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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.



Botany

LOUISIANA STATE UNIVERSITY
BATON ROUGE · LOUISIANA · 70803



Jardin Bot. Guatemala

12 - VI 1978

semillas del "Palo de Pito"

Erythrina rubicinervis = "pito" >

for carving figures
of "Relaj Mam"

Sacred to Tzotziles
of h. Atitlan

Leg. Bl



13	14		1	2	5	6
15	16	(V)	3	4	7	8
(13)	(VIII)	Ahau	(30)	(XIII)	(18)	V
<p><i>Dios G</i>, su tocado es sencillo. Sus jeroglíficos están borrados. Nótese que estas cuatro divinidades carecen de ofrendas.</p>		<p>Eb</p> <p>Kan</p> <p>Cib</p> <p>Lamat</p>	<p><i>Dios D</i>, que cae de lo alto, arrastrando consigo algunas hojas. Sus signos están en 2 y 3. 4 es el signo <i>Chuen</i>, mono.</p> <p>En 2 está la divinidad con ojo Akbal y en 3 el de la noche.</p>		<p><i>Dios A</i>, que como el anterior cae, habiéndose transformado una de sus extremidades inferiores en rama florida. De su boca se escapa un grito.</p>	
			1	2	5	6
(1)			3	4	7	8
Ik	(13)	(1)	(31)	(VI)	(8)	(1)
Manik	<p><i>Dios B</i>, que como las divinidades de la página anterior, cae. Lleva el signo Kan en la mano. Su signo está en 3.</p>		<p>Divinidad femenina que también cae, llevando adelante el signo de la muerte. Tal vez por eso tiene cerrados los ojos.</p> <p><i>Cimi</i>, muerte, se ve en los jeroglíficos 5, 7 y 8. 6 es una divinidad con ojo akbal.</p>		<p><i>Dios H</i>, en forma femenina, sentada sobre el asa de una vasija.</p> <p>Esta figura se relaciona con la primera de la sección correspondiente de la página que sigue. Su jeroglífico está en 11.</p> <p>En 9 se ve un <i>Cimi</i>, y en 10 una divinidad con ojo akbal.</p>	
Eb	1 es <i>Cimi</i> ; 2, divinidad con ojo akbal y 4, Ben Ik, sobre la cabeza alargada 9.					
Caban						
Ik						
			1	2	5	6
(III)	(III)		3	4	7	8
Lamat	Ix	(12)	(11)	(14)	(11)	
Ahau	Cimi	<p><i>Dios A</i>, divinidad de la muerte con un signo Kin, del Sol en la mano. El mismo signo se ve en 2.</p> <p>En 1 está <i>Cimi</i>, muerte, lo mismo que en 4.</p>		<p><i>Dios D</i>, también con un Kin, Sol, en la mano, al que llega la escolopendra de su tocado. 6 es también Kin. 5, es <i>Cimi</i>, con el signo del Sur por superfiño; en 7 está el signo de la Luna, diosa de la noche, y en 8 el de H.</p>		
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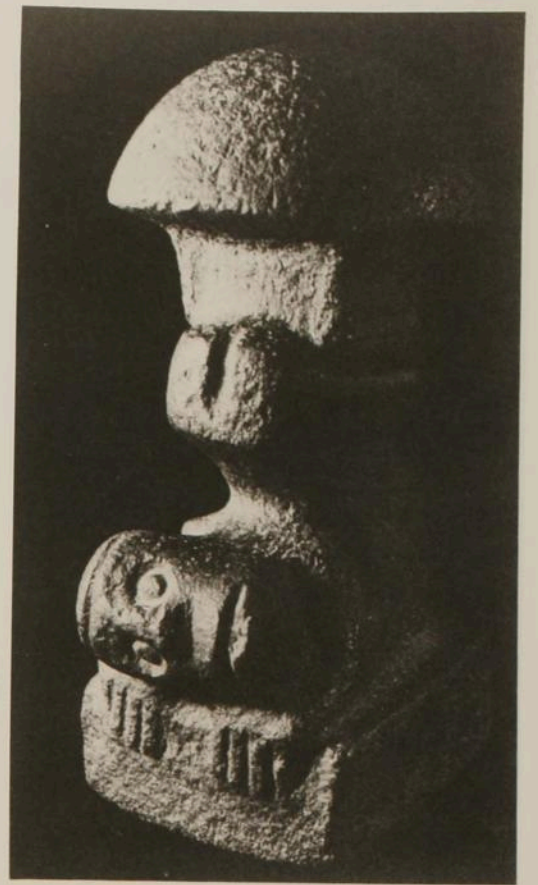


13	14		1	2	5	6
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(13)	(VIII)	Ahau	(04)	(XIII)	(18)	V
<p><i>Dios G</i>, su tocado es sencillo. Sus jeroglíficos están borrados. Nótese que estas cuatro divinidades carecen de ofrendas.</p>		<p>Eb</p> <p>Kan</p> <p>Cib</p> <p>Lamat</p>	<p><i>Dios D</i>, que cae de lo alto, arrastrando consigo algunas hojas. Sus signos están en 2 y 3. 4 es el signo <i>Chuen</i>, mono.</p> <p>En 2 está la divinidad con ojo Akbal y en 3 el de la noche.</p>		<p><i>Dios A</i>, que como el anterior cae. habiéndose transformado una de sus extremidades inferiores en rama florida. De su boca se escapa un grito.</p>	
			1	2	5	6
(I)			3	4	7	8
Ik			(13)	(I)	(31)	(VI)
Manik	<p><i>Dios B</i>, que como las divinidades de la página anterior, cae. Lleva el signo Kan en la mano. Su signo está en 3.</p>		<p>Divinidad femenina que también cae, llevando adiante el signo de la muerte. Tal vez por eso tiene cerrados los ojos.</p>		<p><i>Dios H</i>, en forma femenina, sentada sobre el asa de una vasija.</p>	
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Ik						
			1	2	5	6
(III)	(III)		3	4	7	8
Lamat	Ix		(12)	(II)	(14)	(III)
Ahau	Cimi	<p><i>Dios A</i>, divinidad de la muerte con un signo Kin, del Sol en la mano. El mismo signo se ve en 2.</p>		<p><i>Dios D</i>, también con un Kin, Sol, en la mano, al que llega la escolopendra de su tocado. 6 es también <i>Kin</i>. 5, es <i>Cimi</i>, con el signo del Sur por superfixo; en 7 está el signo de la Luna, diosa de la noche, y en 8 el de H.</p>		
Eb	Ezanab	<p>En 1 está <i>Cimi</i>, muerte, lo mismo que en 4.</p>				
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Cib	Ik					

