

# Pseudo-Glyphs on Late Classic Maya Ceramics in Museo Popol Vuh, UFM, Fundacion La Ruta Maya and on other Vases



Pseudo-Glyphs on Late Classic Vases, Bowls and Plates. Why not all these Texts are completely legible.  
Examples from Burials 196 and 116 of Tikal

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Museo Popol Vuh, Universidad Francisco Marroquin, Guatemala, Camilo Luin, Organizer

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FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala)

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# Introduction to interest in Maya Pseudo-Glyphs

Inga Calvin has dedicated many years of in-depth research on pseudo-glyphs of Maya ceramics resulting in her monumental PhD dissertation (2006). Her research on pseudo-glyphs already in 1997 focused on El Salvador, Honduras, and Guatemala vases and bowls (2001) that were of a style very different than traditional Maya styles of Peten (Lowlands) and the Maya Highlands. But most of her PhD dissertation is on pseudo-glyphs on traditional Maya ceramics.

My research is to locate additional examples of Maya vases with pseudo-glyphs that are in the FLAAR Photo Archive, which was donated to Dumbarton Oaks, Trustees for Harvard University in 2024. Plus, to find digital rollouts by Hellmuth that have pseudo-glyphs. These digital rollouts are in a separate FLAAR Digital Photo Archive. So all these previously unstudied pseudo-glyphs will now be available to Calvin, her students and to other epigraphers, linguists, iconographers, and ceramicists around the world.

Most importantly, I wish to document that one cause of "illegible, and/or sloppy" pseudo-glyphs can be documented fully from what I discovered in the Tomb of the Jade Jaguar, that I excavated in 1965. In my Harvard undergraduate BA thesis of 1967, I show how and why the scenes on a dozen of the vases in Tikal Bu. 196 (Str. 5D-73) were sketchy. So today is a year 2025 update to my research of 1965-1967. In those years I was more focused on iconography. Now, for recent years, I am also focused on epigraphy.

Since Calvin studied pseudo-glyphs for many many years and has a corpus far larger than I do, I am showing primarily photos that I took in the 1970's-1990's. I use my own informal categories that later can be merged with the classifications by Inga Calvin.



Fig. 1, a and b. A rare example of two different gouged-incised vases that both have several of the same pseudo-glyphs, so potentially from the same atelier or at least the same region. Both are digital rollouts by Nicholas Hellmuth, FLAAR Digital Photo Archive. We show the complete vase rollouts further into this presentation.



Fig. 2. Sloppy hieroglyphs on a Codex Style bowl or low vase. The scribe was obviously untrained or intoxicated. But are these pseudo-glyphs merely because they are so sloppy? Could the Classic Maya read this text even if it was this sloppy?

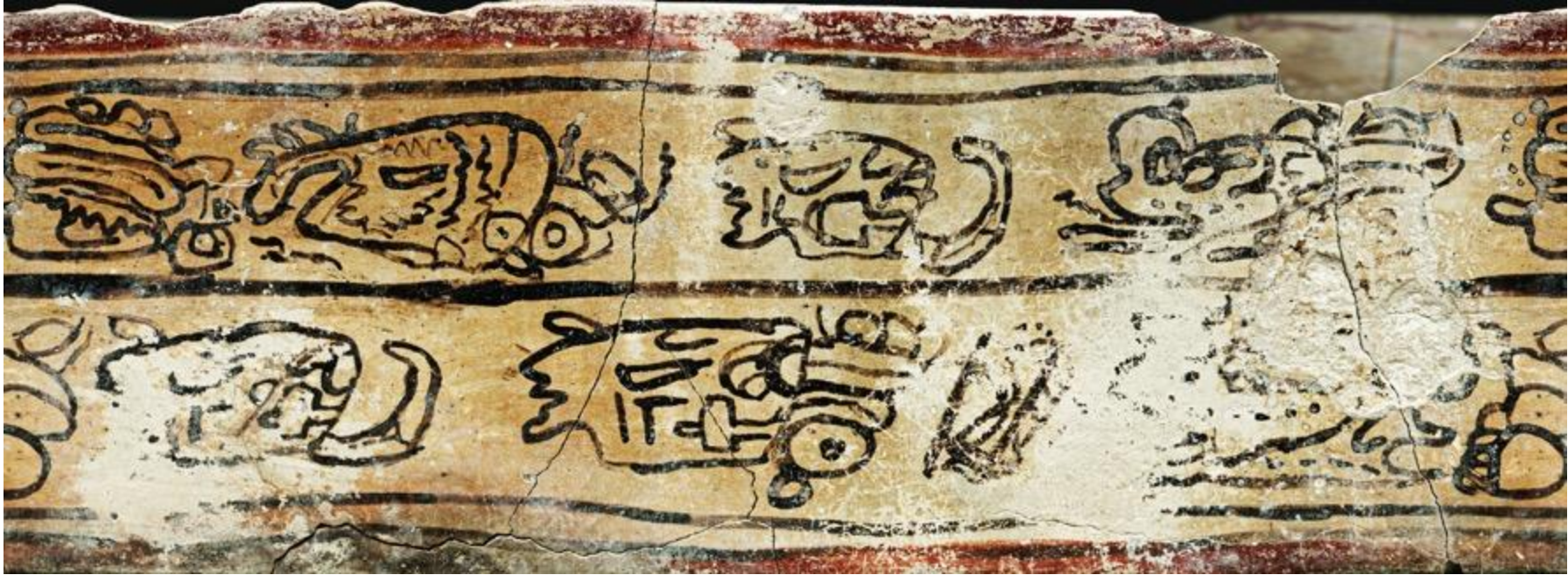


Fig. 3. Detailed, finely painted Maya hieroglyphs, by a master scribe. These are obviously true, legible Maya glyphs, of a PSSequene dedicatory text.



Codex Style plate so both are related regional style.

Photos by Nicholas Hellmuth, FLAAR Photo Archive, Dumbarton Oaks, Trustees for Harvard University.





Fig. 4. This horizontal text was important enough for the patron and scribe that they show the text at full-height of this bowl or low vase. This has nice red coloration and even though not a typical PSS it nonetheless includes key elements such as the Wing-Quincunx and others. So I prefer to classify these as variations of a PSSequene or other proclamation and definitely not pseudo-glyphs. The head with two eyes reminds me of a slide in an epigrapher's lecture at the same year 2025 epigraphy event at UFM, organized by Camilo Luin, UFM.



Fig. 5. Just because a text is “wandering” and the individual glyphs are not ornately decorated, does not mean they are pseudo-glyphs. This PSSequene dedicatory formula is a helpful dedicatory text for epigraphers, linguists and iconographers to study (the scene below also has lots of surprises for iconographers—this vase needs to be photographed at an additional angle to show these monsters at parallel viewing angle). Museo Popol Vuh, Universidad Francisco Marroquin. FLAAR digital rollout a quarter century ago.



Potentially legible or potentially pseudo glyphs?

Feline pelage pattern.

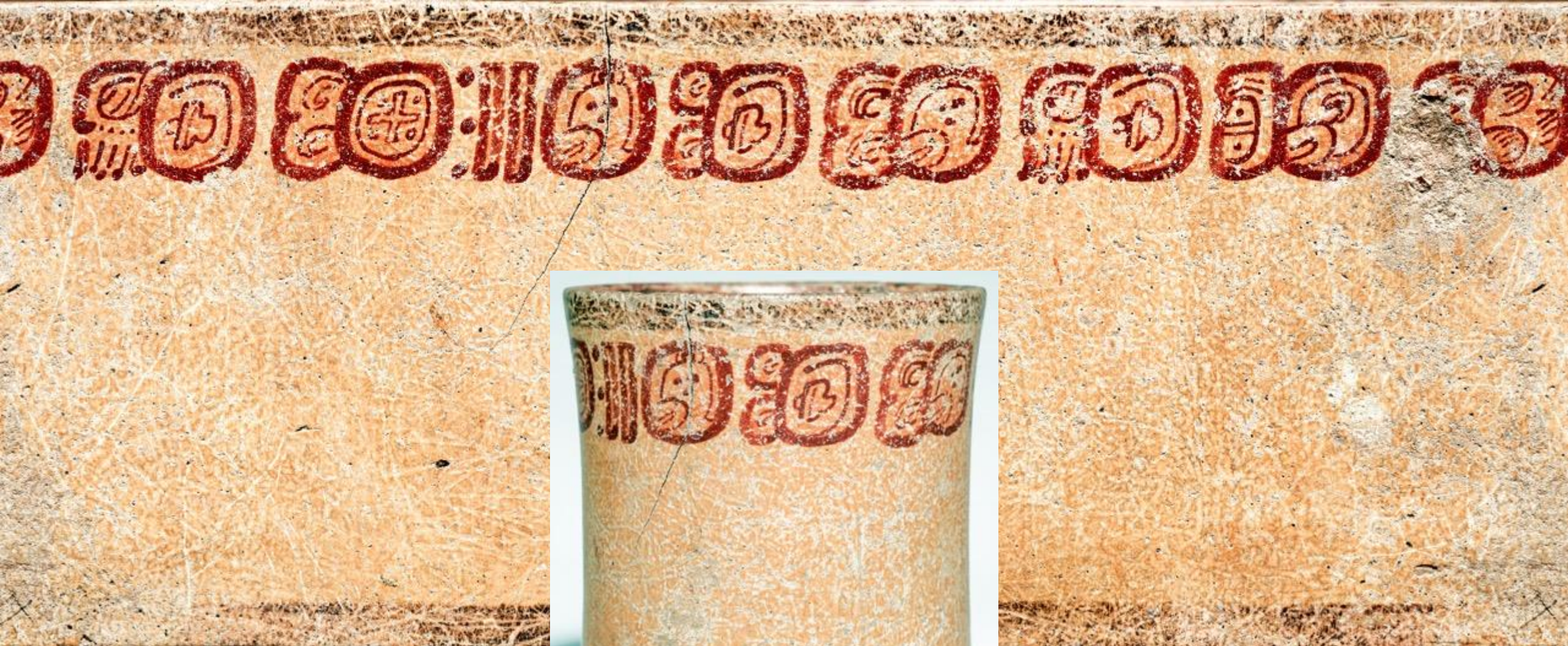
Crossed Bands are a feature in lots of Sky Bands, often in short versions in vertical spaces on vases.



Fig. 6.

Helpful scene because it is authentic—not repainted fraudulently in Miami, New York or Europe.





Although not the usual PSSequence, these glyphs are potentially legible and although there are repeats, I prefer not to classify as pseudo-glyphs. Or if epigraphers want to label them pseudo-glyphs, then as a legible variant. It took scholars over a century to read Maya hieroglyphs—what if lots of linguists and epigraphers decipher these texts also?

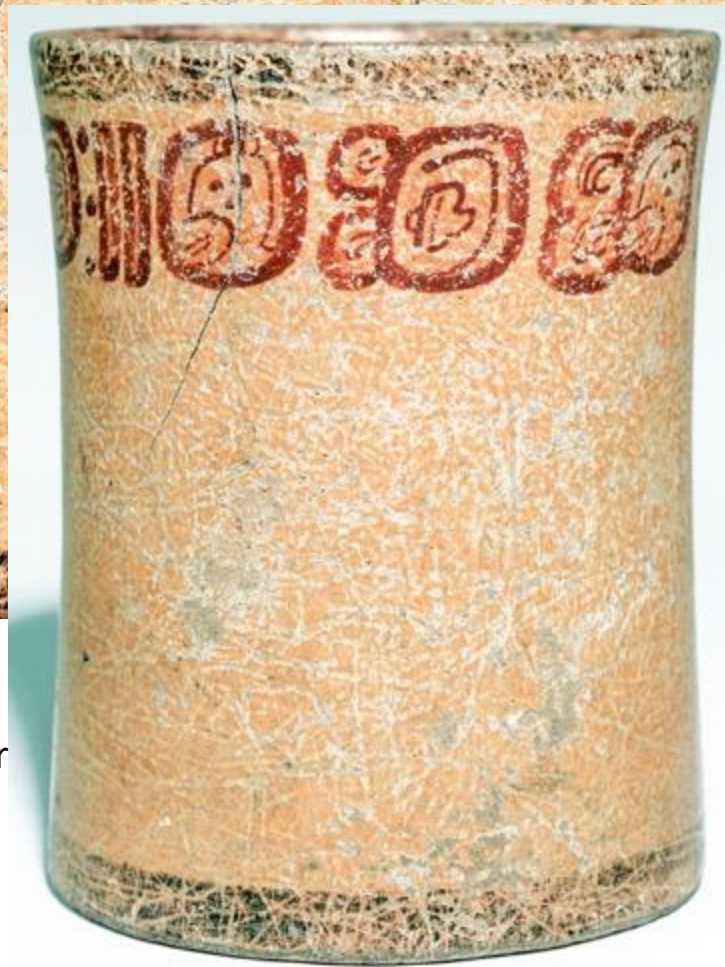


Fig. 7 a (the rollout), b (the vase). All rollouts are digital, with Dicommed Better Light first edition, or with subsequent improved software for second edition based on beta-testing by Hellmuth of the first edition.



Fig. 8. Since the scene on this vase is geometric decoration, no surprise that the hieroglyphs are simplified and repeated, thus potentially to be classified as pseudo-glyphs, in the suggested category of repeated pseudo-glyphs.





Repeated Glyphs but one is not repeated. Scene features God K, Ka'wil



Fig. 9. God K, Ka'wil, is on many Late Classic polychrome Maya vases from the Lowlands that have pseudo-glyphs.





Fig. 10, a. Closeup so you can see that although “repeated” each glyph has slightly different designs.

Our goal is to make our digital rollouts available for epigraphers, linguists, iconographers, and students for their theses or PhD dissertation. These were taken with a Better Light digital rollout camera so are more precise and higher resolution than other rollouts.

