, among them a fantastic one called *Sueño*



*Resting in front of Primera Medusa*



*Blanco*, none of which caused any problems. But it would have been too good to be true if it had always stayed that way. Too easy...

Predictably, things got more difficult because the cave is often traversed by water, which in parts flows smoothly along level galleries, in others becomes mist and roars down violent waterfalls, beating viciously against the walls, which are often pitch black.

That was the case in *Los Rápidos de Chak*, a name given in honour, and not by accident, to the God of Rain. You hear the rapids as you approach them and already your imagination starts going wild, mentally constructing whatever it is that you could be approaching.

Then, your every prediction is confirmed. The noise is incredible and deafening. As an extra, the dampness all around is complete, so that as soon as you manage to take the equipment out, it's already wet. Probably these rapids synthesise and well represent, in a photographic context, the precariousness which we have mentioned several times.

Precarious is the spot where you place your tripod (as the water flows violently between its legs, almost carrying it away), precarious is the way you place the camera on its head (a small knock would cause it to fall catastrophically into the water), precarious is also the spot where you opened the backpack and took out the equipment. All around a strange form of disorder reigns, since there are various pieces of equipment scattered around (batteries, lamps, lenses and cables), filling up the few empty, dry and safe spots (relatively speaking!). What should we say of the impossibility (or nearly so) of the team members being able to communicate with each other?

Imagine having to ask one of your companions to light up for a certain time a particular wall or a speleothem or another companion? Near the rapids that was close to impossible: the noise of the water covered everything and only experience and the 'feeling' which kept the team together, allowed us to reach the result we finally achieved.



*Photographic equipment is protected from mud and water by specific waterproof containers*

Generally, in a cave, the thing which causes most problems while photographing, is mud. It gets everything dirty and you're not able to overcome it. As it worked out, in the Cueva del Río La Venta, mud was not such a big problem, but it was worthily substituted by another peril: sand.

Sand is:

- Everywhere
- Damp
- Sticky
- Abundant
- Extremely damaging



Each one of these adjectives can be a story in itself, sometimes with a very sad end.

There isn't anything more unpleasant and perhaps bloodcurdling than feeling a grain of sand moving beneath a focusing ring or any other camera dial: some infinitely and desperately small and unreachable grain stuck between the gears following your every movement. So, near the *Tercera Medusa*, we were literally immersed in the sand. The memory of the screeching made by the tripod legs as they were being closed is still fresh... as that of the resistance they met while sliding until they were nearly permanently jammed.

Despite all these hardships, worsened by the duration of the great underground journey, the photographs taken in the *Cueva* tell the story of the cave's eternal darkness, which for a brief moment has been lit by our lights and by our desire to show the beauties of the cave to the world.

*Backlighting can enhance the spectacular underground shapes*

*Right: shadows and reflections in the Salón Sforza Italia*

*Page 116: From Barranca de Ollin, the river crashes with a deafening noise, forming the Cascada del Viento*

*Page 117: the tunnel that precedes the Barranca de Ollin (Arroyo Blanco)*

*Page 118: along the river below Escalera del Diablo*

*Page 119: the large lake at the base of Cuarta Medusa*



























# April 2009

## The International Photographic Expedition

*Francesco Lo Mastro*

For ages, the great journeys; from the crossing of vast territories towards the celestial Empire to the explorations in the heart of black Africa and from ocean crossings en-route for the Americas to the exploration of the Polar regions, all were fuelled principally by the prevailing interest of conquest. In addition there was the study and documentation of the territories that they crossed; not only to satisfy the innate thirst for knowledge congenital in humans, but also to be able to transmit to the world those anthropological and natural wonders which, journey after journey, revealed themselves to the eyes of the explorers.

Not only were the explorations for economical or political interests, but also for the love of quest, discovery and knowledge. In fact, thanks to some enlightened rulers, many exploration journeys were also followed by men of science: cartographers, naturalists, and astronomers. They also inspired artists, such as designers, painters, and scribes, often clergy men with the precise task of taking notes, drawing, and carefully describing the encountered wonders.

*The main base camp at the Rancho El Arco (Los Joaquines)*

*Right: the photo-shooting expedition begins. Equipment for the trip to the sierra is loaded in Tuxtla Gutiérrez*

In modern times, almost incredibly, there is still a lot yet to be explored: surely not with the same craving for conquest, but with more noble and globally useful aims. There is a growing need for documentation of territory, to make it accessible to the collective



memory. The photographic expedition to the Cueva del Río La Venta was born with this intent, almost as a moral obligation: to hand over to history a wonder of nature.

In terms of organisation there's not much difference between an exploratory expedition and a documentary one, at least in the preparatory stages. The accurate bibliographic research on the area of interest, the study of the territory, the on-site logistic organisation, the management of contacts with local authorities and the populations who live in those areas are common things to all expeditions. What actually changes is the target of the expedition itself, given the documentary side of the venture; and as a consequence the type and preparation of camp activities vary as do the organisation of materials and team tasks.

It is not possible to ascertain the exclusiveness of this operation, i.e. of the existence of previous photographic expeditions totally aimed at documenting a cave, but it is surely the first one with such a high number of participants. There has been a previous case in the La Venta group, in the Cueva de Los Cristales of Naica, where a session of accurate documentation took place: but it was a mixed project, i.e. exploratory-scientific-documentary. In the expedition to the Cueva del Río La Venta, on the other hand, the only aim was to achieve a significant and accurate photographic documentation of the cave, with a deployment of resources, men and materials.

We know that a lot of time is required in order to photograph underground areas, whether they are calcite flowstones, speleothems, shafts, or halls. For a cave such as the Cueva del Río La Venta, due to its complexity and considerable length, it took several days; and to accomplish the work in a professional way and in reasonable time the participation of many people was necessary. This was the reason why we used such a high number of participants.