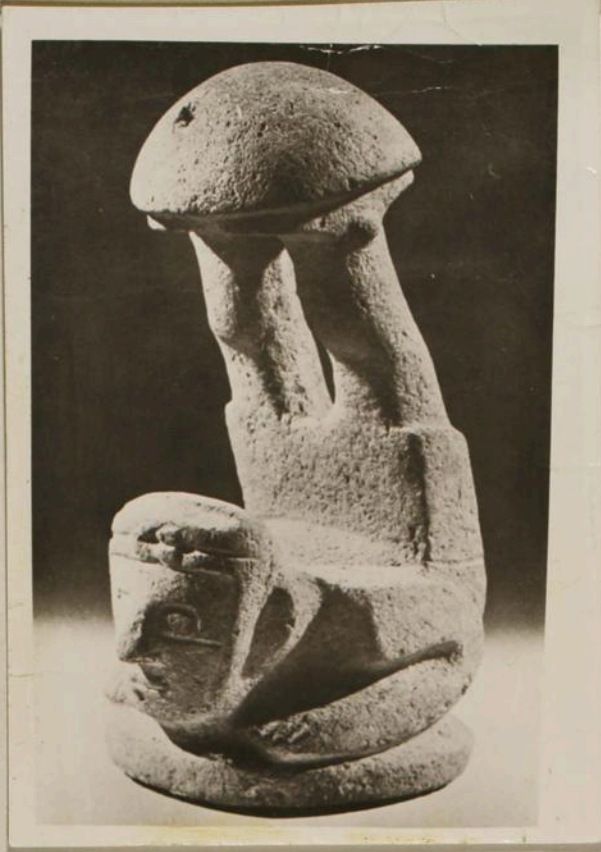
13	14		1	2	5	6
15	16	(V)	3	4	7	8
(13)	(VIII)	Ahau	(34)	(XIII)	(18)	V
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Ik	(13)	(I)	(31)	(VI)	(8)	(1)
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Eb	<p>1 es <i>Cimi</i>; 2, divinidad con ojo akbal y 4, Ben Ik, sobre la cabeza alargada 9.</p>		<p><i>Cimi</i>, muerte, se ve en los jeroglíficos 5, 7 y 8. 6 es una divinidad con ojo akbal.</p>		<p>Esta figura se relaciona con la primera de la sección correspondiente de la página que sigue. Su jeroglífico está en 11.</p>	
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(III)	(III)		3	4	7	8
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Eb	Ezanab	<p>En 1 está <i>Cimi</i>, muerte, lo mismo que en 4.</p>				
Kan	Oc					
Cib	Ik					











DR. LOWY

1 from MAYER

DREAM STONES

DRESDEN 15

(FÖRSTEMANN,
VILLACORTA)

PRINTS
&
NEGATIVES

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Erythrina vubrenervia



HOTEL GENEVE

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Erythrina rubrinervia

Guatemala

12-VI-1978

CORREO AEREO - AIR MAIL



Botany
LOUISIANA STATE UNIVERSITY
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Dr. B. Lowy
Mycol. Herb. Botany Dept.
Louisiana State University
Baton Rouge, La. 70803

DR. LOWY

NEG.

- 1) CODEX VINGOBONENSIS 24 (AKAD. DR. FACSIM.)
 - 2) " DRESDENSIS 15 + PRINTS (AKADEMISCHE DR. FACSIMILIE)
- ~~RIGBY ALBUM~~



Ethnomycological Inferences from Mushroom Stones, Maya Codices, and Tzutuhil Legend

Bernard Lowy

With the advent of critical ethnomycological studies over two decades ago, convincing evidence has revealed that the use of naturally occurring hallucinogens by diverse indigenous peoples in various parts of the world and in different epochs, in all probability played a major rôle in their cultural development and in their adumbration of an omnipotent power that governed their lives. The pervasiveness of that power was expressed in the magico-religious concept of resident deities which reign over the animate and inanimate world. Further investigation is needed to document and evaluate the extent of the influence that naturally occurring hallucinogens have had in ancient civilizations, but from pre-Columbian America there have come down to us a number of pictorial codices, some of which bear symbolic representations that either directly or indirectly bespeak a knowledge of entheogenic agents. Among the codices that provide a rich source of information for scholars are the Vindobonensis, Madrid, and Dresdensis which are American in origin but which were carried to Europe after the conquest, and are now held at institutions in the cities for which they are named. In all three of these documents, representations of mushroomic symbols are to be found, providing prima facie evidence that the ancient

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Aztecs and Mayas used mushrooms ceremonially (Lowy, 15). Thompson (20) stressing another source of evidence for the Mayan use of fungi, stated that "the highland Maya almost certainly used toxic mushroom, for large stone representations of mushrooms are fairly plentiful in archeological sites in the highlands of Guatemala from Formative times onward." He was referring to mushroom stones, which have engendered some controversy, and various interpretations of their meaning have been summarized by Mayer (18). According to Köhler (12) they were used as pottery molds, and Rose (in Mayer 18) has postulated that they were molds used for making rubber balls, but the prevailing opinion is that they were part of the cultic paraphernalia associated with the use of hallucinogenic mushrooms (Borhegyi 2,3; Furst 9; LaBarre in Furst 13; Lowy 14; Wasson 22).

In the *Codex Vindobonensis Mexicanus I* (6), believed to be a 14th century Mixtec document the original of which is now held in the National Library of Vienna, Austria, page 24 shows the ceremonial use of mushrooms held in the hands of gods (fig. 1). Attention was first called to these figures by Alfonso Caso (4), who provisionally identified what he called "T-shaped" objects in the manuscript, as mushrooms. Heim (11) later published this page in color, and accepted without hesitation its mushroomic interpretation. Most recently, Furst (8) has concurred in this opinion in her minute examination and analysis of the codex. Also summarizing the significance of this page, Wasson (25) concludes that it shows "the major place occupied by mushrooms in the culture of the Mixtecs." The additional collateral evidence to be considered further supports the validity of these opinions, and extends the base upon which they rest.

In the course of examining a copy of part of a Maya codex that I encountered in Guatemala, I suggested (Lowy, 16) that several pages of the *Codex Dresdensis* and *Codex Madrid* might be interpreted as depicting the ritual use of mushrooms. A further examination of facsimilies of the *Dresdensis* (5, 21) has convinced me that that document yields additional evidence indicating that the pre-Columbian Maya were fully cognizant of the power of hallucinogenic mushrooms. On page 15 of this codex, as shown in the drawings of Villacorta (21), and reproduced in fig. 2, there are three sections, a, b, and c (from top to bottom). The figures that concern us are in sections a and b, each of which shows representations of three gods or goddesses. In section a, the gods are identified (from left to right in fig. 2) as gods G, D, and A. An interpretation of this page in Spanish, as it appears in Villacorta's work (on the page facing the codex) is shown in fig. 3.