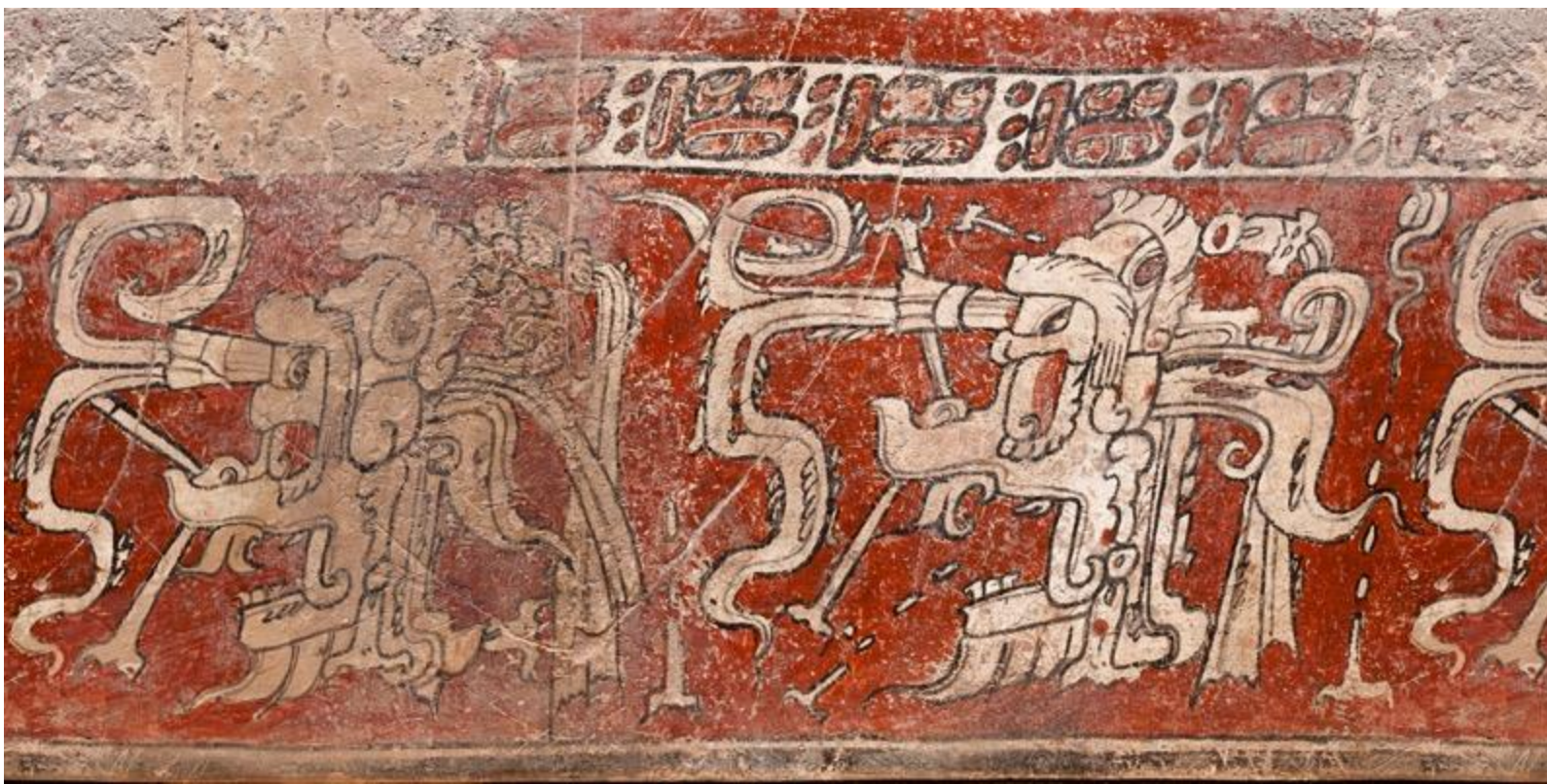


Fig. 10, b.





Fig. 11. Postfix repeated on all six glyphs of the two vertical columns. Another postfix as a vertical earring is repeated on all eight glyphs in the horizontal band. Most of these head-variant glyphs share similar styles. But I would not consider these as pseudo-glyphs—I think they are telling a story.

The Xibalba creature is holding a torch or a large cigar. The other costumed person is holding a high-status military weapon/staff.





Fig. 12, a.



Fig. 12, b. Even though they all have the same earring, I estimate that the Classic Maya could have understand whatever message this scribe was presenting.

It helps to have a digital rollout so you can enlarge the hieroglyphs to see more detail. If you need to trace a line drawing, you can use software to enhance the actual designs. CaptureOne is the best photo processing software in the world but everyone uses Adobe Photoshop or Lightroom. I process all files in RAW mode.

It would help if epigraphers and linguists could publish what software is best for completely removing the background color so that the black details of each glyph are visible (without drawing them by hand). In other words, creating a digital drawing by removing the background color.



The same postfix and several have similar prefix.

But the main sign is not repeated. Thus I would encourage epigraphers and linguists to “translate” these and not to discard them into a pseudo-glyph category.

Inga Calvin made an inventory of pseudo-glyphs—what’s needed now is a category of all these glyphs that J. Eric S. Thompson and Sylvanus Morley were not aware of in the previous century.

Cropped from digital rollout so you can enlarge the text to see more details.

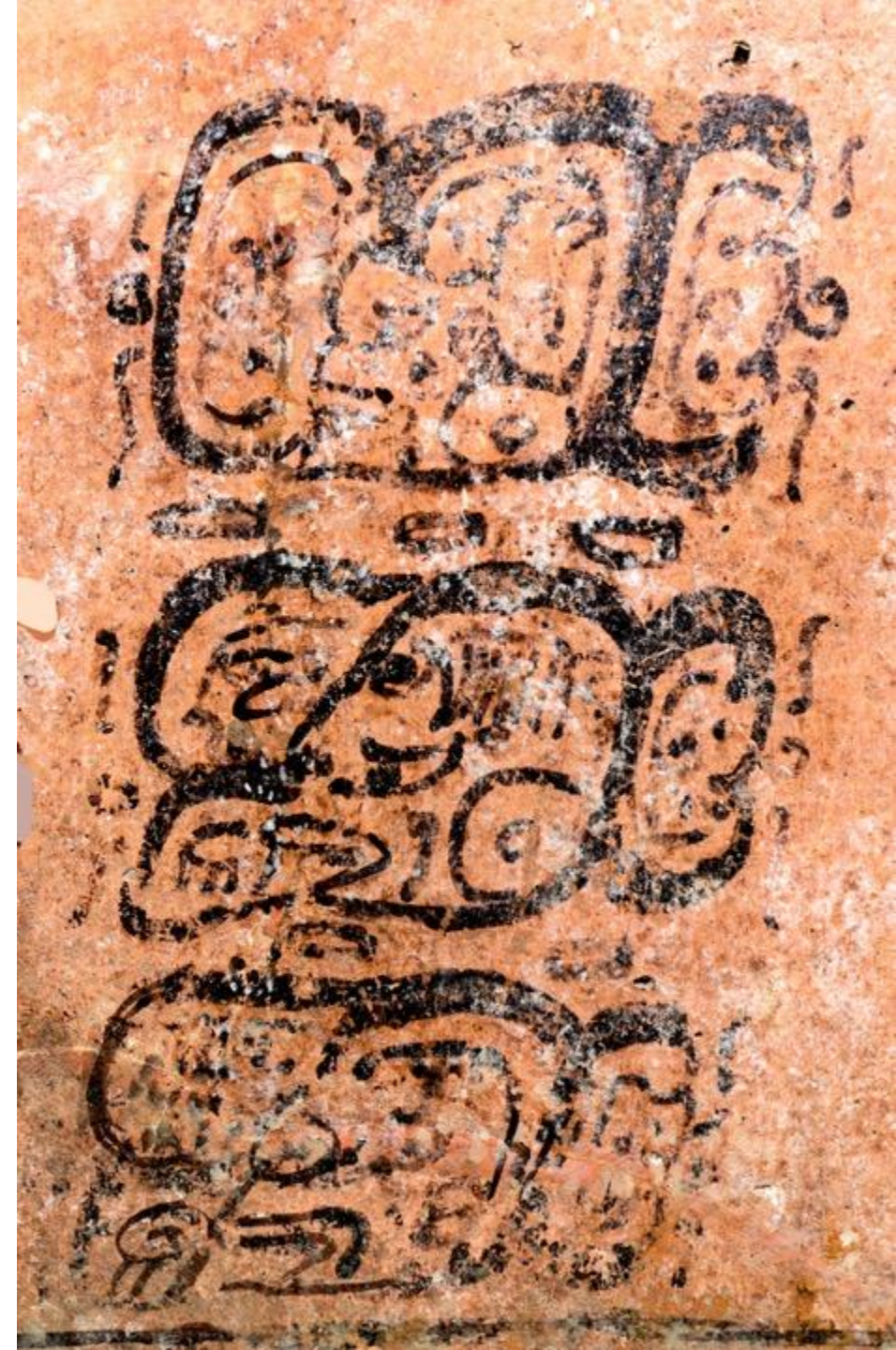
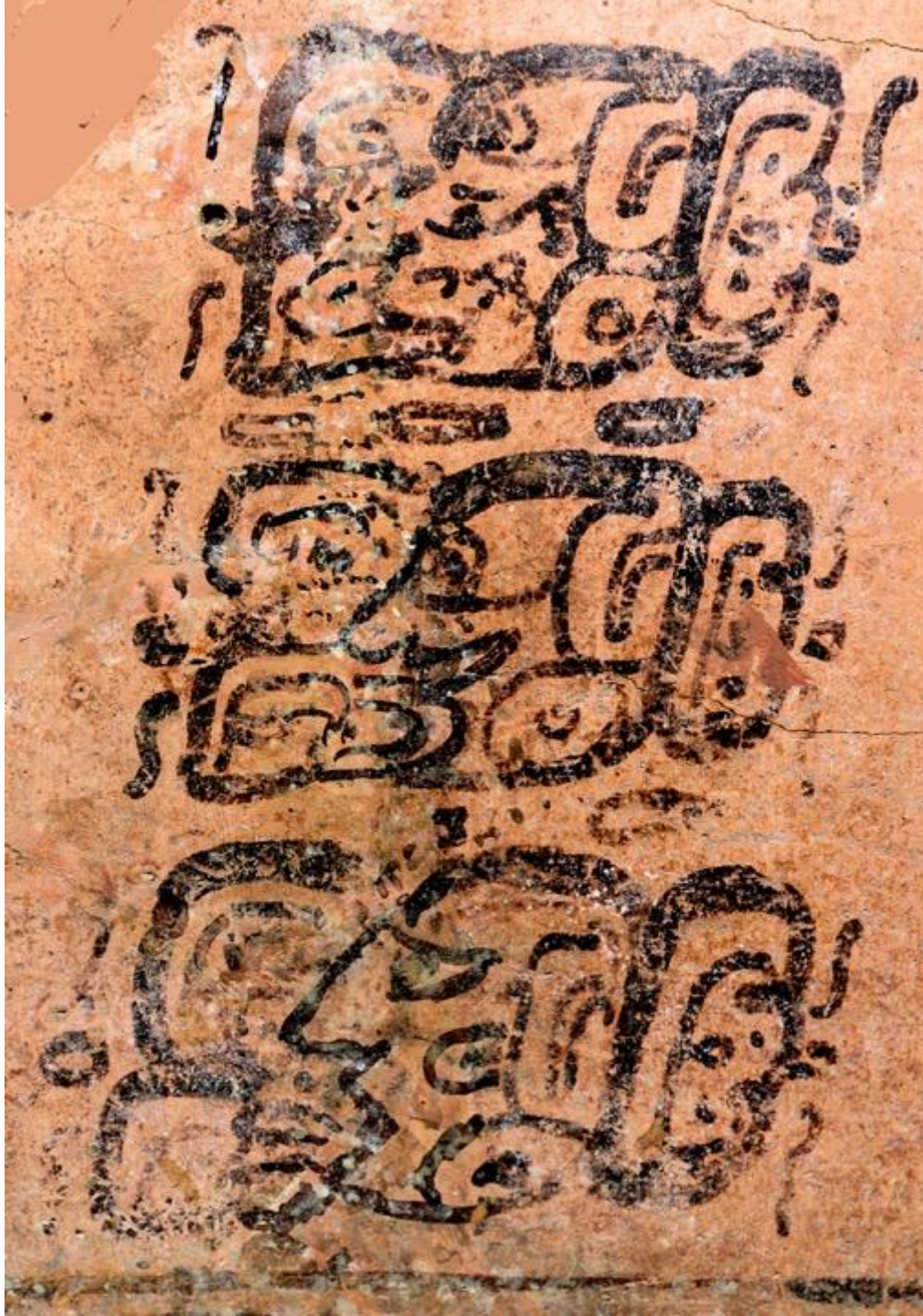


Fig. 13, a and b.



## Pseudo-Glyphs on "Catfish Red Style" Maya Vases



Fig. 14. Over decades I have noticed lots of vases with red backgrounds that feature catfish, so I called these Catfish Red Style. Probably Central Maya Lowlands (Hellmuth 1998). Although a quarter-century ago I estimated them as Tepeu 2, they could be late Tepeu 1 (best for a ceramicist to decide). The vase we show here has the band of stylized feline-like spots but the ones of the following two pages have a different color and no feline spots around the upper area). All are digital rollouts by Hellmuth, FLAAR Digital Photo Archive. The dark red here is not the usual hue for a Catfish Red Style vase.





Fig. 15.



Repeated  
pseudo-  
glyphs.