In the complex world of caving, such a project does not go unnoticed and therefore we had many requests to participate; the La Venta association acted as the hub for people from different cultures and nationalities that in most cases had never met before. Thirty cavers, 20 Italians, 8 Mexicans, 1 Romanian and 1 Spanish: this is how the Cueva del Río La Venta International Photographic Expedition was born .

No expedition to any territory is actually permitted without a pre-



*The first base camp, above the El Hongo speleothem, hosted 30 people, coming from 4 different nations*



vious contract and permit from the local authorities and people. In Mexico, the association La Venta plays at home, since there have been many explorations over many years in the country: particularly in Chiapas, where it enjoys high credibility. It is credibility in fact, along with trust, that is a fundamental element to the implementation of any project beyond someone's borders.

Projects do not always respect the delicate balance that coexists between hosts and guests, and sometimes the presence of an exhibi-



*Crossing does not pose significant dangers, although it is easy to get cut on the sharp rock blades*

tion in territories where everything flows according to rhythms and rules rooted in time can be somewhat confusing. Because of this, the expedition was run in full respect of the ethics dictated by the 'Chart of Casola', a behavioural code for the participants of caving expeditions in a foreign country, signed in November 1994.

How then was the crossing of the Cueva del Río La Venta organised? As in all caving expeditions, great attention was given to the logistics, with the organisation of the material needed for the overnight stays in the cave, and food and drink preparation. Of extreme importance also was the medical aspect, with the use of first aid bags and sanitary details of all participants. The technical aspect and the calculation of all the necessary equipment for the rigging and progression were also of extreme importance.

Last, but not least, all the documentary equipment: cameras, lenses, flashes, light sources, tripods, and a lot more, making up the true value of the expedition.

To coordinate and manage so many people in the cave at the same time is not an easy task; in addition to the usual logistic and movement problems, there are also those related to communication between teams, to coordination, to individual and collective security. It is easy to understand why any simple accident in a cave could result in a life threatening experience for the whole group, thus also risking the success of the whole expedition. That is why a correct division of the medical bags was distributed among the teams, with all everything needed in case of distortion, fractures, and injuries of any kind.

At the same time an operational plan was developed for handling and organisation of the photographic teams: once the map of the cave has been examined, the transversing time was estimated in three days. Therefore the cave itself was divided into three parts, each of which was assigned to one of the teams, each responsible

for the task of documenting the most significant spaces in their assigned sector.

From the entrance, teams proceeded a few hours apart, so that they were able to start their own assigned section at almost the same time. All three teams were preceded by a fourth, with the specific task of rigging the equipment. At the end of the day, at given times, everybody would gather in a base camp which had been selected in a dry place and safe from sudden floods. After dinner the equipment would be organised again and the following morning, at time intervals, the teams would leave again for their assigned cave section.

The uniqueness of this adventure consisted in watching people from different countries, with different photographic technical experience and ways of perceiving and interpreting a cave, to then exhibit these differences through their pictures. All the team members worked endlessly for three days, aware that they were leaving a mark on the history of caving. Besides the assigned role, it was a real team work, with no primary roles or hierarchies: where everyone, in total humbleness, did their own job for a common interest and result.

It is hard sometimes to assemble a common project with so many different people, with different previous experiences, and from different countries. Caving activity that for obvious reasons has always focused on local territory, has seen in the last few years an increase in the sharing of information and experiences between teams: this has meant a quantum leap in the exploration and research fields.

The evolution of technology first, but also the development in means of communication, and last but not least Internet, have all favoured the meeting of culturally and geographically distant people. It made it possible to organise projects outside one's own ter-



*A good coffee, prepared with an Italian moka, cannot be missing from the camps set in the Cueva del Río La Venta*

*Right: just outside the cave, the team unwinds after three days spent underground*

ritory, driven by the common desire to learn and explore. The International Photographic Expedition of the Cueva del Río La Venta has explored the darkness to light it up and fix it in pictures. The cave has now found its place in history, thanks to different people joined together by the same passion: caving.







## DIARIES OF THE PHOTOGRAPHIC TEAM

### **Stripping the Lady of Río La Venta from her dark dress**

by Filippo Serafini

*The Cueva del Río La Venta is not the usual cave that you might find in your back yard, one that you can reach quite easily every Sunday to continue the work you left behind the previous week; it is a place separated from our everyday lives by an ocean.*

*To shoot pictures in the darkness of one of the most fascinating caves in the world, to paint, with light, the dark walls that at every glance appear different, is not easy. It is not just a simple click in a fraction of a second where you have to adjust to the light conditions that surround you. It is an indefinite*



*The temperature inside the cave remains constant all year round; at 23 °C, the underground bivouacs are rather pleasant*

*time where recreating the spaces, colours, and atmospheres, of the cave, involves difficult and strenuous teamwork. A symphony of different light sources, each and every one of which not only represents dynamicity and sensitivity, but mainly the psycho-physical state of the caver who must manage his equipment, after many hours of hard progression, by listening and putting into practice the photographer's suggestions. With sensitivity we look at the cave without intimidating it and slowly caress it with light. We are able to discover and admire, little by little, all its beauty and elegance by stripping away its dark dress. After, we continue our journey and let it put on its dark dress once again.*

*The pictures I took were taken by using led or halogen spot lights with different degrees of temperature and luminous angle of diffusion. In the bigger and more detailed environments we managed to use up to six light sources, some used directly by the people present in the shot, others by people outside the field of view. We also used other fixed elements in order to highlight some particular features present in the different areas of the cave itself. The hard part was to have the people within the shot move the lights they were holding without moving themselves which would have created a ghosting effect in the final image. Also to avoid creating a backlighting effect. Exposure times were between 15 and 30 seconds, to allow the use of low ISO and to avoid unpleasant noise effects, whilst at the same time allowing the complete lighting of the areas with the available gear.*