In section a, the figures of gods D and A are of special interest. God D is described in the commentary (fig. 3) as follows: "cae de alto, arrastrando consigo algunas hojas." (i.e. "he falls from on high dragging some leaves along with him.") The critical point here is that the god is said to be dragging "leaves". If we examine the figure of god D we observe that he has 5 such "leaves" attached to different parts of his body. What significance do the "leaves" have? Are they merely decorative, or do they have a deeper

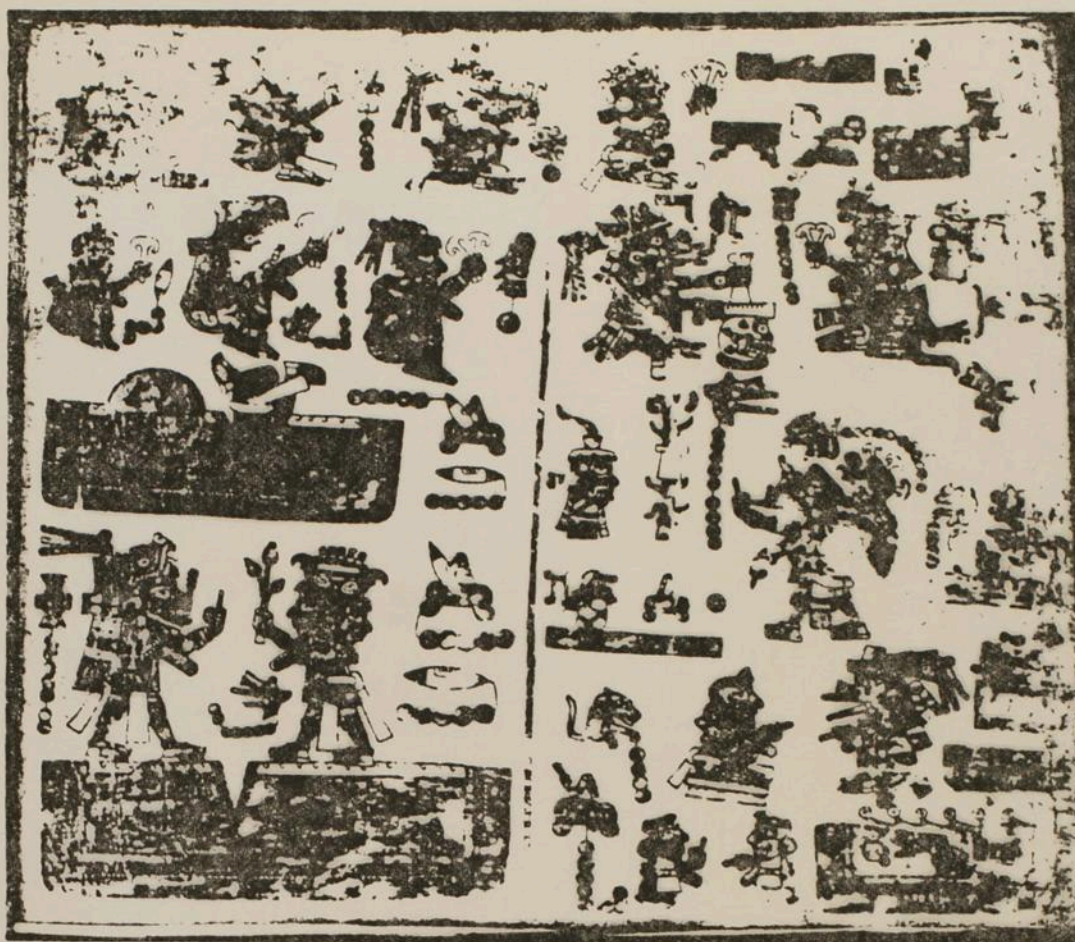


Figure 1. Codex Vindobonensis Mexicanus I, page 24, showing ceremonial use of mushrooms.

meaning? If they are simply leaves, nothing more can be said of them, and we are forced to dismiss them as objects whose function we cannot guess. However, if the "leaves" are stylized representations of mushrooms, as I believe them to be, then the unusual posture of the gods immediately lends itself to a logical and compelling interpretation. We then realize that the gods are in a trance, floating or falling through space, bemushroomed! God A in this section apparently imagines that one of his feet has become transformed, and is sprouting 2 mushrooms. Likewise, in section b, the two falling figures are under a similar spell. The second falling figure of this section differs in an important particular from the previous three. It is referred to as a "feminine deity" in the commentary (fig. 3 b) and it is perhaps the most revealing figure of the four. The goddess is unmasked, and we clearly discern her closed eye and open mouth as she appears to float or almost swim through the air, bemushroomed too, like her companions. This human figure has two clusters of divine mushroom caps attached to her



Figure 2. Codex Dresdensis, page 15, with plunging gods in section a and b. (from Villacorta)

13	16		1	2	5	6	
15	16	XVI	3	6	7	8	
(13)	(VIIII)	Ahau	Oh	(XIII)	(15)	V	
Dios G, un sacerdote sencillito. Sus jaguillos están borvados. Némas que entre cuatro devandados carecas de avandam.	Eb Kan Cib Lamat	Dios D, que cas de lo alio, avandando congope algunas borjas. Sus jaguos están en 3 y 2. 4 en el signo Chom, amam. En Jomá la devandad con ojo Akbal y en 3 el de la noche.	Dios A, que como el anterior cas habandados transformado uno de sus extremos interiores en rama florida. De su boca se escapa un grito.				
		1	2	5	6	9	10
(13)	3	6	7	8	11	12	
15	(13)	(1)	(13)	(VII)	Oh	(1)	
Mamit	Dios A, que como las devandadas de la página anterior, cas. Lio su el signo Kan en la mano. Su signo está en 1.	Devandad fantasma que tocado con, llevando adelante el signo de la muerte. Talves por que tiene cerrados los ojos.	Dios H, en forma humana, sustenta sobre su oreja una vasija.				
Eb	1 es Chom; 2, devandad con ojo akbal y 4, Dios H, sobre la columna cargada 6.	Cimí, muerte, se ve en los jaguillos 1, 7 y 8. 4 es una devandad con ojo akbal.	Esta figura se relaciona con la primera de la sección correspondiente de la página que sigue. Su jaguillo está en 11.				
Calan			En 9 se ve un Cau, y en 10 una devandad con ojo akbal.				
15							
		1	2	5	6		
(13)	(13)	3	6	7	8		
Lamat	15	(12)	(11)	(14)	(11)		
Ahau	Cimí	Dios A, devandad de la muerte con un signo Kin, del Sol en la mano. El mismo signo se ve en 2.	Dios D, tambien con un Kin, Sol, en la mano, y que lleva la escocipendra de su tocado. 6 es tambien A'u, 5, es Cimí, con el signo del Sur por superior; en 7 está el signo de la Luna, diosa de la noche, y en 8 el de 11.				
Eb	Kanan b						
Kan	Oc	En 1 está Cimí, muerte, lo mismo que en 4.					
Cib	15						

Figure 3. Commentary referring to corresponding sections of Codex Dresdensis. (from Villacorta)

body. It should also be observed that three of the four glyphs pertaining to her (numbers 5, 7, 8 in fig. 3) are the death glyph, "cimi." This is one of the most provocative figures in the codex, and one of far-reaching importance, because it emphasizes the religious connotation associated with the mushroom-induced hallucinogenic state.