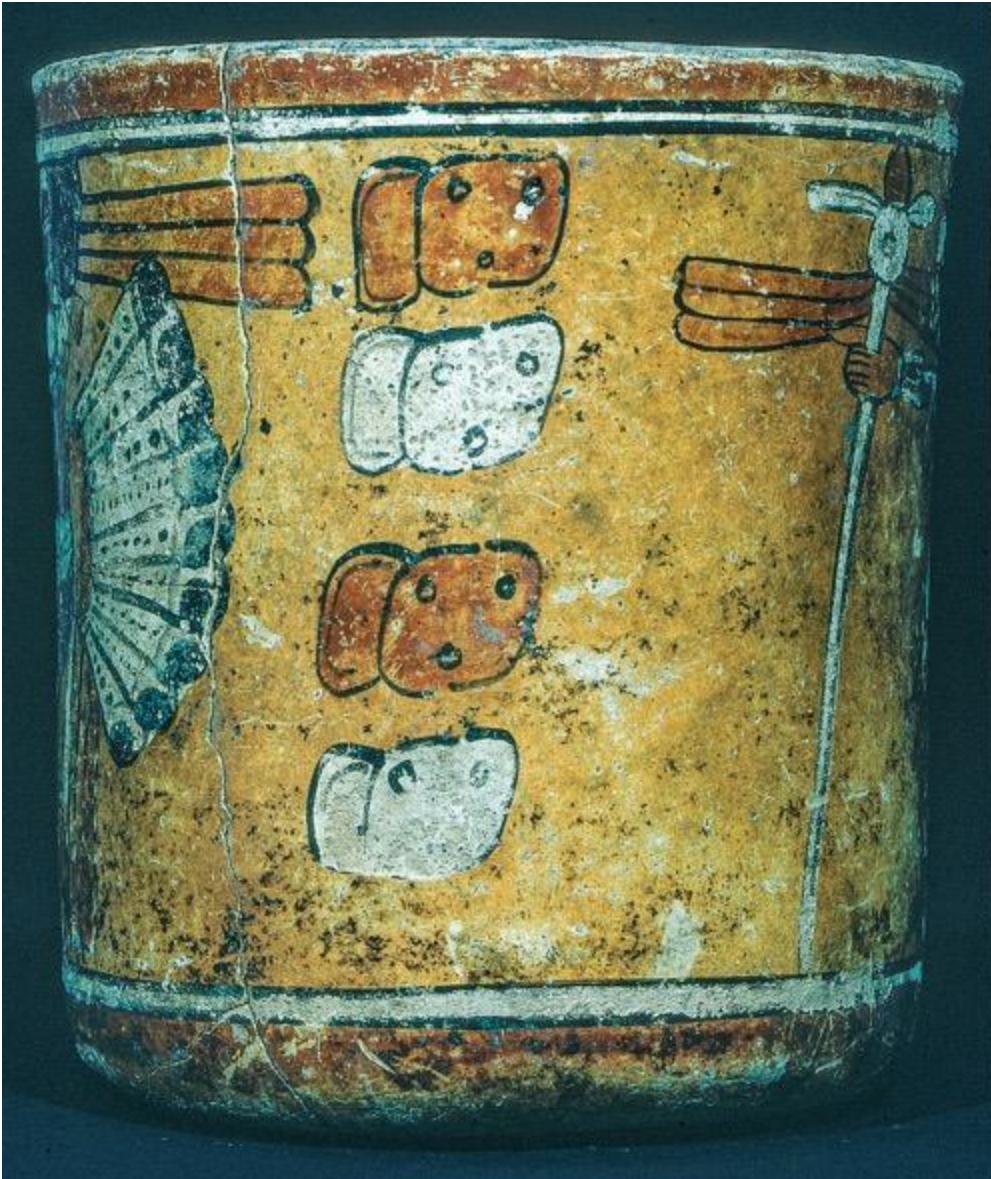
Catfish Red  
Style,  
probably late  
Tepeu 1, is a  
classification  
by Hellmuth  
over  
decades,  
since most of  
these scenes  
with this  
background  
color have  
catfish.



Fig. 16.



## Let's now start with examples on polychrome vases of Chama Style, Guatemalan Highlands



Most vases were photographed by Hellmuth both in black-and-white and also with a Leica with 35mm Kodak transparency film. Slides are easier to scan than B&W negatives.

I would photograph all sides of each vase or bowl—so all those are at Dumbarton Oaks. In the present FLAAR Reports I just show the glyphs that are potential pseudo-glyphs

Fig. 17, a and b.



If glyphs are repeated, should they be considered as potential pseudo-glyphs even if each glyph can be read (so not sloppy decoration)?



When a hieroglyph is “not in Classic Maya sophisticated beautiful style” they are often written off as pseudo-glyphs—such as here. Michael Coe shows lots of excellent Chama vases with perfect Maya hieroglyphs. But now it’s helpful to show Chama vases with sloppy hieroglyphs.

The seated elite Maya individuals were painted by a knowledgeable and experienced painter. But these two hieroglyphs are clunky and look like they are using geometric designs as space fillers.

Dumbarton Oaks will put numbers on each artifact. Since there are over 30,000 images and since unless I win the PowerBall or MegaMillions lottery, I don’t have money to catalog that many images.

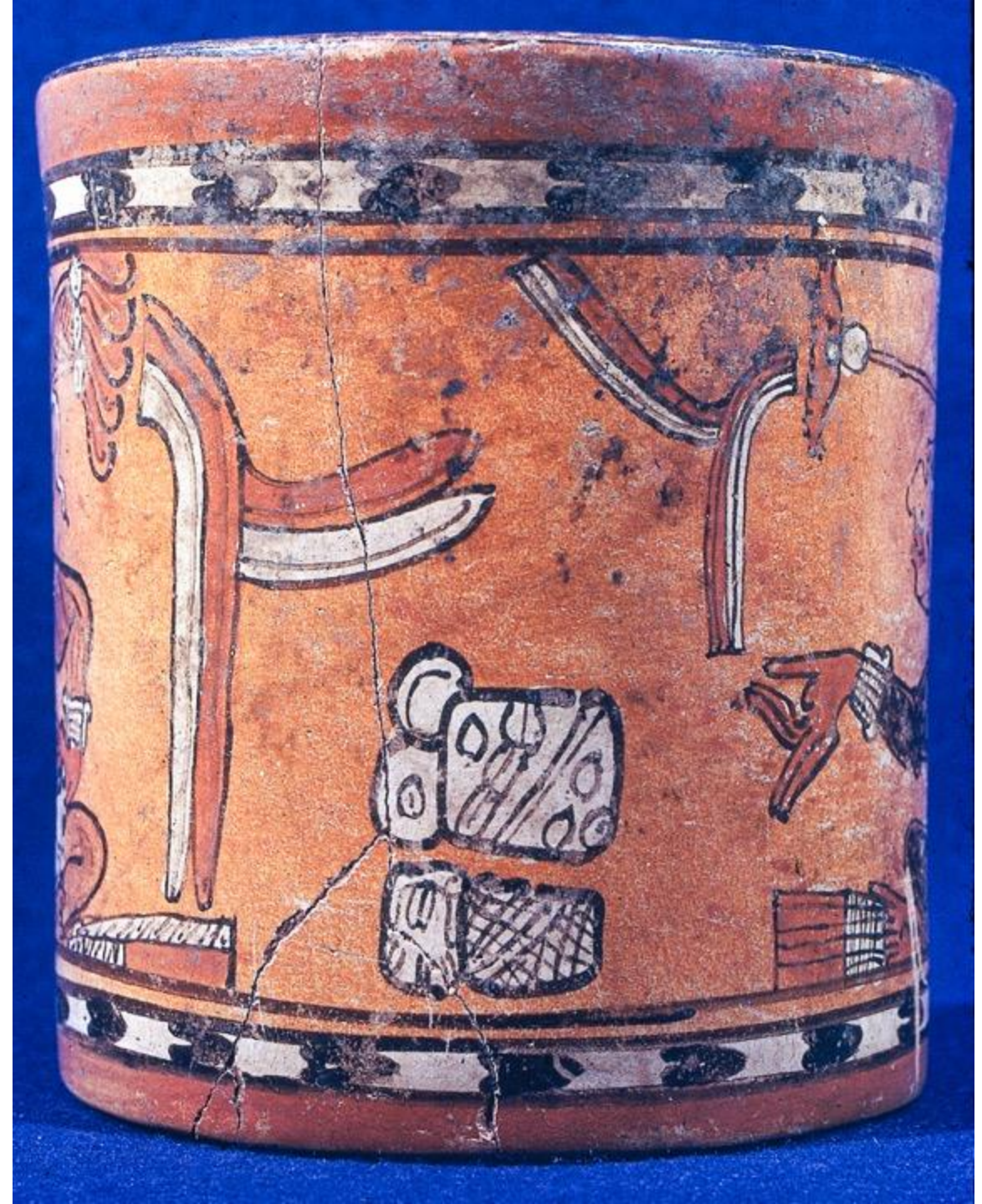


Fig. 18.



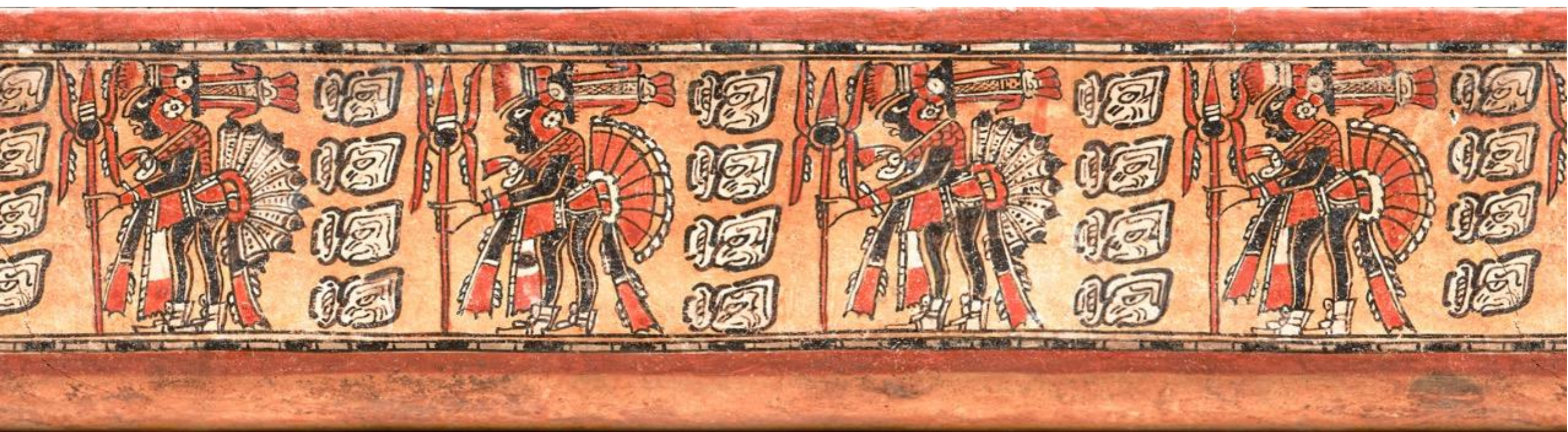


Fig. 20. Estimated to be related to Chama Style. Fundacion la Ruta Maya. In other words, although “Chama style” means a vase with a horizontal row of chevrons around upper and lower parts of the front, I estimate that other vases of same size and comparable color, that have different geometric shape on their horizontal bands, are from the same or nearby areas.

All twelve hieroglyphs are repeated, so they would tend to be called pseudo-glyphs. But, what if this is a particular message that the scribe deliberately wanted to repeat a dozen times?

The feathers with black areas are excellent examples of ones used to decorate Tepeu 2 plates in Tikal Bu. 116 and Tikal Bu. 196.



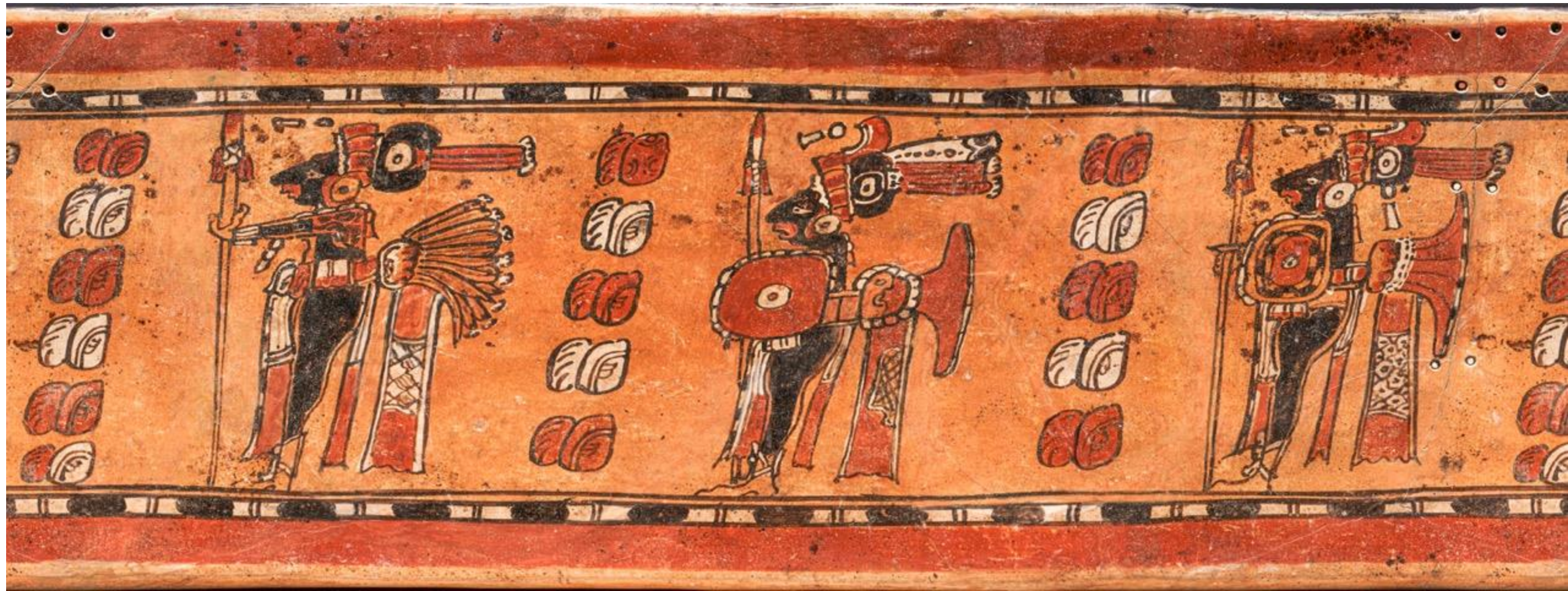


Fig. 21. Related to Chama Style, Fundacion la Ruta Maya.

These hieroglyphs are both repeated and also simplified, but even if their message is short, what if there is still a message ?