*A Nikon D50 with fixed-focus lens and a dedicated fixed optics Fisheye-Nikkor 10.5mm f/2.8G ED DX was used. The lens turned out to be perfect for cave photography, both for the high f-number and for the aperture of the camera equal to 180° on the diagonal. To reduce any movement an infrared remote was used to fire the camera which was positioned on a tripod.*

*To protect the gear I used a watertight backpack by Lowepro, the Dry Zone 200 which, when loaded with all the equipment (including two litres of rum!) for a three day shoot, weighed over 15 kg. Because of its weight and shape, it was sometimes quite troublesome to pass through some areas of the cave. The watertight fastening worked perfectly for the first two days but suffered from prolonged exposure to mud and sand which sometimes made it difficult to use.*



**Exploration in Chiapas: a tribute to Albert Einstein,  
Joseph Niépce, Thomas Edison, to team play,  
and to the Crown of Aragon.**

by Riccardo De Luca

*I do not know if Einstein was ever in a cave, but it may not be such a remote idea, he was in fact an 'explorer' himself... and a pretty good one too. His theory on relativity is well embraced by those who attend underground sites; time slowly goes by, it stops, it crystallises, it vanishes, it keeps on going by; definitely it is not my summary that gives me certainty, at the very most it astonishes me.*

*Being part of the third photographic team expands everything; it is not just a random name, to define us from the other two teams. Third team means being the last ones to arrive (to lunch as well!); having the privilege to set up the photographic camp and to discover the cave in its entirety, and the responsibility to 'deliver' it to the other cavers is priceless.*

*Since I have cited our old friend Albert, me quito el capo ("hats off" for non-Spanish-speakers) it is worth mentioning also Joseph Niépce who enabled us to freeze time and things with the art of photography and obviously to Thomas Edison, great grandfather of precious lights and beloved spotlights. Photography means light, obviously, and nothing has ever been truer than this when you are in a cave; we like to show the depths in their very own details, every shot is in fact an act of responsibility.*

*In Chiapas the karst is at its best and it makes you feel small: enormous settings and draperies, columns and pools, Río la Venta is in fact an architect Gaudì style. It is a wonderful feeling to be breathless, but we must keep on working! That's why we are here! We only walked nine hours carrying 40 pound backpacks (I will not narrate on the masochistic nature of cavers; a lot has already been said on that topic).*

*To set up a photographic camp in a cave is not an easy task, light testing goes on for hours (it is true that Albert comes to our rescue as we said before), the guys that worked with me and that I wish to thank individually have been very patient and sensitive, most of them were getting their first experience as flash-*

*men and despite that we did an excellent team work of which I am deeply proud. I also wish to thank the Crown of Aragon, because if since the XIV century it had not had the urge to expand I would have never been able to simply speak the dialect of Sardinia and give understandable instructions to our Mexican staff. This is actually priceless!  
Hasta la vista!*



*Dinnertime at the base camp*

## **The discovery of underground photography**

by Israel Huerta Ibarra, Argelia Tiburcio Sánchez

*Some years ago, some photos of caves stroke our attention and it was enough to feel strongly attracted and fascinated by this world; caving, even though it was far away from our daily reality.*

*In order to take those photos, it is easy to think that it may be enough to have a beautiful landscape before your eyes, a camera and be equipped with good experience. Well, after taking part in the photo expedition organized in the Cueva del Río La Venta we understood that it is not quite so.*

*To get the results contained in the work that you are now enjoying, it requires the commitment of experienced photographers, the use of very large equipment consisting of different types of lights, flashlights, cameras, tripods, and most important, a team of speleologists composed of several elements that are well-coordinated and well rehearsed.*

*With this experience in the Cueva we understood that, unlike the surface, to take pictures in caves where the rooms are pitch dark, wet and often very large, you need a great team, tied up together by commitment and patience. Two conditions, the latter, which allow you to live the cave in greater details, almost in a state of meditation.*

*Fundamental in the team is the work of the photographer who covers the role of the scenographer and possesses a clear and precise knowledge of all the technical aspects to achieve the best possible picture.*

*The approach of use and timing of light sources and, above all, the areas to illuminate, are other important elements that can emphasize certain places and corners of the cave.*

*All this is coordinated by the photographer but it is realized thanks to the remarkable cooperation offered by the entire team.*

*Our experience in the Cueva del Río La Venta was precisely to be part of a team and be responsible for the use of photographic lighting equipment.*

*A pretty hard job that requires a lot of concentration, also considering that often, the team spoke at least two languages: "On / encendes", "turn off / apaga", "freeze / parado", "now to the right / ahora a la derecha", "now to the left / ahora a la izquierda" were some of the indications that we were given and that we could*

*not afford to disregard. Even when, however, the roar of the water near a waterfall or the difficulty of communication - given the enormous Cueva environments - often forced us to repeat the shot.*

*Difficult and uncomfortable were also the positions that I had to assume when it was necessary to hide from the camera shot, ensuring however perfect wall lighting, or when, for other scene requirements, we were asked to freeze and remain motionless for a long time.*

*This latter circumstance allowed us to appreciate the beauty of the cave and made me see each and every detail I would have not enjoyed otherwise.*

*No doubt the most tiring work was having to carry all the camera equipment across the entire cave, but not only; in addition to the photo equipment, in fact, we had to carry the caving gear and the food, and manage everything quite rationally given that the backpack would contain as much stuff as possible and leave enough space for flashes, lights, batteries, that for our mission had to have precedence.*

*Eventually, as it happens in caving, cohesion and participation of all members of the team allowed outstanding and truly beautiful results, like the photographs published in this book.*



*Setting camp inside the caves allows recovering one's strength and fixing minor mishaps*



## Traversing the Cueva del Río La Venta

by Jorge A. Paz Tenorio

Overall, we spent sixty hours inside the cave; of these, 12-13 hours a day were dedicated to work, 6-7 to resting and 2-3 on logistics (meals, setting up and packing up camp, reviewing the topography, getting the equipment organised and so forth).