Apart from the mushroomic interpretation of page 24 of the *Vindobonensis* by Caso (4) and Furst (8), and of the mushroom caps carved upon the stone statue of Zochipilli, elaborated by Wasson (24), at least two human effigy mushroom stones are also highly suggestive of a link existing between the Maya and their use of psychoactive mushrooms. One of these in the Nottelbohm collection in Guatemala was published by Heim (10), and may be referred to as the "dream stone," because the human head at its base clearly depicts a somnolent or dreamlike state in which the dreamer's legs are extended upward toward the mushroom cap, giving one the impression that the individual is floating through space (fig. 4). This figure has also been called an "acrobat" (by Heim 10, and others) because of its curious position, but as Heim (10) points out, the sculpture "fait penser à l'état extatique dans lequel se trouvent aujourd'hui encore les Indiens Mazatèques après l'absorption des Champignons hallucinatoires." Another excellent illustration of this mushroom stone was published by Anton (1), and again most recently by

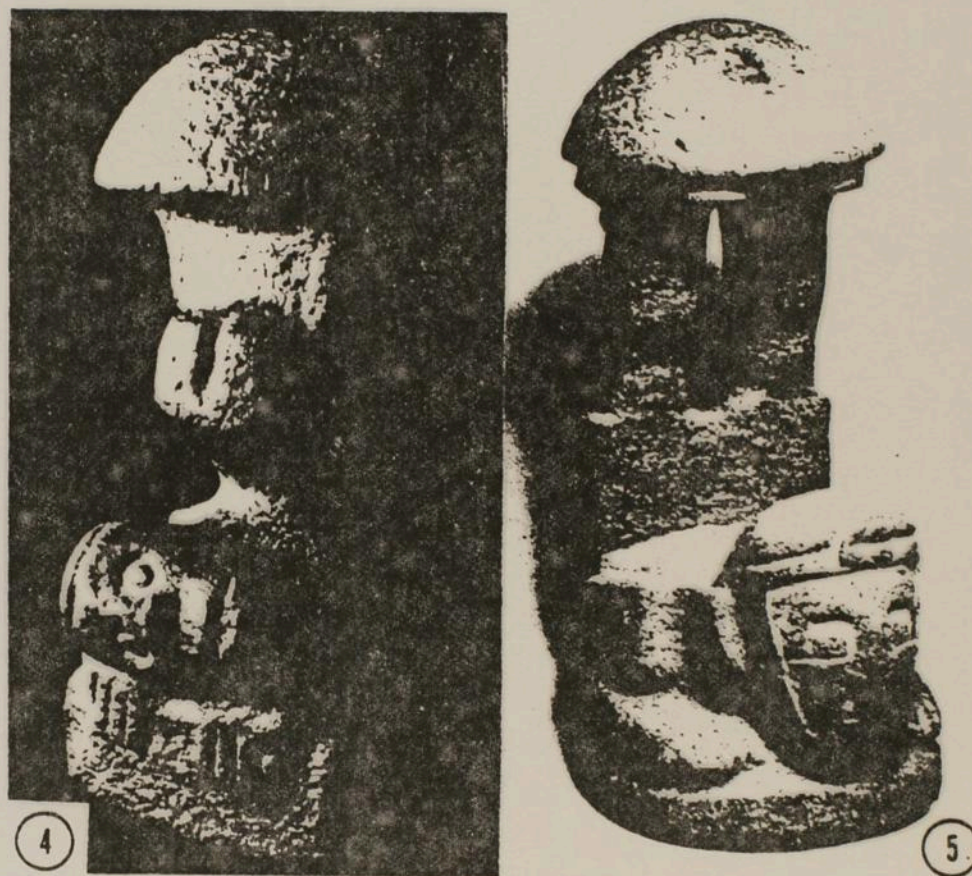


Figure 4. Mushroom stone (Nottelbohm collection) with plunging human figure in dream-like state.

Figure 5. Mushroom stone (Emmerich collection) with plunging human figure.

Wasson (25). Commenting on this artifact, Lowy (14) indicated that "the face is striking because of its trance-like expression, and the suggestion cannot escape us that the subject may be dreaming or hallucinating."

Another falling or plunging god is Piltzintli, shown in the Codex Borgia, and illustrated by Wasson (25), who in the same work reinterprets a multitude of carved, painted cherubs including a "plunging youth," on the columns, pilasters, archways and ceiling of the small church of Santa María Tonantzintla near Puebla, Mexico. These joyful, frolicking, children, Wasson observes, illuminate another aspect of the flower god Xochipilli, for here we "discover him as captain of the romping children, the world of 'dear little people' of the entheogens."

A second mushroom stone that merits special comment was shown in Mayer's paper (18, fig. 14) and is from the collection of André Emmerich in New York. The head, chest, and arms of this human figure lie upon the circular base of the stone. The face is upright and looking forward, but the body and legs are vertical with the mushroom cap supported by the soles of the feet (fig. 5). The individual is plunging head first, as in the dream stone. Excellent photographs of both these unique mushroom stones are shown by Wasson (25, p. 192, figs. 19, 20).¹ It is my conviction that these figures represent individuals who are also under the influence of psychoactive mushrooms, and I believe that the parallel between the falling gods in the Dresdensis and the plunging human effigies on these mushroom stones is inescapable. Both sources forcefully convey the same message, namely, that entheogenic mushrooms profoundly affected the religious life of the Maya and their descendents.

During a visit to Guatemala in the summer of 1978, I stayed in the village of Santiago de Atitlán, a community where Tzutuhil is spoken and where ancient traditions and folkways are still maintained. There I learned that in Tzutuhil legend mushrooms are intimately associated with the creation myth.

In the Quiché pantheon the god Kakuljá, he of the lightning bolt, one of a trilogy of supreme gods, is revered above all others, and in the Popol Vuh, the sacred book in which the traditions of the Quiché people are recorded (Edmunson, 7), his position of ascendancy is made clear. The deeply myth-laden religion of the contemporary Quiché, Kakchiquel, Maam, Tzutuhil, and other related descendants of the Maya, still revere their ancient gods and virtually every significant aspect of their lives reflects this reverence. Birth, marriage, death, the sowing of corn, and other indigenous crops, but chiefly corn, the staff of life of American civilizations past and present, is accompanied by appropriate rites. The Chacs or rain gods determine the success or failure of a crop and ceremonies honoring them are offered to

¹ I am indebted to R. Gordon Wasson for permission to reproduce these figures from his book "The Wondrous Mushroom."

insure a felicitous outcome of all agricultural efforts. The ground itself is considered sacred, for nothing would be forthcoming to sustain life without the favorable intervention of the controlling gods. So it is that beliefs with deep roots in the past guide the predominantly agricultural life of contemporary autochthonous Guatemalan societies. Within this context the rôle that mushrooms play in the lives of the Tzutuhil of Santiago de Atitlán may best be understood.

The most revered god in the Tzutuhil pantheon is formally known as Rilaj Maam meaning the venerable grandfather. In common parlance the god is called Maam. An alternate name is Maximon, literally meaning "bound with rope", because within the effigy of the god there is a network of rope symbolizing his intricate relationship with the higher deities who created him. The name Maximon, however, is considered too sacred to utter, so the appellation Maam is most commonly used. Maximon was created by the Nahuales, the elite of the gods who conferred upon him the power he now possesses, consequently he represents a synthesis of their attributes.