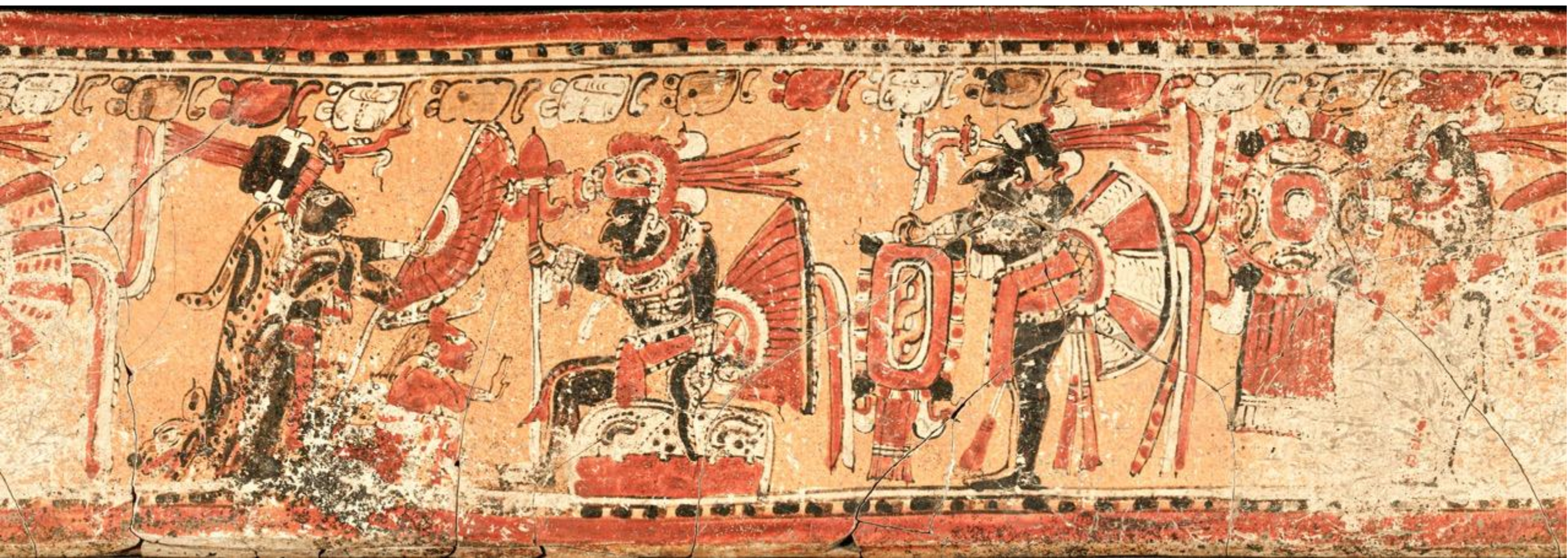


Fig. 22. The two horizontal decorative bands and the colors of the scene suggest this is related to Chama Style (even with no chevrons). The hieroglyphs are so simplified, and so covered with colorant, that what few details were present are not always visible. Lots of repeats. I would accept classifying these as pseudo-glyphs.

Digital rollout by Nicholas Hellmuth a quarter century ago.





Fig. 23. Repeated simplified glyphs that could be considered pseudo-glyphs.

Museo Popol Vuh, Universidad Francisco Marroquin. Digital rollout.



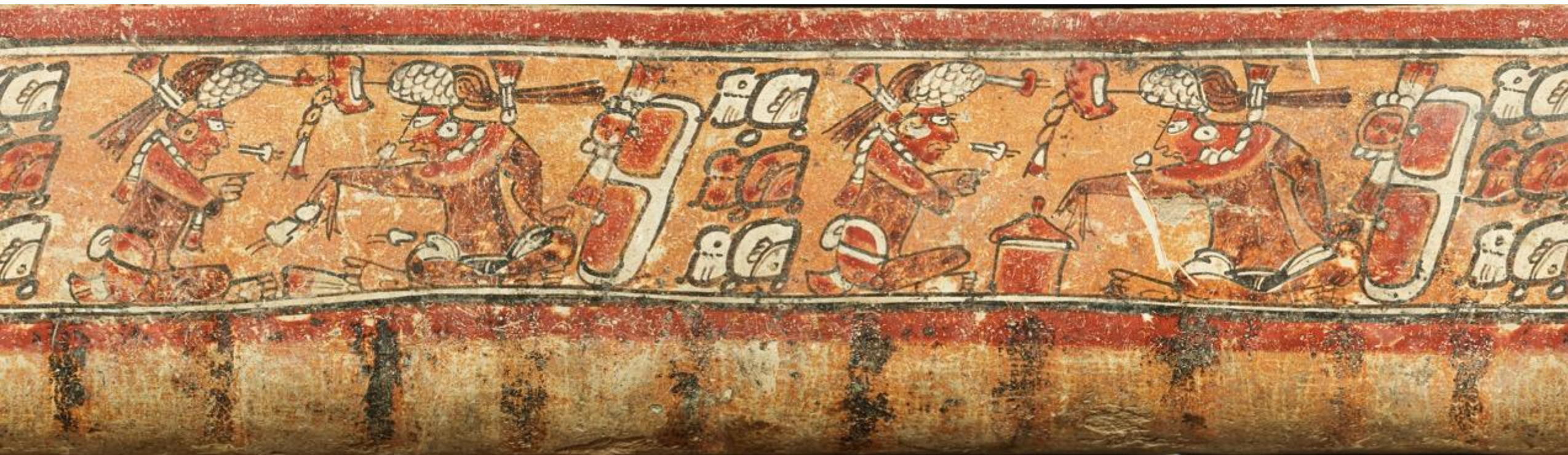


Fig. 24. Even without horizontal row of chevrons, the colors and style suggest a relationship to Chama area of the Maya Highlands.

This painter was fully capable of rendering the scene and the glyphs are not sloppy—they are just simplified and repeated.

98% of the rollouts in this FLAAR Reports are digital rollouts by Nicholas Hellmuth, FLAAR Digital Photo Archive. About 60% are published here for the first time. They are available for iconographic research in addition to epigraphic and linguistic research.



The legs of the two deities were painted with a thin black line.

The pseudo-glyphs were painted with a thicker line.

Was the scribe a different person or simply using a different tool?

Need to check other scenes to see how often this difference is noted.

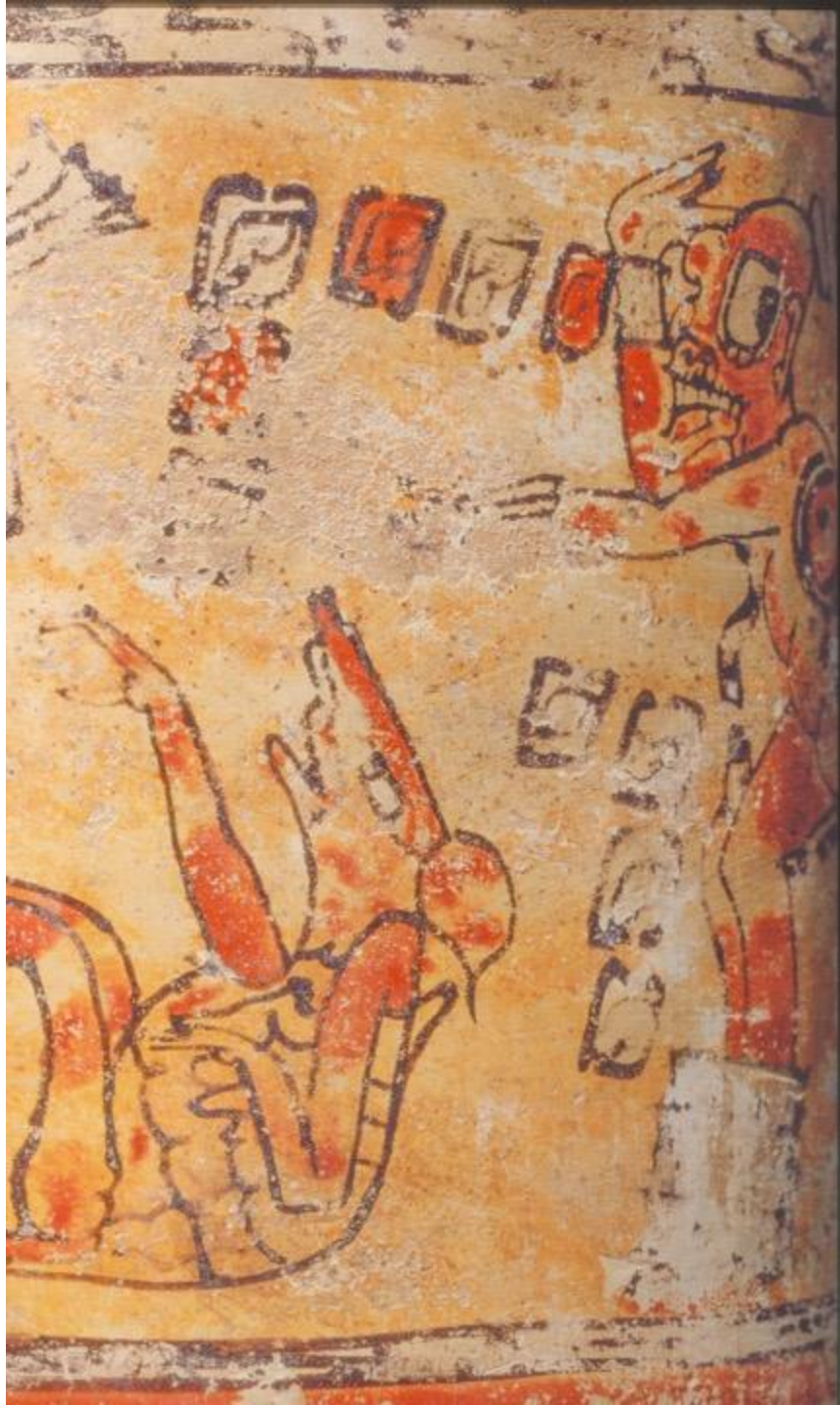


Fig. 25, a and b.





g. 26, b.

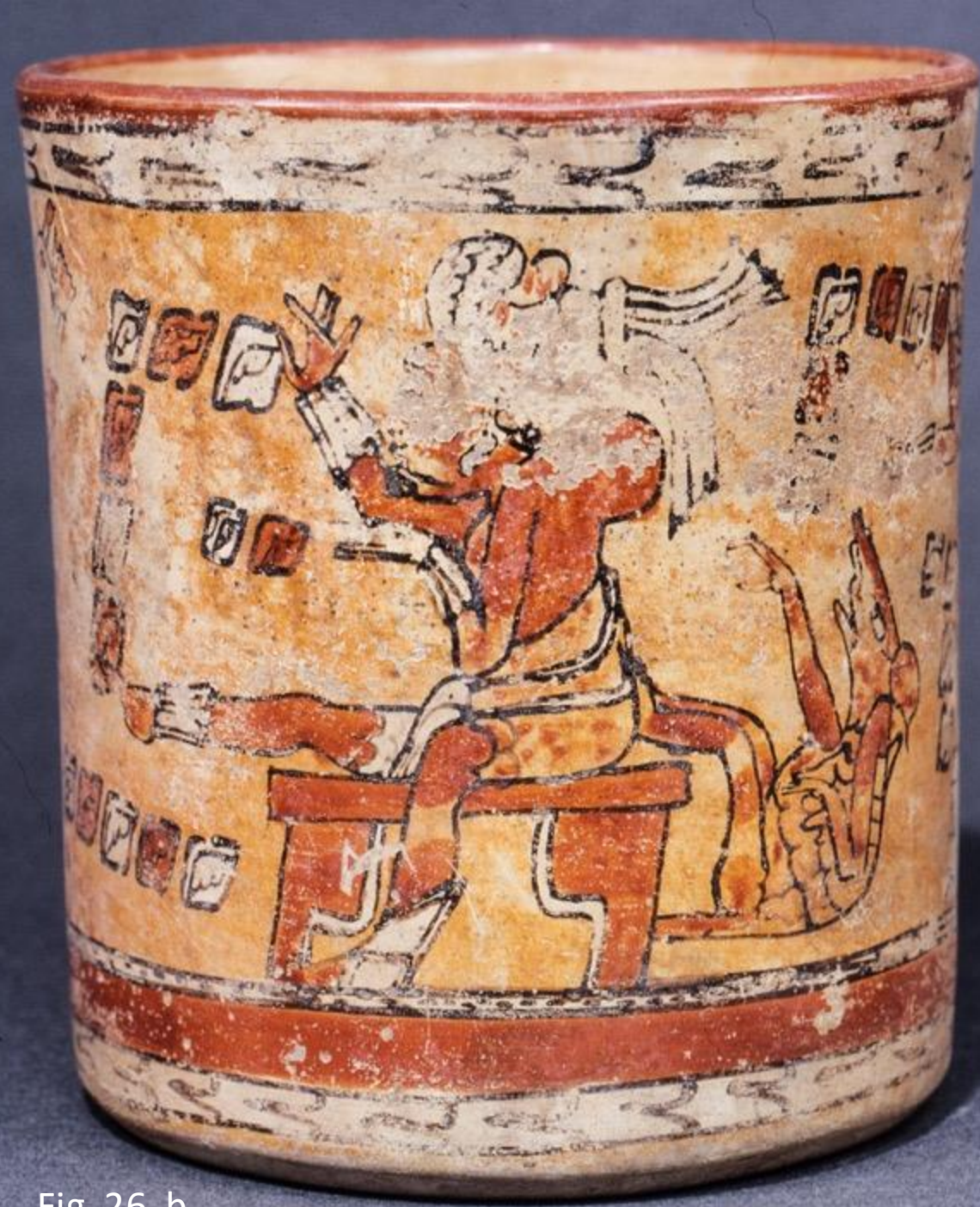


Fig. 26, b.



Glyphs with thick outline, legs with outline of thinner width.

If you Google iconography, God N, Hellmuth, FLAAR you will get the most complete corpus of God N scenes yet accumulated.

Although I estimate this scene is related to Chama style I would welcome other ideas.

With no decorative bands, best not to caption this as Chama style, but the size, shape and colors suggest this low vase is from a nearby area that knew the Chama colors.

Fig. 27.





Repeated decorative pseudo-glyphs.

The giant exaggerated conch shell has a row of dots that comes from the Surface of the Underwaterworld (Hellmuth 1987a and 1987b).

With no decorative bands, best not to caption this as Chama style, but the size, shape and colors suggest this low vase is from a nearby area that knew the Chama colors.

As soon as the Dumbarton Oaks database has scanned and organized the Hellmuth photos from FLAAR, then hopefully we can find photos of all the other sides of this scene.