The two internal camps were strategically placed at 3 and 5 kilometres from the entrance of the cave, in wide spaces in which the sandy soil made resting easier.

Darkness was our constant companion during the transverse; it surrounded us as soon as we switched the last light off and from that moment on, it made no difference if we kept our eyes open or shut. It was total darkness and this allowed us to reflect on the day that had just passed. Most of our thoughts were for the work we had carried out, but many of them were also about the outside world: families, friends, future plans and projects. It was a constant flow of ideas and thoughts that, together with tiredness, lulled us into a deep and restoring sleep.

The following day we were back to work. “Ready?” “Go!” “Stop!” these were the commands issued by Giuseppe Savino when it was time to take a picture in one of the large, dark areas of the Cueva. On average, a shot required a twenty-second exposure.

Alicia (Beba) and Tono posed, perfectly still, in front of a large concretion, while the rest of the team (Ciccio, Nanni and I) lit the walls with our led light-packs and Mauricio used two powerful flashes.

I remember when, 12 years ago in 1997, I worked with the same people from La Venta, to map and document some caves in the same area. At that time, Massimo Liverani (who is also inside the Cueva right now, but in a different area) and Francesco Lo Mastro (who is now in my same team) were in charge of the shooting sets, taking photos with their powerful 35mm reflex cameras, loaded with negative or transparency films. Only synchronised flashes were used back then, and those photos of the Cueva del Río La Venta were used in several books published after 1997.

Now, the new technologies based on digital cameras, led light packs and

dedicated flashes empowered the photographers with more creativity; still, nothing can replace personal skills derived from experience.



Assistant photographers take care of the lighting, an essential task for getting good images







# Above the caves: local inhabitants and the speleologists

*Natalino Russo*

The bond between our association and the Río la Venta area is very strong. Over twenty years we have organised thirty expeditions there during which we learned routes and fatigue, and little by little discovered new aspects of this magnificent place. Each expedition is like a show for us: the curtain is familiar, but it punctually rises to reveal a new scenario. Upon arrival each time, our first thought is to go to the local neighbourhoods, on the edge of the woods, to visit our friends. To say hello and see how things are. Just enough time for a quick adjustment to the setting at Cintalapa, then we quickly push on to López and Cárdenas. We enter the village. Word spreads through the few houses. One after another our friends look out, from far off they wave hello. We go to them, exchange fraternal embraces.

- *Qué tal?*
- *Todo sigue igual.*
- *Estas bien?*
- *Así estamos, pues. Y tu?*

*The contribution of local guides has been essential in all expeditions, starting from the first surveys in the 1980s*

And so, between handshakes, stories and secrets, our expedition begins. The next day we will set out once again into the forest in search of caves to explore, accompanied, as always, by our precious “guides”.

## ***A fragile world***

The plateau and the forest that covers it on both sides of the canyon, hosts an exceptionally important ecosystem: with numerous vegetable and animal species, including mammals, birds, reptiles and insects, even rare ones, especially on the right-hand segment of the area. The Selva El Ocote, is one of the places with the highest level of biodiversity in the world. But this place also has, in its name, a sad destiny, or omen. The term ocote comes from *ocōtl*, the pine in *Náhuatl*, that is the language spoken by the Nahuatl – better known as the Aztecs – and by their descendants. The word, transformed by the Maya Tzotzil of Chiapas, indicates different species of pines: *Pinus caribaea*, *Pinus rudis*, *Pinus oocarpa*, *Pinus montezumae*. The resin of the last one is called *ocótzotl*. It has a penetrating odour and is highly inflammable, at such a level, that its wood, along with being used for construction, has also been widely used as fuel. An ocote is a plank of wood soaked in resin, used as a match; the word ocote also means torch, and in some cases the candle is called *ocotillo*.

Fires are the principle threat to this forest. One of the most devastating ones in recent memory was in 1998, when more than 2,000 hectares of forest went up in smoke in just a few days. The inhabitants of the place remember the quemazón, forest fire, with overwhelming panic: here the forest is a source of wood, food and water. Where the fire passed through, the primary forest was lost forever. Only woods with caoba, chicozapote and other large trees are left, surrounded by large clearings often used for grazing and agriculture. It is clear that it was a case of arson, done to make space for cultivating corn which, moreover, requires rapid soil renewal and, therefore, the sacrifice of new portions of forest. Vast areas of woods are still intact, but the human factor is critical: on the one hand there are those following century-old rhythms and on the other those constituting a threat to the integrity of the area, as a result of changing socio-economic conditions. The progressive expansion of the market economy induces aspirations and needs that are incompatible with safeguarding nature. The need to carve out spaces for roads and agriculture is one of the principle causes of clear cutting and forest fires. Often, control is difficult, as the heads of the Reserva de la Biósfera Selva El Ocote well know.

### ***Twenty years in the jungle***

The limestone composition of this plateau, its geological story, and the area's climate are ideal for the formation of large caves. In these areas it rains a lot, up to 4,000 millimetres per year. Yet, it is rare to find water on the surface and in the heart of El Ocote it is almost impossible. It penetrates the limestone and reaches the substratum where there is a true labyrinth of caves: vast and ready to be explored.

The first Italian expeditions in the area took place in the mid-eighties. Some of the participants were future founders of our association. In January 1990, the first full-scale descent of the Río La Venta took place, and this experience led to the majority of the subsequent projects in the



*People living in the colonies need to know the paths of the underground waters*

*Right: the La Venta Association has organized free courses to encourage involvement of local young people in speleology*





jungle and in other parts of the Chiapas area of Mexico.

The descent into the canyon created the basis for the birth of the association which was, in fact, established in June of the following year (1991). It took on an ambitious project: exploring and documenting the forest, canyon and its complex underground world.