According to Tzutuhil legend as narrated to me by Martin Prechtel, a talented painter and linguist living in Santiago de Atitlán, there once were 12 sacred trees, each of them associated with a different mushroom. The Nahuales decided to select one of these trees to rule over men on earth. Each tree in turn was asked whether it would accept the heavy responsibility. Only one accepted, an unlikely, undersized candidate called "Ch'iip" or Little Brother. He said he had a dream or vision in which he was directed to find a certain hill at the foot of the volcano San Lucas (still venerated by the Tzutuhil) where a tree called the "palo de pito" grew surrounded by numerous mushrooms. As the tree was approached, a strong south wind arose bringing with it a violent storm, and presently the tree was split by a thunderbolt. The tree was hollow, and within it Ch'iip observed a vague countenance which he then proceeded to carve out of the soft wood. This effigy became the god Maximon. Each stroke of Ch'iip's knife was accompanied by a sacred word, and each stroke likewise gave origin to a musical note, tone, or "son." The notes provided the musical basis for traditional songs. When Maximon was fully formed, each Nahual conferred upon the newly created god a special power. Then Maximon was commanded to stand, for he was to be tested to determine whether or not he was able to use the powers conferred upon him. A deaf mute from the village was brought before him and Maximon was directed to cure his infirmity. According to one version of the legend, a fragment of one of the mushrooms growing around the "palo de pito" was fed to the man, who thereupon became rejuvenated and his infirmity disappeared. The Nahuales were pleased, and Maximon has ever since presided over the Tzutuhil people. It is this divine mushroom which is known among the Quiché as Kakuljá, only recently identified as *Amanita muscaria* (Lowy, 17) and which takes its name from the Maya god whom it personifies. Kakuljá is one of a trinity of gods referred to in the Popol Vuh as "Kakuljá Huracán," the others being "Ch'iip Kakuljá," and "Raxa Kakuljá" (Edmunson, 7).

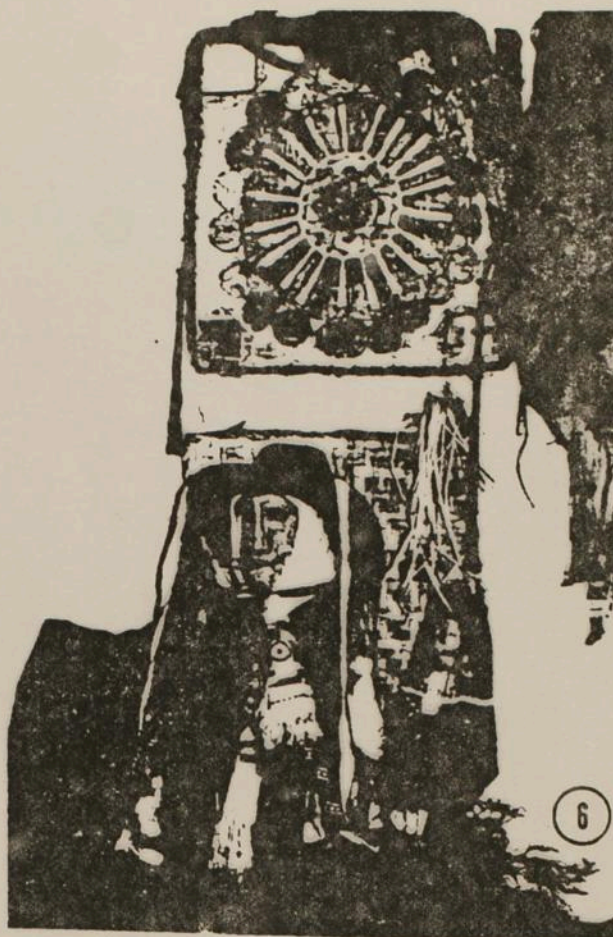


Figure 6. Effigy of Rilaj Maam before an altar in Santiago de Atitlán, Guatemala.

The first of these, "Kakuljá Huracán," enigmatically refers to "a single leg," (huracán), that is, the single shaft of the thunderbolt. Where this shaft struck the earth the miraculous mushroom *Amanita muscaria* arose. Relating this to Vedic myth, we have a further, unexpected verification of the meaning of Soma. Does not this "single leg," also reveal the meaning of the riddle cited by Wasson (23) in the traditional verse sung by German children?

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lesser ray or bolt, (i.e. little brother), and "Raxa Kakuljá" is the "rayo verde" or "trueno," thunder as interpreted by Brasseur de Bourbourg, based upon the original translation of the Popol Vuh into Spanish by Padre Francisco Ximénez during his stay in Chichicastenango (1701-1703) where he discovered the manuscript.

Wood of the "palo de pito" is still used to carve effigies of Maam, who always wears a mask befitting his sacred origin, and is provided with a cigar symbolizing the curative properties of tobacco, known and used by indigenous Americans since pre-Columbian times. I saw the effigy of Maam used as a prominent altar-piece among the contemporary Tzutuhil of Santiago de Atitlán (fig. 6). The "palo de pito" is a leguminous tree, *Erythrina rubrinervia*, which produces several large, red seeds in each pod. The beans are toxic, considered to have magical properties, and in Guatemala are commonly used as part of the paraphernalia of curanderos, although "in some parts of Salvador and Guatemala the flowers and buds are cooked and eaten like string beans" (Standley, 19).

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Ethnomycological Inferences from Mushroom Stones, Maya Codices,
and Tzutuhil legend

B. Lowy

With the advent of critical ethnomycological studies over two decades ago, convincing evidence has revealed that the use of naturally occurring hallucinogens by diverse indigenous peoples in various parts of the world and in different epochs, in all probability played a major rôle in their cultural development and in their adumbration of an omnipotent power that governed their lives. The pervasiveness of that power was expressed in the magico-religious concept of resident deities which reign over the animate and inanimate world. Further investigation is needed to document and evaluate the extent of the influence that naturally occurring hallucinogens have had in ancient civilizations, but from pre-Columbian America there have come down to us a number of pictorial codices, some of which bear symbolic representations that either directly or indirectly bespeak a knowledge of entheogenic agents. Among the codices that provide a rich source of information for scholars are the Vindobonensis, Madrid, and Dresdensis which are American in origin but which were carried to Europe after the conquest, and are now held at institutions in the cities for which they are named. In all three of these documents, representations of mushroomic symbols are to be found, providing prima facie evidence that the ancient Aztecs and Mayas used mushrooms ceremonially (Lowy, 15). Thompson (20) stressing another source of evidence for the Mayan use of fungi, stated that "the highland Maya almost certainly used toxic mushroom, for large stone representations

of mushrooms are fairly plentiful in archeological sites in the highlands of Guatemala from Formative times onward." He was referring to mushroom stones, which have engendered some controversy, and various interpretations of their meaning have been summarized by Mayer (18). According to Köhler (12) they were used as pottery molds, and Rose (in Mayer 18) has postulated that they were molds used for making rubber balls, but the prevailing opinion is that they were part of the cultic paraphernalia associated with the use of hallucinogenic mushrooms (Borhegyi 2,3; Furst 9; LaBarre in Furst 13; Lowy 14; Wasson 22).

In the Codex Vindobonensis Mexicanus I (6), believed to be a 14th century Mixtec document the original of which is now held in the National Library of Vienna, Austria, page 24 shows the ceremonial use of mushrooms held in the hands of gods (fig. 1). Attention was first called to these figures by Alfonso Caso (4), who provisionally identified what he called "T-shaped" objects in the manuscript, as mushrooms. Heim (11) later published this page in color, and accepted without hesitation its mushroomic interpretation. Most recently, Furst (8) has concurred in this opinion in her minute examination and analysis of the codex. Also summarizing the significance of this page, Wasson (25) concludes that it shows "the major place occupied by mushrooms in the culture of the Mixtecs." The additional collateral evidence to be considered further supports the validity of these opinions, and extends the base upon which they rest.