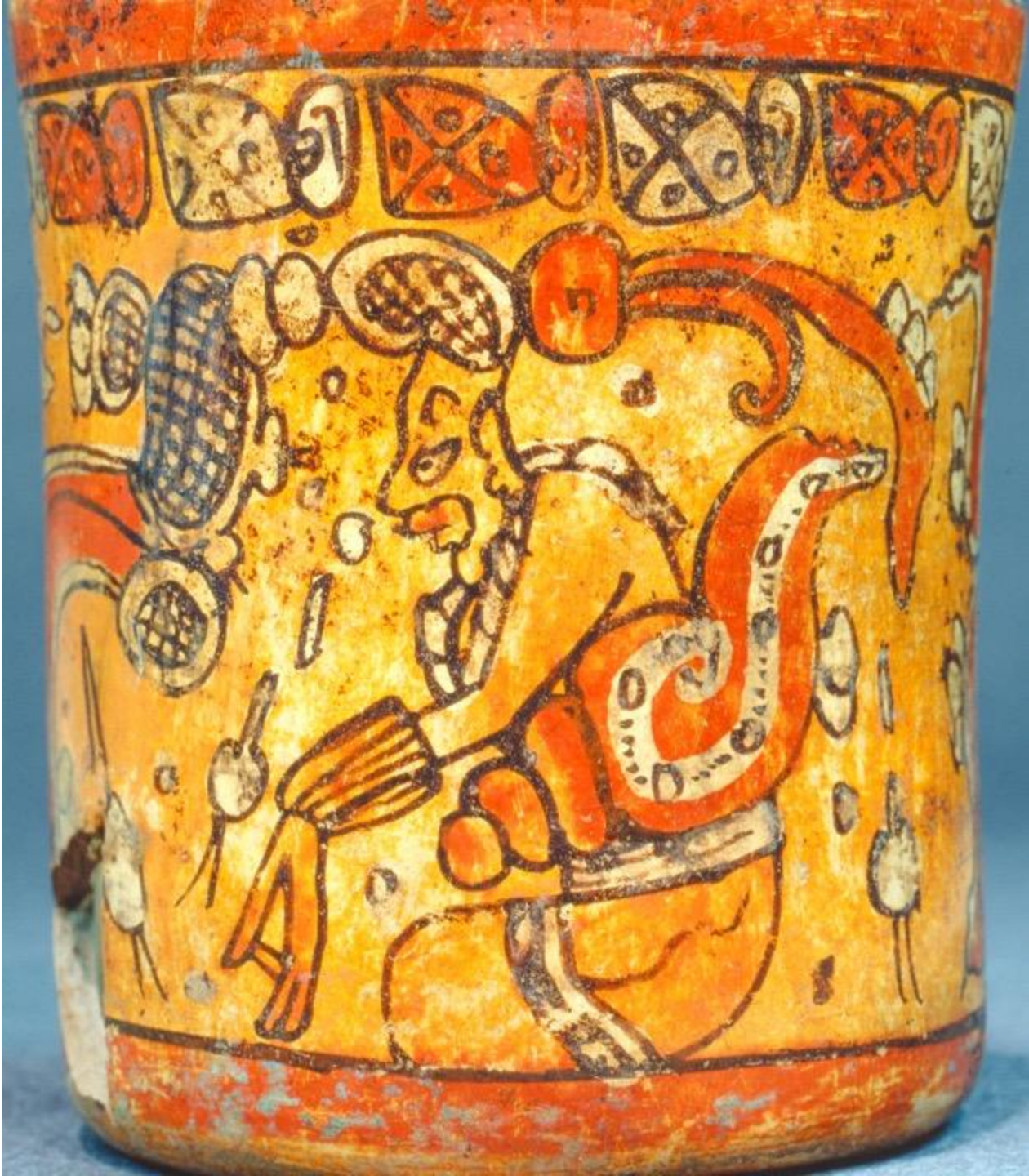


Fig. 28.





Fig. 29. Simplified and repeated pseudo-glyphs in colors that are potentially associated with Chama style.

All photos are digital rollouts by Nicholas Hellmuth with a Better Light tri-linear scan back operated by special rollout software on a portable Macintosh computer. Hellmuth was the beta-tester for the first model, the Dicomed-Better Light. Then all suggestions for improvements were built into an improved rollout camera that we then used to replace the Dicomed. That said, the Dicomed rollout camera produced more detail and did not distort the rollouts.





Fig. 30. Probably Highlands, but not necessarily Chama. Kerr rollout K3102 shows the same triple rows of bat heads, but by a different scribe. I would consider the row of designs around the upper and lower areas as designs rather than pseudo-glyphs, but would be interesting to search the database of Inga Calvin. The repeated heads of the bats I would consider as portraits of bats rather than bat hieroglyphs, but I would be open to suggestions by epigraphers that these are also bat hieroglyphs. What I find notable is that a scribe could produce so many nearly identical decorations on the face of this bat. But the middle column is narrower than the column at it's left. Did the scribe have a "stamp"? But if you look closely, each one looks individually painted in some aspects.



Pseudo-Glyphs on Vases and Bowls in Holmul Dancer Orange-Red Style (not all with actual Dancers)



Fig. 31.





Fig. 32, a and b. The face of the personage is nicely rendered. The other panel has a possible God K, Ka'wil.

The pseudo-hieroglyphs are simplified but not all identical. These texts need to be compared and contrasted with vases, bowls, and plates of the same colors found at Holmul, other Peten sites and at Maya sites in Belize.

Digital rollout by Nicholas Hellmuth.



## Vases and Bowls in Holmul Dancer Orange-Red Style (not all with actual Dancers)



Fig. 33, a. Museo Popol Vuh, Universidad Francisco Marroquin.

Possible God K, Ka'wil.

All the glyphs are simplified. Several (but not all) are repeated. These would be cataloged as pseudo-glyphs.



Fig. 33, b.



The horizontal text is simplified a bit but is more likely a crude PSSequene than pseudo-glyphs.

The two vertical texts are scrunched so don't have space for much detail. But although simplified they should be compared and contrasted with all vertical texts on dozens of other Holmul Dancer scenes before naming them pseudo-glyphs.

Holmul Dancer vase, Museo Popol Vuh, Universidad Francisco Marroquin.

Digital rollout has lots of resolution so you can see the details.

Fig. 34.





**Clusters of Glyphs, Each Cluster separated from the rest, instead of PSS around Upper area,  
Red Band Tepeu 1 Style**

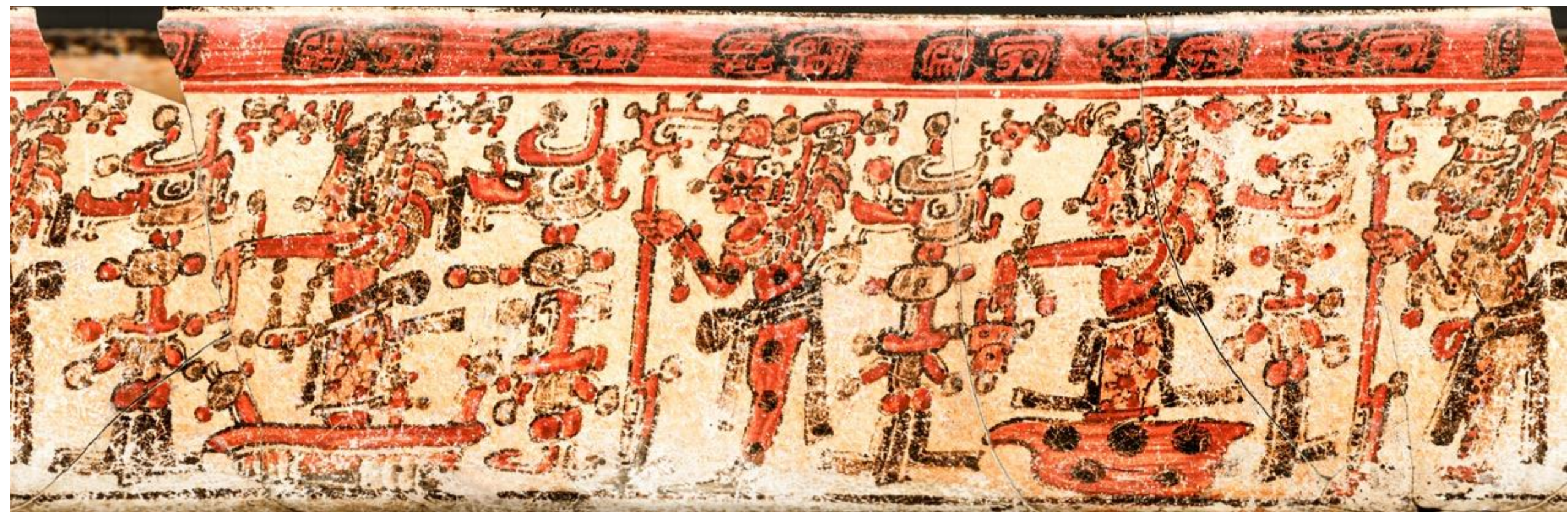


Fig. 35. Each cluster is two glyphs though the front one of each cluster could be a large “prefix??”.

Museo Popol Vuh, Universidad Francisco Marroquin, digital rollout by Nicholas Hellmuth. I named all the vases and bowls of this color and style as Red Band Tepeu 1. Most, but not all, of these Red Band Tepeu 1 vases have widely separated glyphs rather than a continuous PSSequene dedicatory text. In the past I may have named this Red Rim Tepeu 1, but now I prefer Red Band Tepeu 1.





Fig. 36. One of the least studied polychrome bowls of the series of Red Band Tepeu 1 scenes. This scene is so rich it could fuel an entire PhD dissertation. As with other Red Band Tepeu 1 style scenes, the glyphs around the top are definitely not a PSSequence, but are clustered in sets of two glyphs (with one area of just a single glyph). Need to see whether one scribe painted texts on several of these scenes.

And especially, need to decide whether these are simply different Maya hieroglyphs and not name them pseudo-glyphs automatically just because they are small and not as large and ornate as lots of PSSequence dedicatory texts.

Digital rollout by Nicholas Hellmuth. This vase needs a black-and-white line drawing so that the iconography can be studied in detail.





Fig. 37, a and b. This scene is so filled with deities, snakes, and accessories that it's amazing. Would help if we knew in what museum this vase can be found. I am preparing a publication on the iconography of all Red Band Tepeu 1 vases in which I will enlarge every segment of the rollout so you can see every aspect in detail.



## Clusters of Glyphs, Each Cluster separated from the rest, instead of PSS around Upper area, Red Band Tepeu 1

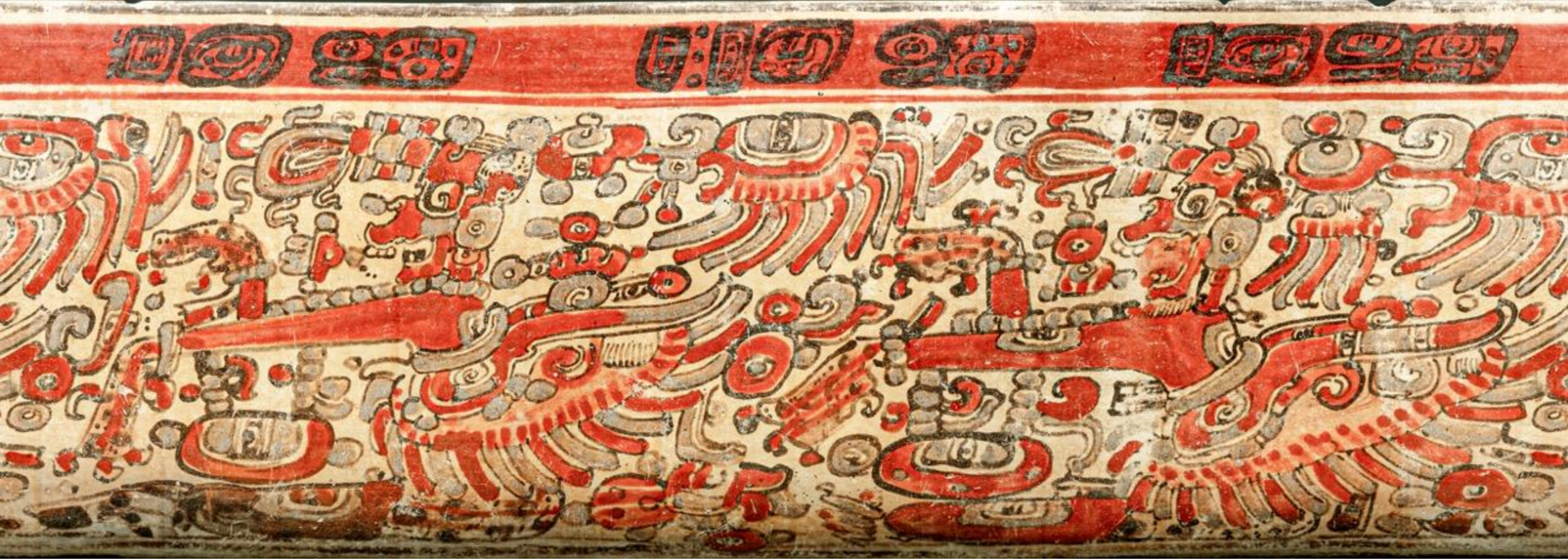


Fig. 38. Important and beautiful scene of jaguar-pawed deities, with the same "serpent-head wing" as a Principal Bird Deity. But the cruller around the eye and feline-pelage earring are more of a JGU concept than a God D or Principal Bird Deity.

The glyphs include some repeats but it's almost as if each group was painted by a completely different scribe?

Museo Popol Vuh, Universidad Francisco Marroquin. Digital rollout by Nicholas Hellmuth and the FLAAR team of photo assistants.



**Clusters of Glyphs, Each Cluster separated from the rest, instead of PSS around Upper area, Red Band Tepeu 1**



Fig. 39. Red Band Tepeu 1, Kerr rollout, K0521, downloaded from database of improved digital quality, Dumbarton Oaks, Trustees for Harvard University.