The La Venta group, made up mostly of speleologists, has as its aim exploration and geographical documentation, with special emphasis on the underground world. But exploration of the caves requires a great deal of time. Here, the thick vegetation hides hundreds of entrances, and finding the right one presupposes detailed work on the approach, transport of equipment, rigging of vertical cave entrances, exploration topographical and photographic documentation. The above-ground

landscape is profoundly affected by karstification which has modified the topography rendering it tortured. On this land even normal movement requires specialised knowledge and preparation.

### ***New friends***

Often the caves we are looking for are fossilized systems, in which water does not flow anymore, often closed by abundant speleothem formation or boulder chokes; or they are still very active caves in which underground rivers fill the cavities to the ceiling forming large sumps that are difficult to explore. The trick is to find and explore complex karst systems. This book is dedicated to the biggest cave found up until now in the area of the Río La Venta, which takes its name from the river and





the canyon, and shares it with the association which was the main protagonist in its exploration. It's no accident that in this part of the world the La Venta group is tied not only to the historic reasons but also to the relationships developed over the years with the local people.

No exploration would be possible here without the knowledge and support of the locals. They know this land like the back of their hand and they are the ones who have supported all the speleological expeditions in the past twenty years.

Over the course of time, we have been able to learn something new about this land and its caves.

But what makes us proudest, and makes us look towards the future with optimism, are the excellent relationships we have established with the people. From one expedition to another beautiful friendships have been formed which, we are sure, will last through time beyond the motivation for which we began coming here: the caves.

During our expeditions we have always worked side by side with the land owners where we carried out prospecting. Many of them accompanied us and we were often joined by young people. They looked for and opened up the paths, finding the best routes to reach the caves. Borrowing from the term that is in vogue for alpine expeditions, over time, we began defining them as “guides”. But over the course of years, we have created a bond of mutual trust with them and sometimes also real friendship.

Twenty years ago, most of our current guides were barely adolescents

*As time went by, locals have realized that all La Venta Association cares for is to increase knowledge about the wonders of the underground world and protect them*

*Cavers and local people exchanging photos and tales.*









or even just children. Today they are experts of the jungle: with able slashes of the machete they open up picadas (paths) in the dense vegetation, they help us with transporting equipment and they lead us to the entrances. After which they pose the age-old question familiar to all speleologists all over the world: what are you looking for?

In these villages on the edge of the jungle our search for caves solicits some distrust, and rightly so: is it possible that there is no compensation for all this fatigue? Why face such a voyage without getting anything in return?

### ***New speleologists***

The first step beyond the entry to a cave is the most difficult. From there the road is long and tortuous but can lead speleologists to fantastic adventures. To start with all you need is curiosity: after our passion for discovering the underground world from its entrances, the guides have started becoming interested in our fantastic visions of pools, follow-up and possible exploration as well. As a result, they have asked us to teach them our techniques to share the experience of the caves together.

In collaboration with the Reserva de la Biósfera Selva El Ocote, the Municipality of Cintalapa and the Lazaro Cárdenas and Adolfo López Mateos neighbourhoods, we organised introductory seminars on karsification as well as practical lessons on the techniques of speleology. The first students had the opportunity to practice on the walls of the Rancho El Arco and in some of the caves in the area, including the Cueva del Río La Venta.

A few years ago, some of the children in the neighbourhoods saw us dis-

appear through the entranceways of the mysterious underground world, for them inaccessible. Today, those same people, young and strong, come in with us to explore. It is beautifully moving for us and for them.

### ***The treasures hidden beneath the jungle***

The initiation into the world of speleology by the local people signalled a point of no return in the culture. Some have started contributing to the project planning of explorations, and having a personal impact on the search for entrances and in the selection of the most interesting ones. It's true: inside the sea of green forest there are hidden treasures. And they are there in the dark caverns. Only those who know of them can understand the passion that drives speleologists. For this reason we decided to include our friends inviting them to climb into a harness and practice on the ropes; to allow them to join us and finally see with their own eyes what we are looking for in the caves: the caves themselves, the indescribable magic of the underground world.