In the course of examining a copy of part of a Maya codex that

I encountered in Guatemala, I suggested (Lowy, 16) that several pages of the Codex Dresdensis and Codex Madrid might be interpreted as depicting the ritual use of mushrooms. A further examination of facsimilies of the Dresdensis (5, 21) has convinced me that that document yields additional evidence indicating that the pre-Columbian Maya were fully cognizant of the power of hallucinogenic mushrooms. On page 15 of this codex, as shown in the drawings of Villacorta (21), and reproduced in fig. 2, there are three sections, a, b, and c. ~~(from top to bottom)~~. The figures that concern us are in sections a and b, each of which shows representations of three gods or goddesses. In section a, the gods are identified (from left to right in fig. 2) as gods G, D, and A. An interpretation of this page in Spanish, as it appears in Villacorta's work (on the page facing the codex) is shown in fig. 3.

In section a, the figures of gods D and A are of special interest. God D is described in the commentary (fig. 3) as follows: "cae de alto, arrastrando consigo algunas hojas." (ie "he falls from on high dragging some leaves along with him.") The critical point here is that the god is said to be dragging "leaves". If we examine the figure of god D we observe that he has 5 such "leaves" attached to different parts of his body. What significance do the "leaves" have? Are they merely decorative, or do they have a deeper meaning? If they are simply leaves, nothing more can be said of them, and we are forced to dismiss them as objects whose function we cannot guess. However, if the "leaves" are stylized representations of mushrooms, as I believe them to be, then the unusual posture of the

gods immediately lends itself to a logical and compelling interpretation. We then realize that the gods are in a trance, floating or falling through space, bemushroomed! God A in this section apparently imagines that one of his feet has become transformed, and is sprouting 2 mushrooms. Likewise, in section b, the two falling figures are under a similar spell. The second falling figure of this section differs in an important particular from the previous three. It is referred to as a "feminine deity" in the commentary (fig. 3 b) and it is perhaps the most revealing figure of the four. The goddess is unmasked, and we clearly discern her closed eye and open mouth as she appears to float or almost swim through the air, bemushroomed too, like her companions. This human figure has two clusters of divine mushroom caps attached to her body. It should also be observed that three of the four glyphs pertaining to her (numbers 5,7,8 in fig. 3) are the death glyph, "cimi." This is one of the most provocative figures in the codex, and one of far-reaching importance, because it emphasizes the religious connotation associated with the mushroom-induced hallucinogenic state.

Apart from the mushroomic interpretation of page 24 of the Vindobonensis by Caso (4) and Furst (8), and of the mushroom caps carved upon the stone statue of ^ZEochipilli, elaborated by Wasson (24), at least two human effigy mushroom stones are also highly suggestive of a link existing between the Maya and their use of psychoactive mushrooms. One of these in the Nottebohm collection in Guatemala was published by Heim (10), and may be referred to as the "dream stone," because the human head at its base clearly depicts a

somnolent or dreamlike state in which the dreamer's legs are extended upward toward the mushroom cap, giving one the impression that the individual is floating through space (fig. 4). This figure has also been called an "acrobat" (by Heim 10, and others) because of its curious position, but as Heim (10) points out, the sculpture "fait penser à l'état extatique dans lequel se trouvent aujourd'hui encore les Indiens Mazatèques après l'absorption des Champignons hallucinatoires." Another excellent illustration of this mushroom stone was published by Anton (1), and again most recently by Wasson (5). Commenting on this artifact, Lowy (14) indicated that "the face is striking because of its trance-like expression, and the suggestion cannot escape us that the subject may be dreaming or hallucinating."

Another falling or plunging god is Piltzintli, shown in the Codex Borgia, and illustrated by Wasson (25), who in the same work reinterprets a multitude of carved, painted cherubs including a "plunging youth," on the columns, pilasters, archways and ceiling of the small church of Santa María Tonantzintla near Puebla, Mexico. These joyful, frolicking, children, Wasson observes, illuminate another aspect of the flower god Xochipilli, for here we "discover him as captain of the romping children, the world of 'dear little people' of the entheogens."

A second mushroom stone that merits special comment was shown in Mayer's paper (18, fig. 14) and is from the collection of André Emmerich in New York. The head, chest, and arms of this human figure lie upon the circular base of the stone. The face is upright and looking forward, but the body and legs are vertical with the mushroom cap supported by the soles of the feet (fig. 5). The indivi-

dual is plunging head first, as in the dream stone. Excellent photographs of both these unique mushroom stones are shown by Wasson (25, p. 192, figs. 19, 20).¹ It is my conviction that these figures represent individuals who are also under the influence of psychoactive mushrooms, and I believe that the parallel between the falling gods in the Dresdensis and the plunging human effigies on these mushroom stones is inescapable. Both sources forcefully convey the same message, namely, that entheogenic mushrooms profoundly affected the religious life of the Maya and their descendants.

During a visit to Guatemala in the summer of 1978, I stayed in the village of Santiago de Atitlán, a community where Tzutuhil is spoken and where ancient traditions and folkways are still maintained. There I learned that in Tzutuhil legend mushrooms are intimately associated with the creation myth.

In the Quiché pantheon the god Kakuljá, he of the lightning bolt, one of a trilogy of supreme gods, is revered above all others, and in the Popol Vuh, the sacred book in which the traditions of the Quiché people are recorded (Edmunson, 7), his position of ascendancy is made clear. The deeply myth-laden religion of the contemporary Quiché, Kakchiquel, Maam, Tzutuhil, and other related descendants of the Maya, still revere their ancient gods and virtually every significant aspect of their lives reflects this reverence. Birth, marriage, death, the sowing of corn, and other indigenous crops, but chiefly corn, the

¹ I am indebted to R. Gordon Wasson for permission to reproduce these figures from his book "The Wondrous Mushroom."

staff of life of American civilizations past and present, is accompanied by appropriate rites. The Chacs or rain gods determine the success or failure of a crop and ceremonies honoring them are offered to insure a felicitous outcome of all agricultural efforts. The ground itself is considered sacred, for nothing would be forthcoming to sustain life without the favorable intervention of the controlling gods. So it is that beliefs with deep roots in the past guide the predominantly agricultural life of contemporary autochthonous Guatemalan societies. Within this context the rôle that mushrooms play in the lives of the Tzutuhil of Santiago de Atitlán may best be understood.

The most revered god in the Tzutuhil pantheon is formally known as Rilaj Maam meaning the venerable grandfather. In common parlance the god is called Maam. An alternate name is Maximon, literally meaning "bound with rope", because within the effigy of the god there is a network of rope symbolizing his intricate relationship with the higher dieties who created him. The name Maximon, however, is considered too sacred to utter, so the appellation Maam is most commonly used. Maximon was created by the Nahuales, the elite of the gods who conferred upon him the power he now possesses, consequently he represents a synthesis of their attributes.