**Clusters of Glyphs, Each Cluster separated from the rest, instead of PSS around Upper area,  
Red Band Tepeu 1 Style, Vases and Bowls**

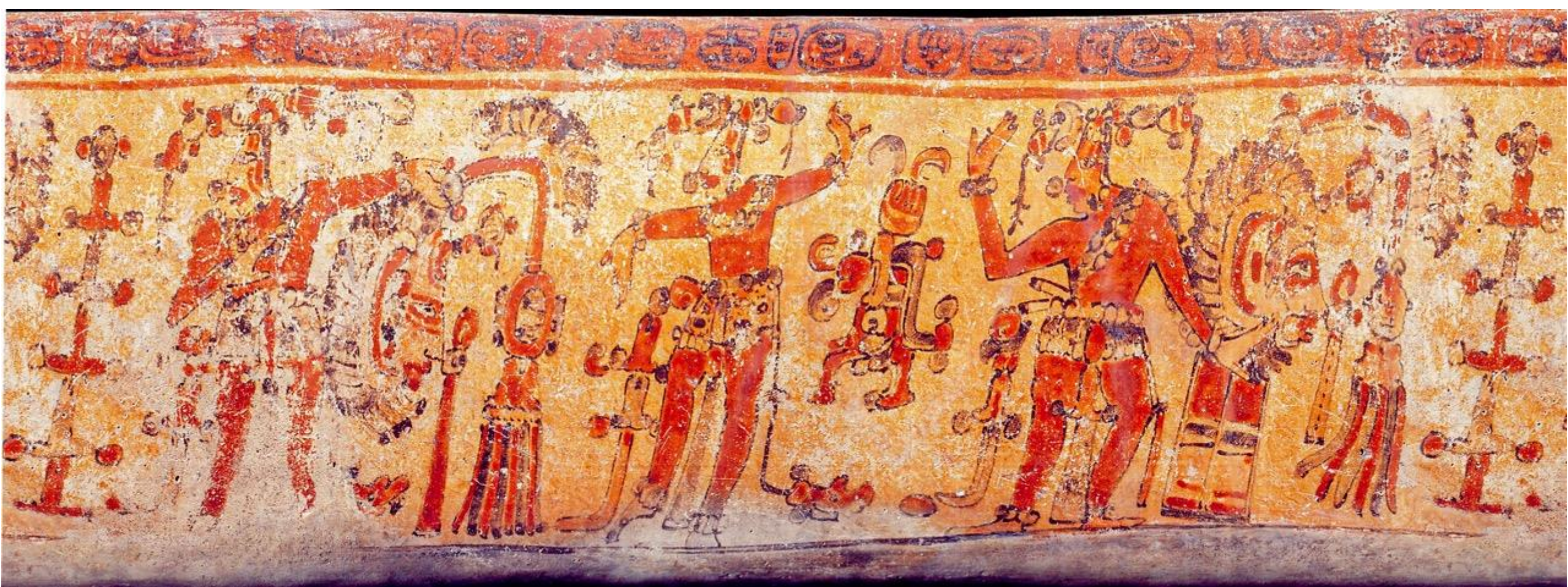


Fig. 40. Variant (lighter colors, not as red, but still considered as a Red Band Tepeu 1 style scene). Each glyph has space between other glyphs, but the glyphs here are not in clusters. . These glyphs are simplified, but an open question as to whether they should be considered pseudo-glyphs. Kerr keywords includes some of these vases/bowls for Tikal but that is not yet documented to my knowledge that any of these come from Tikal. Would help if the project of Bishop and Reents can suggest from what regional area these vases and bowls were made and painted.





Fig. 41, a. Museo Popol Vuh, Universidad Francisco Marroquin



Fig. 41, b. Museo Popol Vuh, Universidad Francisco Marroquin

Other than spacing and thick lines, not identical to other text.



Fig. 41, c. Kerr rollout, K0621, improved digital quality of Dumbarton Oaks, Trustees for Harvard University.



Fig. 41, d. Fundacion la Ruta Maya, digital rollout by Nicholas Hellmuth.



Fig. 41, e. Kerr rollout, K0621, improved digital quality of database of Dumbarton Oaks, Trustees for Harvard University.

Would help to have photos of the horizontal hieroglyphs of all other Red Band Tepeu 1 vases and bowls.





Fig. 42, a and b. Definitely helps to have a rollout at the resolution achieved by the FLAAR digital rollout camera, because now you can see that the glyphs at the left are repeated for sure. And the other glyph partially repeated. Museo Popol Vuh, Universidad Francisco Marroquin.





Fig. 43. You can even see some of the brushstrokes.

Museo Popol Vuh, Universidad Francisco Marroquin. The MPV kindly provided Hellmuth space to set up a photo studio, and in subsequent years the UFM provided office space for the entire FLAAR digital imaging research team in another building.





Fig. 44, a, b, and c.

Museo Popol Vuh, Universidad Francisco Marroquin, has only one mas o menos repeated main sign three times, but prefix only repeated twice (and not identical).







Fig. 45, a, b, c, and d.

Now you can notice that the prefixes of the first glyph in each cluster is the same.

And the prefix of the second glyph in each cluster is the same for that final glyph.

But can linguists or epigraphers decipher these glyphs? There is no reason that all horizontal texts on ceramics have to be a PSSequene dedicatory text.

Fundacion la Ruta Maya, has very important painted and incised ceramics for iconographers, linguists, and epigraphers.





## Incised Vases, Repeated Geometric Motifs instead of Hieroglyphs



Fig. 46. Museo Popol Vuh, Universidad Francisco Marroquin. I love this cursive style to show the elongated stylized shape of these Maya faces. The row of geometric designs around the top could be considered simply as geometric designs, or as geometric pseudo glyphs because this area of Maya vases and bowls usually had a row of glyphs.





Fig. 47, a.



Fig. 47, b.



My first experience with Maya ceramics was in 1965, at age 19, working at Tikal as a student intern. In that decade it was common for students to “take a year off” (from college) and do something totally different.

Although Maya architecture (my assignments at Tikal were to accomplish architectural drawings for the Penn Museum Tikal Project), then iconography and now epigraphy are my primary focus, I realized already back in the 1970’s that it would help scholars and students to study how a Maya vase was incised or how a polychrome vase was painted. Close-up photos, using a tripod to prevent wobbly view, was a goal for decades of photography in museums around the world. Although the focus of the present presentation is on pseudo-glyphs, as long as these vases have other features worth sharing with colleagues, I am adding close-ups.

Fig. 48.





Cross-lighting (lights from each side) are very helpful. Most professional photographers use more light from one side since that's how they are taught. But I want to show detail without having more light on one side than the other.

With close-up details it should be possible for a clever student to do a 3-D reconstruction of a 7th-8<sup>th</sup> century Maya artist incising this scene.

Fig. 49.





## Repeated Pseudo-Glyphs



Fig. 50. A rare scene with the main personages facing right. Normally they would face left. The heads are not placed correctly but there was not space for a neck. The rest of the figures are not as out of proportion.

These are clearly pseudo-glyphs.





Fig. 51, b.

Fig. 51, a. Museo Popol Vuh, Universidad Francisco Marroquin, digital rollout by Nicholas Hellmuth, FLAAR Digital Photo Archive.



Here you can see how the designs were incised.

The chips on the lower leg are probably from the looters' excavation or from damage in the burial over a thousand years of material falling down onto the burial.



Fig. 52.





Fig. 53, a.

By removing the color it's easier to see the incised lines.

Although most Maya scholars study iconography or epigraphy of ceramics, there is also a need to study how each regional style was made. These photos from FLAAR are to assist professors and students to have close-up views.

This is the panel on the other side.



Fig. 53, b.





Fig. 54, a.



Fig. 54, b.





Fig. 55. Rare style but the incised repeated pseudo-glyphs should allow epigraphers or ceramicists to estimate where it was made.

Digital rollout by Nicholas Hellmuth many decades ago in the Museo Popol Vuh, Universidad Francisco Marroquin.





Fig. 56, a, b, and c. Museo Popol Vuh, Universidad Francisco Marroquin. Digital rollout by Nicholas Hellmuth, FLAAR Digital Photo Archive. Potentially related to Chipoc Style



Fig. 57. The God N is nicely rendered but many of the glyphs are repeated.







Fig. 58. These God N portraits are better quality than on the preceding vase. But the hieroglyphs look “decorative”. That said, I still estimate that the scribe had a message.



Fig. 59. One of the reasons why I wanted to accomplish rollouts at high digital resolution was so you could study how this God D was gouged and incised.







Fig. 60. Another vase with totally different scene but the hieroglyphs look similar to those on the previous God N vase.

I will be publishing all these in English and in Spanish next week so all these glyphs can be available to epigraphers.





Fig. 61, a and b. Close-ups of two different texts, on two different vases, but clearly from the same atelier or at least the same area.



## Repeated Hieroglyphs, Gouged-Incised



Fig. 62. Museo Popol Vuh, Universidad Francisco Marroquin, digital rollout by Nicholas Hellmuth. Are these symbols, or bizarre glyphs, or an inept scribe trying to express a message. Surely if the scribe designed this, there was symbolic meaning that clearly epigraphers, linguists and iconographers need to study, since I doubt they were “meaningless”.



Fig. 63.

Repeated incised glyphs.







Fig. 64, a and b. Repeated Main Sign but the prefixes are not all identical and the upside-down Ahau is not repeated. The size and shape of the two panels reminds me of the gouged incised vase from Tikal Bu. 116 and the series from Tikal Bu. 196, but clearly not the same scribe or the same message.







Fig. 65, a and b. Simplified and repeated so would be considered pseudo-glyphs. The geometric scene is much more sophisticated and the flowers deserve a thesis or PhD dissertation by iconographers and botanists.







Fig. 66, a, b, and c.  
Excellent rollout,  
probably at the  
museum where this  
vase is exhibited.



Fig. 67. Los Angeles County Museum of Art. Not Kerr rollout K0631 due to harsh lighting there and smooth lighting on the nice rollout here. Rollout by Yosi Pozeilov.







Fig. 68. Repeated prefixes but some of the main signs are not repeated. Surely the Maya could have “read” these glyphs and surely the scribe was texting a message?





Fig. 69, a. Closer view of the repeated hieroglyphs.

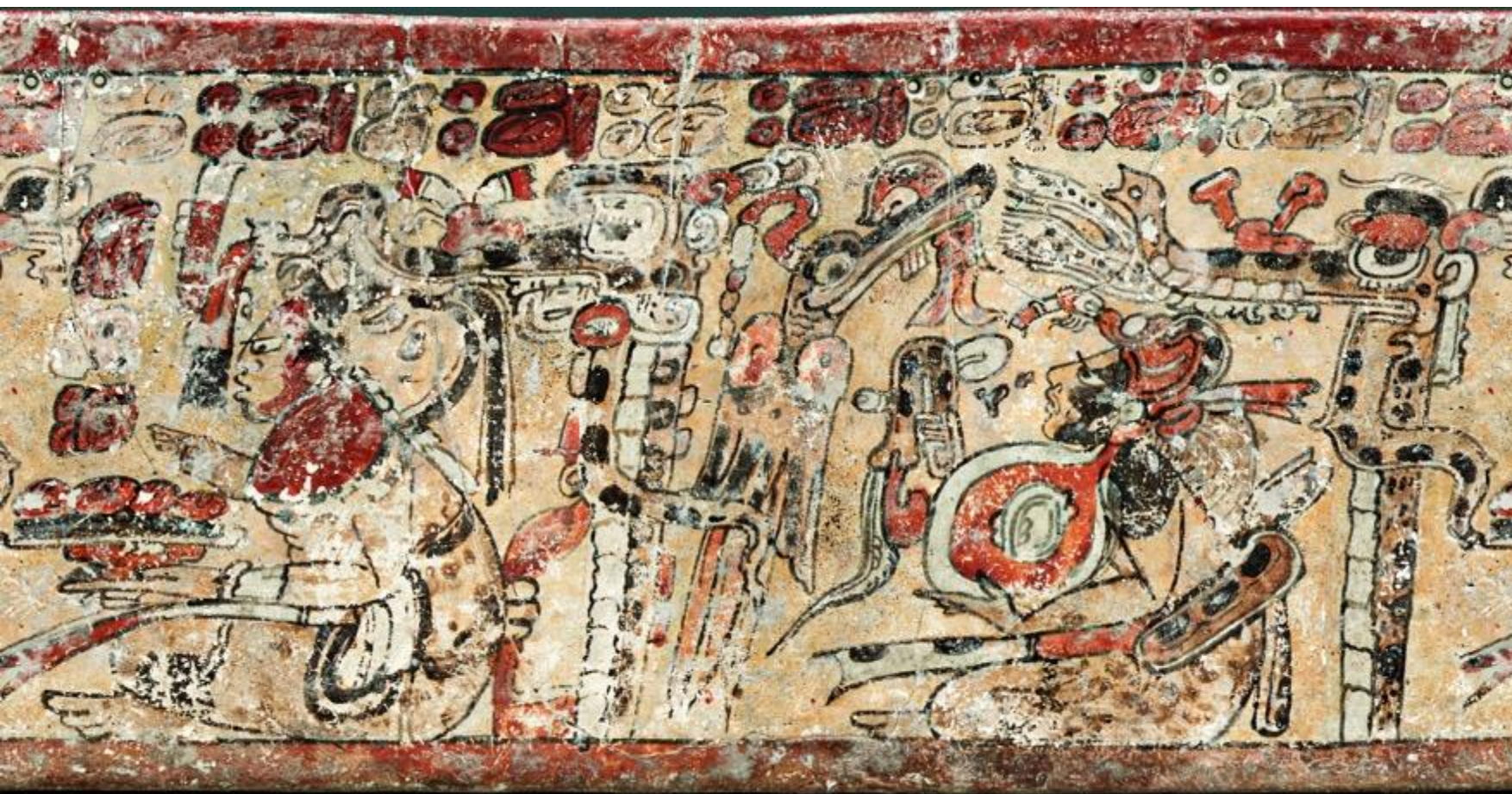


Fig. 69, b.





Fig. 70.

Mas o menos PSS across the upper part, but simplified and a bit crude (and one face glyph turned right). But are these pseudo-glyphs or just simplified PSS? MPV,UFM.