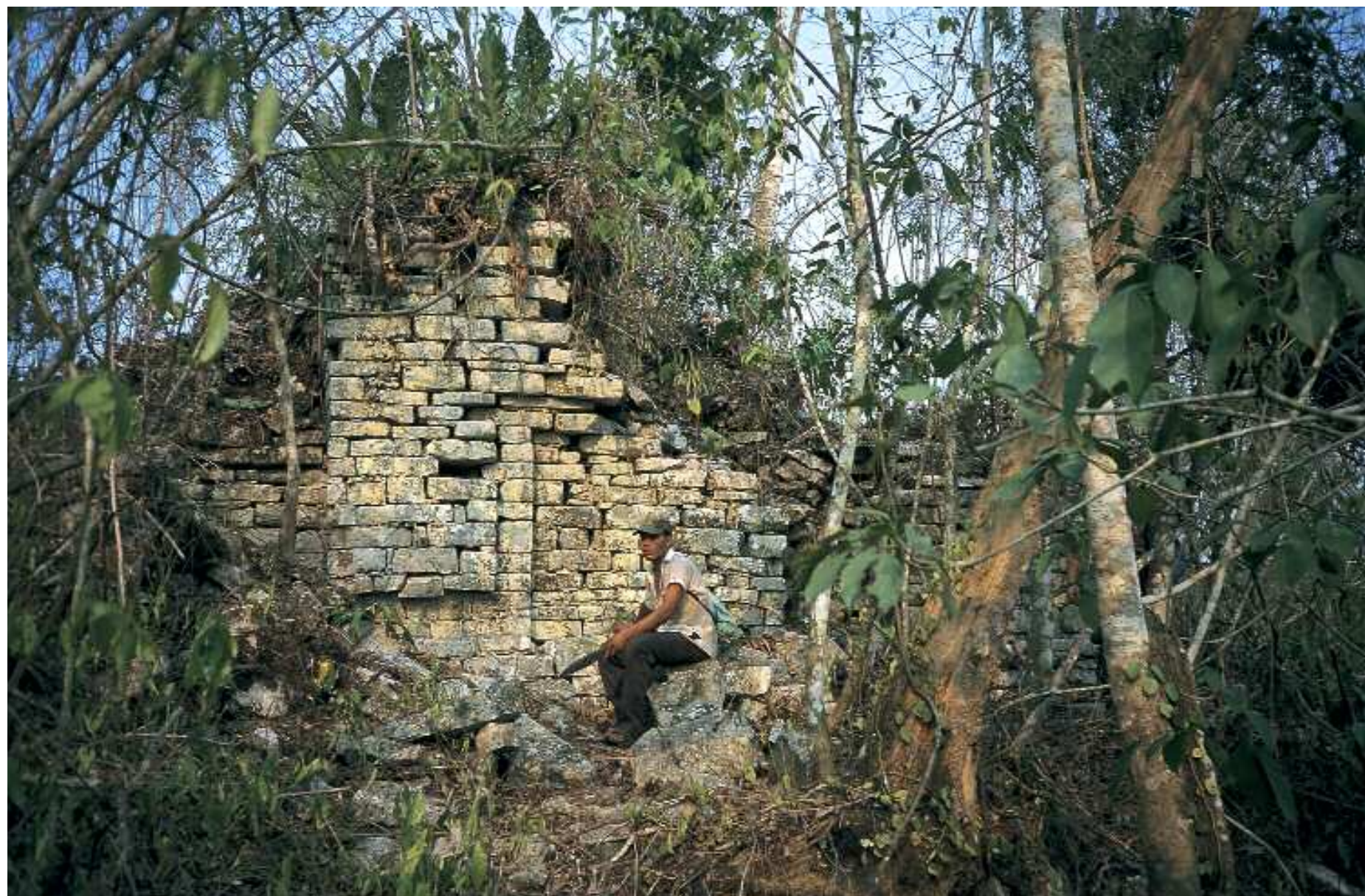
The Cueva del Río la Venta is not a deep cave, at least not like the grand abysses in other parts of the world. For this reason, there is no point in comparing it with the eight thousand alpine peaks, the great mountains on planet Earth. But the passage through this immense cavern is a voyage that is similar to 18th century expeditions in faraway lands, or like the literary dreams of Jules Verne.

It is a magnificent cave, but not at all easy. For its length and technical difficulties, it is only accessible to expert speleologists.

We are sure that soon many will come to visit it. The best way to do so is to rely on the local community who are willing to provide all the support necessary, from food and water, to guiding and logistics. In this way, speleology and speleologists can follow a route that is integrated with the local populace, providing a useful economic contribution to this land.

*After the initial, understandable wariness, time has brought a sense of reciprocal trust*







# The Cueva del Río La Venta and the ancient Zoque

*Davide Domenici*

The cavers of the La Venta Association were not the first ones to explore the Cueva del Río La Venta... In fact, the presence of archaeological remains demonstrates that the cave was known by the Zoques, an ancient group of native people who, almost 1500 years before the pre-Hispanic era, populated the Western Chiapas. The archaeological remains were mainly found near the upper entrance, not far from the community of Lazaro Cárdenas, and on the wall of the canyon at the end of the Río La Venta. In these two places it is possible to observe ceramic fragments of the classic period, a lithic pestle of a corn grindstone and scattered human remains. Although the archaeological settings have in most cases been ruined by the floods that take place in the cave during the rainy seasons, their location, limited to marginal areas of easy access, show that the ancient Zoques did not cross the whole underground path. Technical difficulties would have prevented them from completing the full crossing, but they entered from the two

main accesses, probably without knowing that both endings were joined by the long gallery that is known nowadays thanks to modern explorations.

But why did the Zoques take the trouble to enter the cave several times over the centuries? The 10 year investigation of the Río La Venta Ar-

*The small building on the side of the cliff that faces the López Mateos archaeological site*

*Right: a vessel found in the initial tunnels of Cueva del Río La Venta*





chaeological Project, organised by the La Venta Association, the Universidad de Ciencias y Artes de Chiapas, and by the University of Bologna, co-directed by Thomas A. Lee Whiting and myself, managed to give this question an answer. We know, in fact, that since the Late Pre-Classic period (approximately 300 B.C.) the Zoques had access to the canyon of the Río La Venta and to the Selva El Ocote to deposit conspicuous offerings in caves such as the Cueva de la Media Luna, where piles of ceramics have been retrieved in addition to fibre bundles which contained ritual paraphernalia. They also built a platform with a stairway made of mud and stone which was later plastered and painted. For over a thousand years, i.e. up to around 600 A.D., groups of native people settled in the valleys of Jiquipilas and Ocozocoautla and continued to enter these wild and deserted territories to deposit offerings in the caves. As in most of Mesoamerica, caves were believed to be accesses to the underground water world and therefore areas suited to become trading and communication places for the water and fertility divinities. In a place such as the El Ocote, the sacred geography of the Mesoamerican cosmology found its best manifestation in the karst landscape of the region.

The recurring offerings of food and ceramics, probably marked by an annual ceremonial linked to the agricultural cycle, led to the formation of massive frameworks where hundreds or thousands of ceramics were piled up during centuries. Caves such as the Cueva de los Cajetes, the Cueva de los Trastes, the Cueva de José Juan and the Cueva del Sapo are just a few examples of these ritual sites, which were common in

*Caves were also used by the Zoque people as worship and burial places*

*Right: animal-shaped incense holder found in one of the caves in the area*











other regions of the Western Chiapas as well, such as the meseta of Ocuilapa and San Fernando.

Even when, at around 600 A.D., the Selva El Ocote was colonised by the Zoques who built a complex network of monumental settlements, nowadays exemplified by sites such as López Mateos, Emiliano Zapata, Unidad Modelo, El Tigre, El Cafetal, and El Higo, the caves were still visited for ritual reasons, with a striking preference for the entrances that opened up on the walls of the canyon. Ceramic offerings were still deposited and probably sacrificial burials took place, like those of the 10 children buried in the Cueva del Lazo along with exceptional perishable materials and food remains placed in a ritual way. It was in that period, according to the ceramics that were studied, that the major visitation to the Cueva del Río La Venta took place, at least in its final part. If the human remains are too scattered to enable us to give any precise explanations, ceramics are typical of that time; like the corn grinder tool, associated to fertility rituals and found in other caves in the region, for example, in the famous cave of Balamkanché, in Yucatán.