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ILLUSTRATIONS

- Fig. 1. Codex Vindobonensis Mexicanus I, page 24, showing ceremonial use of mushrooms.
- Fig. 2. Codex Dresdensis, page 15, with plunging gods in section a and b. (from Villacorta)
- Fig. 3. Commentary referring to corresponding sections of Codex Dresdensis. (from Villacorta)
- Fig. 4. Mushroom stone (Nottebohm collection) with plunging human figure in dream-like state.
- Fig. 5. Mushroom stone (Emmerich collection) with plunging human figure.
- Fig. 6. Effigy of Rilaj Maam before an altar in Santiago de Atitlán, Guatemala.

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B. Lowy

With the advent of critical ethnomycological studies over two decades ago, convincing evidence has revealed that the use of naturally occurring hallucinogens by diverse indigenous peoples in various parts of the world and in different epochs, in all probability played a major rôle in their cultural development and in their adumbration of an omnipotent power that governed their lives. The pervasiveness of that power was expressed in the magico-religious concept of resident deities which reign over the animate and inanimate world. Further investigation is needed to document and evaluate the extent of the influence that naturally occurring hallucinogens have had in ancient civilizations, but from pre-Columbian America there have come down to us a number of pictorial codices, some of which bear symbolic representations that either directly or indirectly bespeak a knowledge of entheogenic agents. Among the codices that provide a rich source of information for scholars are the Vindobonensis, Madrid, and Dresdensis which are American in origin but which were carried to Europe after the conquest, and are now held at institutions in the cities for which they are named. In all three of these documents, representations of mushroomic symbols are to be found, providing prima facie evidence that the ancient Aztecs and Mayas used mushrooms ceremonially (Lowy, 15). Thompson (20) stressing another source of evidence for the Mayan use of fungi, stated that "the highland Maya almost certainly used toxic mushroom, for large stone representations

of mushrooms are fairly plentiful in archeological sites in the highlands of Guatemala from Formative times onward." He was referring to mushroom stones, which have engendered some controversy, and various interpretations of their meaning have been summarized by Mayer (18). According to Köhler (12) they were used as pottery molds, and Rose (in Mayer 18) has postulated that they were molds used for making rubber balls, but the prevailing opinion is that they were part of the cultic paraphernalia associated with the use of hallucinogenic mushrooms (Borhegyi 2,3; Furst 9; LaBarre in Furst 13; Lowy 14; Wasson 22).

In the Codex Vindobonensis Mexicanus I (6), believed to be a 14th century Mixtec document the original of which is now held in the National Library of Vienna, Austria, page 24 shows the ceremonial use of mushrooms held in the hands of gods (fig. 1). Attention was first called to these figures by Alfonso Caso (4), who provisionally identified what he called "T-shaped" objects in the manuscript, as mushrooms. Heim (11) later published this page in color, and accepted without hesitation its mushroomic interpretation. Most recently, Furst (8) has concurred in this opinion in her minute examination and analysis of the codex. Also summarizing the significance of this page, Wasson (25) concludes that it shows "the major place occupied by mushrooms in the culture of the Mixtecs." The additional collateral evidence to be considered further supports the validity of these opinions, and extends the base upon which they rest.

In the course of examining a copy of part of a Maya codex that

I encountered in Guatemala, I suggested (Lowy, 16) that several pages of the Codex Dresdensis and Codex Madrid might be interpreted as depicting the ritual use of mushrooms. A further examination of facsimilies of the Dresdensis (5, 21) has convinced me that that document yields additional evidence indicating that the pre-Columbian Maya were fully cognizant of the power of hallucinogenic mushrooms. On page 15 of this codex, as shown in the drawings of Villacorta (21), and reproduced in fig. 2, there are three sections, a, b, and c (from top to bottom). The figures that concern us are in sections a and b, each of which shows representations of three gods or goddesses. In section a, the gods are identified (from left to right in fig. 2) as gods G, D, and A. An interpretation of this page in Spanish, as it appears in Villacorta's work (on the page facing the codex) is shown in fig. 3.

In section a, the figures of gods D and A are of special interest. God D is described in the commentary (fig. 3) as follows: "cae de alto, arrastrando consigo algunas hojas." (ie "he falls from on high dragging some leaves along with him.") The critical point here is that the god is said to be dragging "leaves". If we examine the figure of god D we observe that he has 5 such "leaves" attached to different parts of his body. What significance do the "leaves" have? Are they merely decorative, or do they have a deeper meaning? If they are simply leaves, nothing more can be said of them, and we are forced to dismiss them as objects whose function we cannot guess. However, if the "leaves" are stylized representations of mushrooms, as I believe them to be, then the unusual posture of the

gods immediately lends itself to a logical and compelling interpretation. We then realize that the gods are in a trance, floating or falling through space, bemushroomed! God A in this section apparently imagines that one of his feet has become transformed, and is sprouting 2 mushrooms. Likewise, in section b, the two falling figures are under a similar spell. The second falling figure of this section differs in an important particular from the previous three. It is referred to as a "feminine deity" in the commentary (fig. 3 b) and it is perhaps the most revealing figure of the four. The goddess is unmasked, and we clearly discern her closed eye and open mouth as she appears to float or almost swim through the air, bemushroomed too, like her companions. This human figure has two clusters of divine mushroom caps attached to her body. It should also be observed that three of the four glyphs pertaining to her (numbers 5,7,8 in fig. 3) are the death glyph, "cimi." This is one of the most provocative figures in the codex, and one of far-reaching importance, because it emphasizes the religious connotation associated with the mushroom-induced hallucinogenic state.

Apart from the mushroomic interpretation of page 24 of the Vindobonensis by Caso (4) and Furst (8), and of the mushroom caps carved upon the stone statue of ³ Kochipilli, elaborated by Wasson (24), at least two human effigy mushroom stones are also highly suggestive of a link existing between the Maya and their use of psychoactive mushrooms. One of these in the Nottebohm collection in Guatemala was published by Heim (10), and may be referred to as the "dream stone," because the human head at its base clearly depicts a

somnolent or dreamlike state in which the dreamer's legs are extended upward toward the mushroom cap, giving one the impression that the individual is floating through space (fig. 4). This figure has also been called an "acrobat" (by Heim 10, and others) because of its curious position, but as Heim (10) points out, the sculpture "fait penser à l'état extatique dans lequel se trouvent aujourd'hui encore les Indiens Mazatèques après l'absorption des Champignons hallucinatoires." Another excellent illustration of this mushroom stone was published by Anton (1), and again most recently by Wasson (5). Commenting on this artifact, Lowy (14) indicated that "the face is striking because of its trance-like expression, and the suggestion cannot escape us that the subject may be dreaming or hallucinating."

Another falling or plunging god is Piltzintli, shown in the Codex Borgia, and illustrated by Wasson (25), who in the same work reinterprets a multitude of carved, painted cherubs including a "plunging youth," on the columns, pilasters, archways and ceiling of the small church of Santa María Tonantzintla near Puebla, Mexico. These joyful, frolicking, children, Wasson observes, illuminate another aspect of the flower god Xochipilli, for here we "discover him as captain of the romping children, the world of 'dear little people' of the entheogens."