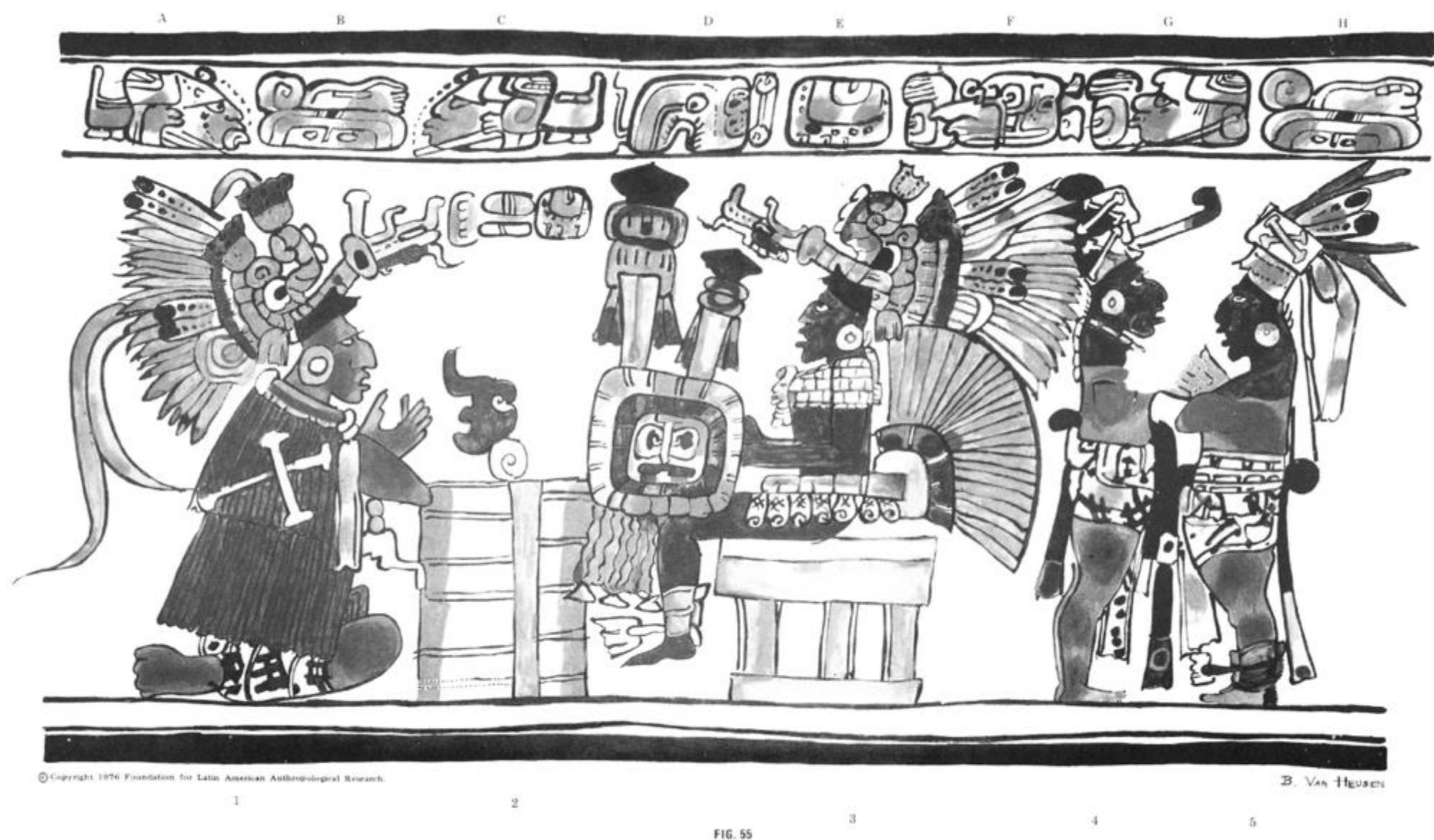


Fig. 71. Drawing by Barbara Van Heusen (Hellmuth 1976: Fig. 55) of throne scene with lots of people wearing crossed bones. Museo Popol Vuh, Universidad Francisco Marroquin. Here you can more easily see that the first hieroglyph is turned to face right.





Fig. 72, a and b. So far, out of 30,000 35mm color slides, we have found only five views of this vase.

We estimate that the missing views (of God L in front of the jaguar throne, and “hummingbird” man in front of the stepped throne) are at Dumbarton Oaks.

We have not yet found a Kerr rollout of this scene.

Colleagues that know where this vase is today can help rescue the scene. These photos were taken in 1981, almost half a century ago.





Fig. 73

a

b

c

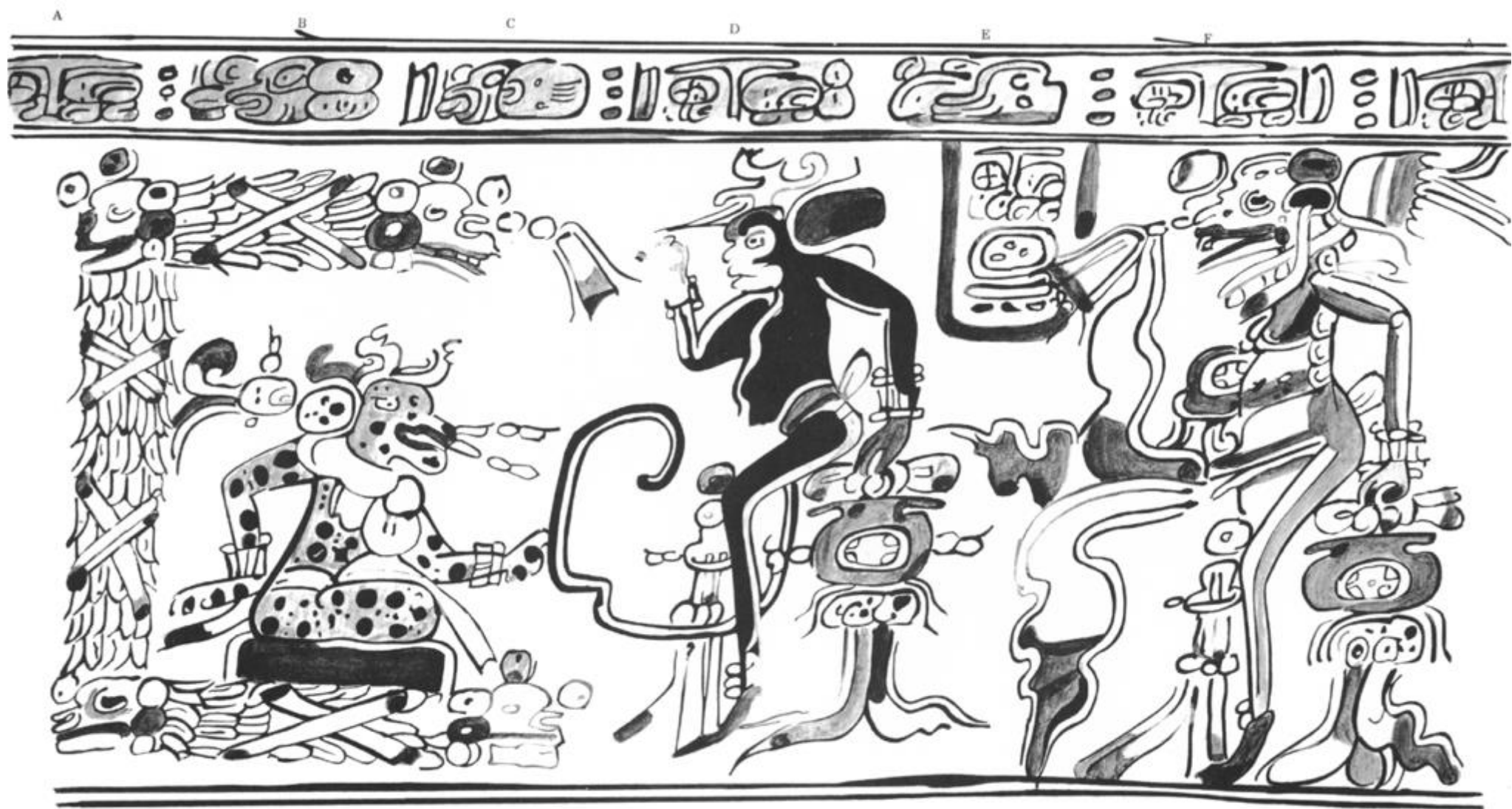




Fig. 74. I include this text to provide material to epigraphers and linguists. Many of the glyphs in this text have rows of black spots—so it should be possible for scholars to find other texts painted by this scribe or his atelier. Although the spots are repetitive and although several prefixes are repeated, I consider this a viable PSSequence dedicatory formula, albeit simplified and with repeated aspects.







© Copyright 1976 Foundation for Latin American Anthropological Research.

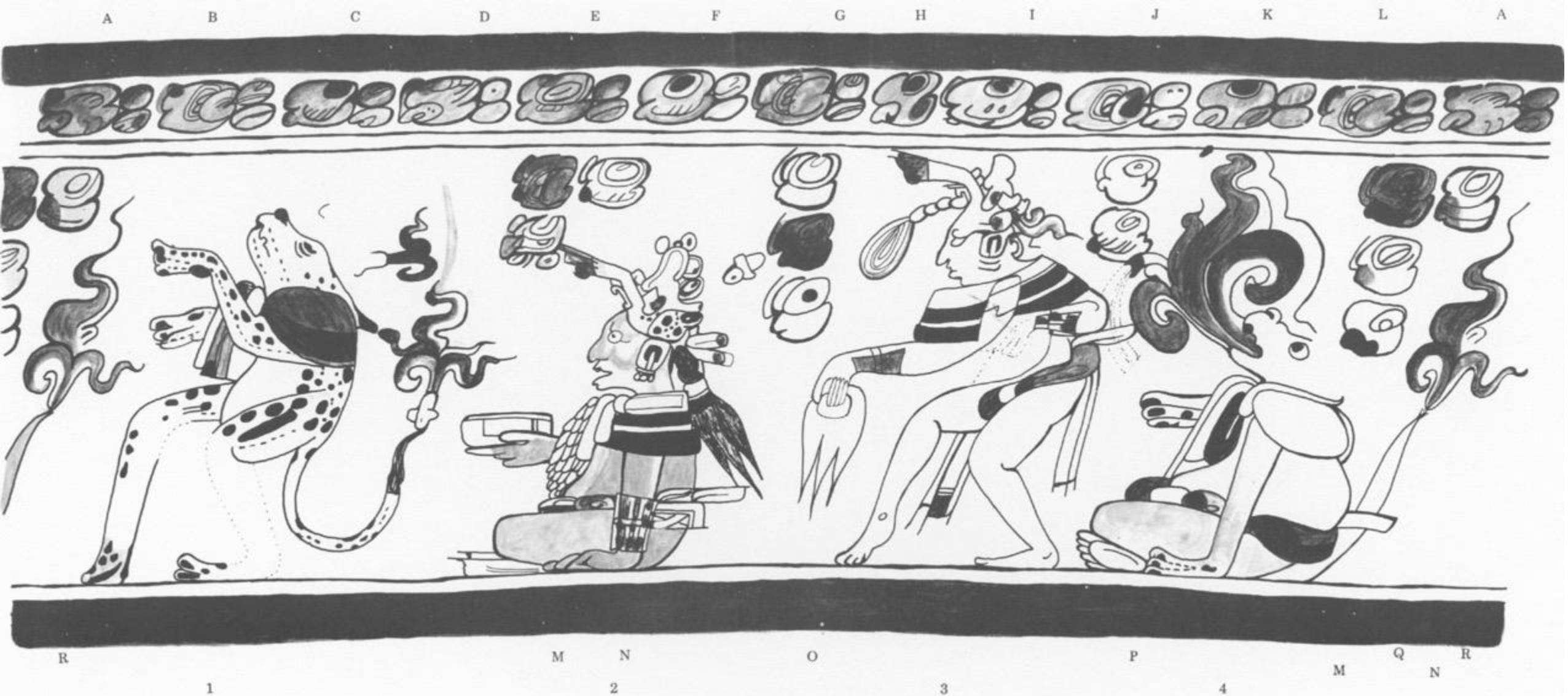
2

FIG. 21

Fig. 75. None of the hieroglyphs are repeated but all are atypical

Drawing by Persis Clarkson in Hellmuth 1976: Fig. 21. NONE of these drawings are based on Kerr rollouts.





© Copyright 1976 Foundation for Latin American Anthropological Research.

Fig. 76. Simplified and repeated glyphs can be considered as one sub-division of pseudo-glyphs, but I estimate that the Classic Maya would have been able to understand the meaning of this text even if it's simplified. And the repeated aspect may be to literally repeat the key message—or, the scribe here could have not been fully literate. Both are possible.

Drawing by Lin Crocker (Hellmuth 1976: Fig. 17).

FIG. 17



This is not a Kerr rollout and is not a drawing based on any Kerr rollout. Should be cited as drawing by Lin Crocker, Hellmuth 1976: Fig. 5. FLAAR waives the copyright—students and scholars are welcome to use this drawing.

Eric Boot shows this drawing (2005: page 4).

This rollout drawing is in Hellmuth publications on enema scenes and on God D. Even though no enema clyster is shown, the large jugs with a row of objects sticking out the top (and the rising “odor” from one) are common in actual enema scenes.