*Left: negative hand-prints on the wall of a cave near Río La Venta*

*Right: El Higo archaeological site, on the orographic right of the canyon. It was discovered and documented by the La Venta Association during the Río La Venta Archaeological Project*

*Page 144: when accessible, for a long time the fossil caves facing the canyon have been used as places of worship*

*Page 145: a section of the archaeological excavation site of El Higo. The main building of the site is visible in the background*

Despite some variations in frequency of use due to the desertion and re-occupation of the region's settlements, the ritual use of the caves in the area of the Río La Venta seemed to go on until the Spanish conquest, when the defeat of the people from Chiapas enabled the Zoques to re-occupy their lands and leave the area of El Ocote. Colonial documents and ethnographic evidence, in fact, testify that the Zoques of Western Chiapas consider El Ocote and the Río La Venta as a sacred area, populated by the nahuals (or alter-ego animals) of powerful sorcerers and named *Norte Ipstek*, translatable in something like "Twenty Houses of the Rain". That rain, which in its constant cyclical movement between the sky and the earth has created wonderful caves such as the Cueva del Río La Venta.















# The importance of speleological explorations for the protection of a territory

*Roberto Escalante López*

The Reserva de la Biósfera Selva El Ocote is a protected natural area located within the tropical region known as Selva Zoque.

The area is characterized by a strong karst component, which makes it vulnerable in case of a possible misuse of the soil, other than its present destination.

This karst morphology in the Reserve generates a unique landscape, the so-called "cone-karst", formed by the strong erosive action of the water against the limestone, of which the area is rich in.

Thanks to this phenomenon, a lot of karst morphologies are created underground: active and non-active caves, large galleries, sótano, and large depressions often crossed by major rivers fed by subterranean crystalline waters that flow either into thundering waterfalls or become large calcite flowstones. In the underground meanders, where water streams often erode the walls in odd shapes, it is also easy to encounter a thriving life whose biodiversity is still unknown to many.

In some caves of this area, the presence of past human life was also

recognized, thanks to the discovery of numerous archaeological finds attributable to the Zoque culture.

Until now, the entire biological, geological and cultural heritage of these subterranean places have not been sufficiently studied, although without any doubt, a great work was done by the Italian friends of the La Venta Association of Geographic Explorations.

La Venta has always kept us up-dated about important exploration results achieved in some areas of the Reserve and, thanks to this knowledge, we have understood how important it is to comprehend the area in order to protect the territory.

The karst waters are closely correlated with the forests at the surface, since these strongly depend on both quality of those waters and the amount which is captured. The various anthropic forms have a great influence on the evolution of the forest extension, especially when trees are removed to favour a different landuse, for example the cultivation of corn and beans, or animal breeding, as well as several other activities that conflict with environmental protection. All these changes in landuse result in a reduction of the water quality and quantity. Similarly, the karst soil structure tends to change when it is irreparably eroded even further, reducing its ability to ensure a balance among all the biological, geological and cultural elements present in those habitats. A balance that is the direct result

*The Selva's ecosystem and biodiversity are extraordinarily valuable and must be preserved*



of the evident correlation between the subterranean and the epigean world of the Reserve.

This knowledge leads us to adopt effective management strategies involving decisions necessary to ensure protection and conservation of the territory, with the awareness that the protection of the Reserva El Ocote cannot depend only on the understanding of its surface, but also and above all of its deeper side, and on the relationship between these two dimensions.

Without any doubt, getting into the entrails of the Earth to understand what nature hides, is for man a challenge that leads to new and more complex frontiers of knowledge. Cultural boundaries must, however, be demolished and knowledge made available to all humankind, so that what the subterranean world still preserves can be appreciated by all.

In this case, what is hidden under a part of the Reserva de la Biósfera Selva El Ocote is revealed to us by the book you are holding in your hands.

*The underground ecosystem is extremely fragile and is also an important archive of information about climate and landscapes of the past.*

*Right: suddenly, the forest sinks into large abysses, a typical feature of tropical karst phenomena*











# What future for the Cueva del Río La Venta

*Francesco Sauro, Tullio Bernabei*

The Cueva del Río La Venta is one of the most spectacular examples of a karst system in a tropical environment, as well as being without doubt one of the most beautiful and complete caves in Central America. It comes natural to ask how this marvel should be preserved in the future and also how it could be made enjoyable by a public which does not belong exclusively to the world of speleology enthusiasts.

It is certainly a difficult question, which requires a careful review of similar cases existing around the world, followed not only by an intelligent conservation policy, but also by a popularisation policy - which in the future will be more and more in the hands of the inhabitants of these mountains as well as the politicians whose duty it is to economically and culturally develop the region.

In order to have an idea of how to develop an eco-tourism project involving the cave, at first we have to consider this cavity in the con-

text of the surrounding environment: the plateau which borders the Canyon del Río La Venta is a real 'karst park' which contains a large variety of caves and spectacular formations. The creator of this three-dimensional landscape is water, an invaluable resource necessary for biodiversity and human survival, but also a vulnerable resource which has to be protected in the strictest possible way.

## ***Pollution: a threat to underground waters***

Since the 1950's, when the first settlements and villages were built in the area, the pollution of surface water originated by humans and livestock has been an ever increasing menace which threatens the balance and integrity of the underground world. In an area like this, where the water disappears underground to re-emerge after having crossed many subterranean tunnels, is very difficult to evaluate the pollution impact of a black water sewer or the drain of the intensive livestock farming. The problem is that what it is not known, is difficult to protect: if the underground waterways and the hydrogeological connections are unknown, is impossible to understand what actions could pollute and damage a given spring. Speleological explorations are, above all, useful for this reason: creating maps of the routes taken by the underground water, with the aim of protecting them.