A second mushroom stone that merits special comment was shown in Mayer's paper (18, fig. 14) and is from the collection of André Emmerich in New York. The head, chest, and arms of this human figure lie upon the circular base of the stone. The face is upright and looking forward, but the body and legs are vertical with the mushroom cap supported by the soles of the feet (fig. 5). The indivi-

dual is plunging head first, as in the dream stone. Excellent photographs of both these unique mushroom stones are shown by Wasson (25, p. 192, figs. 19, 20).¹ It is my conviction that these figures represent individuals who are also under the influence of psychoactive mushrooms, and I believe that the parallel between the falling gods in the Dresdensis and the plunging human effigies on these mushroom stones is inescapable. Both sources forcefully convey the same message, namely, that entheogenic mushrooms profoundly affected the religious life of the Maya and their descendants.

During a visit to Guatemala in the summer of 1978, I stayed in the village of Santiago de Atitlán, a community where Tzutuhil is spoken and where ancient traditions and folkways are still maintained. There I learned that in Tzutuhil legend mushrooms are intimately associated with the creation myth.

In the Quiché pantheon the god Kakuljá, he of the lightning bolt, one of a trilogy of supreme gods, is revered above all others, and in the Popol Vuh, the sacred book in which the traditions of the Quiché people are recorded (Edmunson, 7), his position of ascendancy is made clear. The deeply myth-laden religion of the contemporary Quiché, Kakchiquel, Maam, Tzutuhil, and other related descendants of the Maya, still revere their ancient gods and virtually every significant aspect of their lives reflects this reverence. Birth, marriage, death, the sowing of corn, and other indigenous crops, but chiefly corn, the

¹ I am indebted to R. Gordon Wasson for permission to reproduce these figures from his book "The Wondrous Mushroom."

staff of life of American civilizations past and present, is accompanied by appropriate rites. The Chacs or rain gods determine the success or failure of a crop and ceremonies honoring them are offered to insure a felicitous outcome of all agricultural efforts. The ground itself is considered sacred, for nothing would be forthcoming to sustain life without the favorable intervention of the controlling gods. So it is that beliefs with deep roots in the past guide the predominantly agricultural life of contemporary autochthonous Guatemalan societies. Within this context the rôle that mushrooms play in the lives of the Tzutuhil of Santiago de Atitlán may best be understood.

The most revered god in the Tzutuhil pantheon is formally known as Rilaj Maam meaning the venerable grandfather. In common parlance the god is called Maam. An alternate name is Maximon, literally meaning "bound with rope", because within the effigy of the god there is a network of rope symbolizing his intricate relationship with the higher dieties who created him. The name Maximon, however, is considered too sacred to utter, so the appellation Maam is most commonly used. Maximon was created by the Nahuales, the elite of the gods who conferred upon him the power he now possesses, consequently he represents a synthesis of their attributes.

According to Tzutuhil legend as narrated to me by Martin Prechtel, a talented painter and linguist living in Santiago de Atitlán, there once were 12 sacred trees, each of them associated with a different mushroom. The Nahuales decided to select one of these trees to rule over men on earth. Each tree in turn was asked whether it would accept the heavy responsibility. Only one accepted, an unlikely, undersized candidate called "Ch'iip" or Little Brother. He said he had a dream

or vision in which he was directed to find a certain hill at the foot of the volcano San Lucas (still venerated by the Tzutuhil) where a tree called the "palo de pito" grew surrounded by numerous mushrooms. As the tree was approached, a strong south wind arose bringing with it a violent storm, and presently the tree was split by a thunderbolt. The tree was hollow, and within it Ch'iip observed a vague countenance which he then proceeded to carve out of the soft wood. This effigy became the god Maximon. Each stroke of Ch'iip's knife was accompanied by a sacred word, and each stroke likewise gave origin to a musical note, tone, or "son." The notes provided the musical basis for traditional songs. When Maximon was fully formed, each Nahual conferred upon the newly created god a special power. Then Maximon was commanded to stand, for he was to be tested to determine whether or not he was able to use the powers conferred upon him. A deaf mute from the village was brought before him and Maximon was directed to cure his infirmity. According to one version of the legend, a fragment of one of the mushrooms growing around the "palo de pito" was fed to the man, who thereupon became rejuvenated and his infirmity disappeared. The Nahuales were pleased, and Maximon has ever since presided over the Tzutuhil people. It is this divine mushroom which is known among the Quiché as Kakuljá, only recently identified as Amanita muscaria (Lowy, 17) and which takes its name from the Maya god whom it personifies. Kakuljá is one of a trinity of gods referred to in the Popol Vuh as "Kakuljá Huracán," the others being "Chi'iip Kakuljá," and "Raxa Kakuljá" (Edmunson, 7).

The first of these, "Kakuljá Huracán," enigmatically refers to "a single leg," (huracán), that is, the single shaft of the thunder-

bolt. Where this shaft struck the earth the miraculous mushroom Amanita muscaria arose. Relating this to Vedic myth, we have a further, unexpected verification of the meaning of Soma. Does not this "single leg," also reveal the meaning of the riddle cited by Wasson (23) in the traditional verse sung by German children?

.....
 Sag' wer mag das Männlein sein
 Das da steht auf einem Bein?

It is at once both Soma and Kakuljá Huracán, the thunderbolt! Here the thunderbolt again strikes across continents, for, from another of Wasson's (23) observations we learn that the Paleosiberian Gilyak "often wear a crudely carved little wooden figure, usually with one leg, suspended around their necks to ward off illness; they call it 'pangkh.'" And what is 'pangkh' but the "Ob-Ugrian word for the fly-agaric, 'pango.'" "Ch'iip Kakuljá" refers to a lesser ray or bolt, (i.e. little brother), and "Raxa Kakuljá" is the "rayo verde" or "trueno," thunder as interpreted by Brasseur de Bourbourg, based upon the original translation of the Popol Vuh into Spanish by Padre Francisco Ximénez during his stay in Chichicastenango (1701-1703) where he discovered the manuscript.

Wood of the "palo de pito" is still used to carve effigies of Maam, who always wears a mask befitting his sacred origin, and is provided with a cigar symbolizing the curative properties of tobacco, known and used by indigenous Americans since pre-Columbian times. I saw the effigy of Maam used as a prominent altar-piece among the contemporary Tzutuhil of Santiago de Atitlán (fig. 6). The "palo de pito" is a leguminous tree, Erythrina rubrinervia, which produces several large, red seeds in each pod. The beans are toxic, considered to

have magical properties, and in Guatemala are commonly used as part of the paraphernalia of curanderos, although "in some parts of Salvador and Guatemala the flowers and buds are cooked and eaten like string beans" (Standley, 19).

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ILLUSTRATIONS

- Fig. 1. Codex Vindobonensis Mexicanus I, page 24, showing ceremonial use of mushrooms.
- Fig. 2. Codex Dresdensis, page 15, with plunging gods in section a and b. (from Villacorta)
- Fig. 3. Commentary referring to corresponding sections of Codex Dresdensis. (from Villacorta)
- Fig. 4. Mushroom stone (Nottebohm collection) with plunging human figure in dream-like state.
- Fig. 5. Mushroom stone (Emmerich collection) with plunging human figure.
- Fig. 6. Effigy of Rilaj Maam before an altar in Santiago de Atitlán, Guatemala.