*Underground water reservoirs are invaluable; they should be protected from any form of pollution*





Water is the main protagonist in the Cueva del Río La Venta. The waterfalls, the rapids and the pools of crystalline water are some of the most vivid and grandiose scenarios of this cave. Unfortunately, in the first part of the cave, these waters contain a fair amount of pollution due to detergents and other chemical agents which are dumped into the surface stream. At the time when this book is being written, the situation is not yet alarming and many small fish swim happily in the clear underground lakes. However, in the future, with an increase in the area's population, their lifestyle and their consumption habits, it can be expected that the level of pollution in this dark river will also increase, unless proper precautions are taken. It will be necessary in the coming years to prepare protective policies for the settlement's water, with rules for sewage discharges and providing instruction in the reduced use of and proper places to use chemical detergents (for example, not directly on the banks of streams). At the same time we should also encourage the use of biodegradable products. During this process, 'hydro-geo-speleological' maps which show the underground water routes could be of great use for territorial planning, by giving clear indications about the degree of vulnerability of the different areas of the plateau.

### ***Teaching the fragility of water***

Knowing and planning though, is not enough to completely protect the underground world. Environmental information and education

*Masses of tourists driving their cars produce an unbearable environmental impact, which degrade the surroundings and their appeal. A viable option would be trekking on foot*

are ultimately the most effective way to protect water resources and the caves which contain them. The people who live, now and in the future, in this area have to be made aware of the fact that they are the guardians of this treasure.

The cultural discovery of the underground world is a slow process. Often in the course of explorative expeditions, we noticed a deep attitude of disbelief in the people to whom we explained our aims. It is understandable that it is difficult to believe that underground, beneath the houses and the fields, such spectacular spaces could exist with grandiose rivers, while on the surface water is extremely rare. Often it is necessary to see it with one's own eyes to believe it. This book and the images we recorded have precisely the aim of "showing" what is hidden down there.

Once this first 'incredulity' obstacle is overcome, we need to explain how the hidden ecosystem works, outlining its weaknesses and its contents of great value: these are not just imaginary treasures, but are made up of the water itself, together with its unmatched aesthetic beauty which can satisfy even the most demanding and imaginative of tourists.

This educational program, right here, in the heart of the karst area, could be exemplarily implemented with courses aimed at schools as well as at farmers and stockmen. This plateau could become a cultural workshop centred on this theme, becoming a reference point for the whole of Mexico: a place where the future of Mexican karst areas is being planned while refining strategies and implementing tangible courses of action.

We shouldn't forget that, according to FAO estimates, due to the increasing pollution and depletion of lowland water tables, in 2025 80% of the planet's drinking water will depend on karst areas, just like the one where the Cueva del Río la Venta lies.



*Survival of a complex ecosystem also depends on water quality. Finding this crab inside a cave tells us that karstic waters are still the purest when it comes to drinkable water*

### ***A cultural and ecologically sustainable tourism***

We shouldn't forget that Earth's inhabitants will also need the chance of exploiting these geological marvels for sustenance and economic development. Often this process has led to deferring the need for 'minimal impact', opening the way for devastating initiatives which have enriched a few but done permanent damage. Will it be possible to reconcile these two expectations?

We believe the answer is yes. On the plateau, many caves are known to be suitable for an 'adventurous' type of speleological tourism, containing various levels of difficulty. There is no need to create extensive infrastructure and make everything easy and comfortable in order to attract tourists to the caves.

On the contrary, trends show that the average tourist will be increasingly searching for 'uncontaminated' places where nature, adventure and the knowledge and experience thus gained can be fully appreciated. Therefore, it is mainly informative and educational investments which are needed in order to provide the necessary cultural and technical preparation to guides who could accompany the tourists through the various underground settings. We can then imagine in the future, a tourist route with fixed walkways and illumination along the Cueva Ejidal's galleries, and also excursions with helmets and portable lights in an intact cave such as Cueva de Pedro y Manuel, in order to experience the feelings of darkness and real exploration. In the same way, some hydrogeological through caves could be visited, while explaining the work of water and the karst processes to the tourist.

A walking tour would also have to go down to the bottom of the canyon, but not only to the famous tunnel called Arco del Tiempo, which is actually rather far away and is difficult to access even for well-prepared tourists.

In order to reach the 'sacred' waters of the Río la Venta, it would





*The future of this community will depend on the new generations, for whom it will be necessary to be in equilibrium with the environment*

*Page 156: an impressive calcite concretion along the underground river path*

*Page 157: stalactites, stalagmites and columns at the Corredor de los Tapires*

be necessary to take the easy path which descends from Unidad Modelo (also possible with pack animals). From there, they could go both up and downstream quite easily: the view of the canyon from the bottom, with its immense cliffs elaborated by time, would give the visitor a perfect idea of the structure and the unique characteristics of this area.

The Cueva del Río La Venta will have to be the symbol of all this; a jewel, a wonderful cave, but also something fragile and dangerous, where visits should be limited to expert speleologists. Only one adventure route should be allowed, like in the Cueva de Pedro y Manuel, with helmet and portable lights, from the first part of the cave until the edge of the first pit.

Speleologists from all over the world, who without doubt will come to visit it in the future, will have to obey some basic rules. First of all: "don't leave anything behind except your footprints, don't take anything except photographs". They should also have to use the local guides, who are already trained through special courses and can offer logistic support, both in the cave and outside.

In this way, the fame of the Cueva del Río la Venta and that of the entire region will increase, without having to damage or sacrifice precious natural treasures. In a future not too far away, the inflow of an ecologically sustainable tourism could be an important source of development for those who live on the plateau, above a marvelous underground world.









### **Photographic credits:**

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