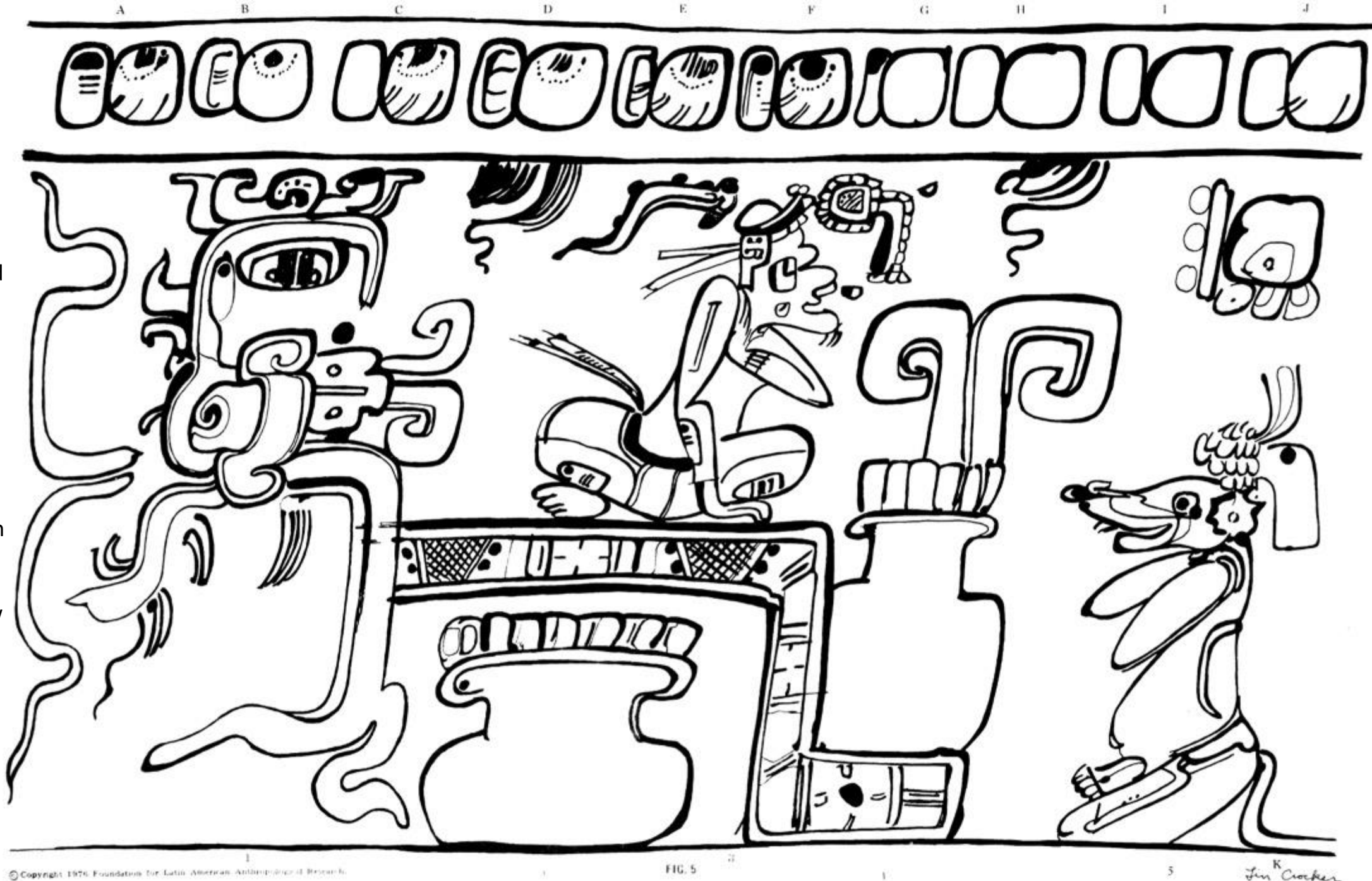


Fig. 77.



This detail from a Mayan manuscript depicts two figures in traditional attire. The figure on the left is seated on a red platform, wearing a red and orange striped tunic and a large feathered headdress. The figure on the right is standing, wearing a red tunic and a large feathered headdress, and holding a long staff or scepter. The background is decorated with a red border and a pattern of red and white circles.

This detail from a Mayan manuscript depicts two figures in traditional attire. The figure on the left is seated on a red platform, wearing a red and orange striped tunic and a large feathered headdress. The figure on the right is standing, wearing a red tunic and a large feathered headdress, and holding a long staff or scepter. The background is decorated with a red border and a pattern of red and white circles.

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This image is a detail from a Mayan manuscript, likely a book cover or an endpaper. It features two figures in traditional Mayan attire. The figure on the left is seated on a red platform, wearing a red and orange striped tunic and a large feathered headdress. The figure on the right is standing, wearing a red tunic and a large feathered headdress, and holding a long staff or scepter. The background is decorated with a red border and a pattern of red and white circles. The style is characteristic of Mayan art, with bold lines and a limited color palette.



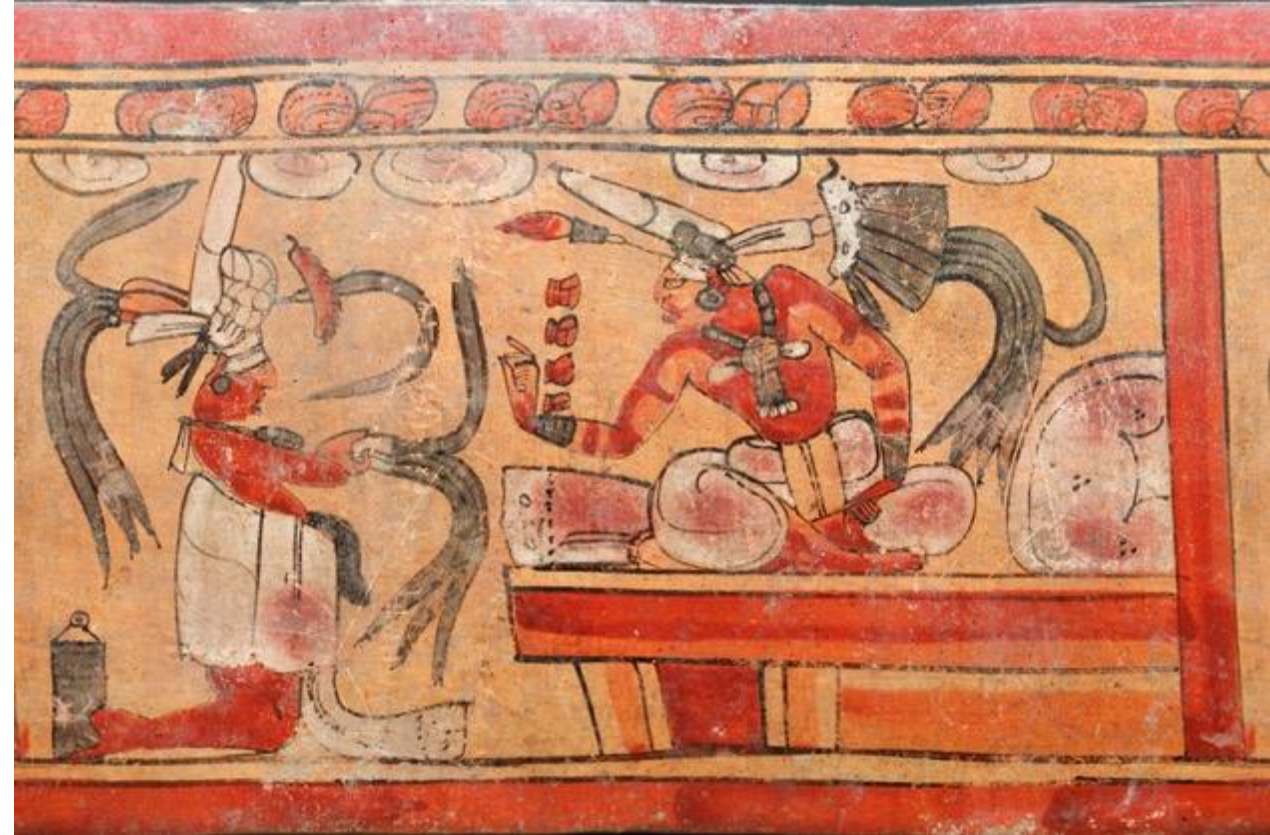


Fig. 79, a and b. I estimate that over 80% of throne scenes from the Central Maya Lowlands have the seated ruler facing to the left. But this throne scene has the ruler facing to the right. Would help to find more examples and learn what the reason for the “facing right” scene format.

I estimate that over 90% of Maya hieroglyphs also face left, though I have photographed at least two or three PSSequence dedicatory texts that are completely reversed. One of these I will show in a forthcoming FLAAR Reports on full-figure hieroglyphs on Maya vases, bowls and plates.

The four glyphs above the outstretched elbow of the seated elite personage are rudimentary pseudo glyphs, yet the scene was painted by a knowledgeable artist.

Would help if the original vase could be found to make sure the rollout is not a digital transition (rather unlikely).





Fig. 80, a.

This scene, and the simplified non-PSS text, face left, as is correct. This painter renders the facial profile perfectly, and shows both men speaking with their arms and hands. If you Google Maya hand gestures you can learn a lot.



Fig. 80, b.





Fig. 81. Repeated simplified glyphs in both vertical columns would be named pseudo-glyphs.

The two standing personages are slightly simplified and their outstretched arm is far longer than it really could have been.

Digital rollout by Nicholas Hellmuth.





Fig. 82, a. First half of the long upper text. Not every glyph is a copy. But all are unexpected and probably never studied by an epigrapher or linguist or iconographer.



Fig. 82, b. Second half, with some head variants facing left but at least one facing right. Processed in RAW mode so you can see more detail.



Fig. 82, c. These hieroglyphs are so hard to see but they are definitely atypical. Yet surely this person (if an actual scribe) painted more than just this one scene. Would be nice to learn whether any text like this was in the full-time research of Inga Calvin on pseudo-glyphs?



## Simplified Maya Hieroglyphs, but not repeated

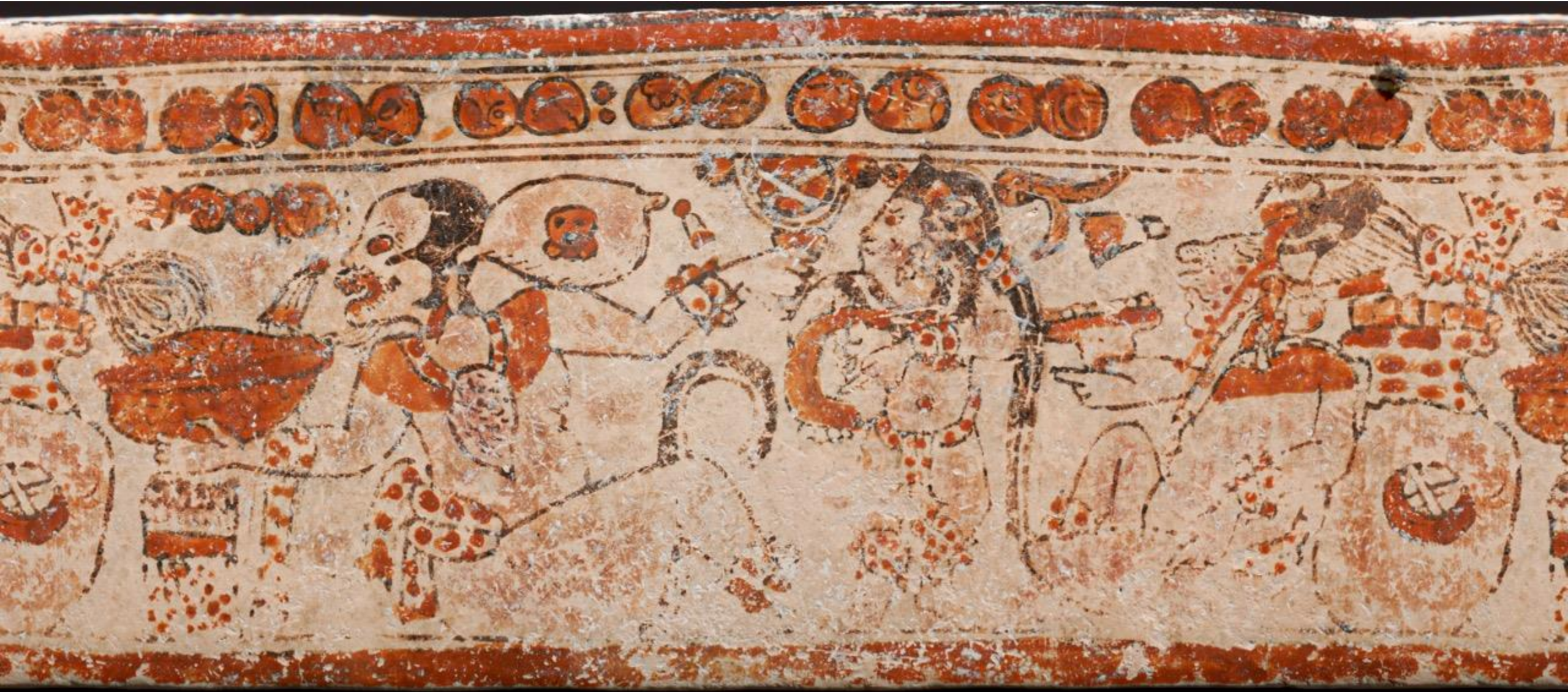


Fig. 83. Most of these hieroglyphs are not repeated but would be classified as pseudo-glyphs. The monkey wears a deer ear. What he holds in his hand is too large and not the shape of a cacao pod which is what he usually holds. There are several FLAAR Reports on monkeys with deer ears, on-line, as easy downloads. The giant jug is size and shape of an enema jug but neither of the objects held by the monkey are completely rendered enema clysters.



## Repeated Head Glyphs



Fig. 84. Repeated head variant hieroglyphs in both panels. Vertical brush strokes fill each panel so no personage of scene needs to be added.

The black corkscrew is a common motif in a deer ear and in other contexts. The two examples here are of unprecedented length.

Museo Popol Vuh, Universidad Francisco Marroquin, digital rollout by Nicholas Hellmuth with Better Light digital rollout system.



Repeated Hieroglyphs would probably be classified as pseudo-glyphs



Fig. 85. Museo Popol Vuh, Universidad Francisco Marroquin.



The scene is painted by a master. The glyphs are nicely rendered but are mostly repeated—but not all.

Fig. 86.

Even though several aspects of the horizontal text are repeated, I would not dismiss this text as merely pseudo-glyphs.

The scene itself is fully detailed, including the scroll of Maya numbers (no dots—just bars).





## Repeated Head Glyphs



Fig. 87, a. This scribe makes these glyph-like heads very large, so clearly they had a message.



Fig. 87, b. Close-up enlargement so you can see the details of each face glyph—though these are more like a row of portrait heads rather than a row of head variants.





Fig. 88, a. Left half of the text. The head has adornments rather than a double postfix?



Fig. 88, b. Right half of the text.



## Repeated Head Glyphs, but Multiple Supernaturales and Personalities, including Animals



Fig. 89, a. Museo Popol Vuh, Universidad Francisco Marroquín. Surely other examples from this same scribe can be found elsewhere.



Fig. 89, b.



## Repeated Head Glyphs

Every glyph, on both horizontal bands and the two preserved diagonal bands, has the identical head. But the “postfix” is different.

At the end of this PowerPoint we show the rollout camera equipment and the lighting. This was literally the most amazing digital rollout camera system ever produced (we also had two other rollout cameras including one from Seitz in Switzerland (not Leitz in Germany)).



Fig. 90. We appreciate the hospitality at Copan Ruinas, Honduras, for our visits there from the late 1960's through two photo sessions in 2024.



Digital rollout, the Better Light software allows you to “measure” the circumference and then the software allows you to have the rollout at the precise width of the complete rollout. Hellmuth was the beta tester of the original Dicomed rollout camera (late 1990’s) and then the engineer at Better Light made improvements so this panorama camera could produce precise rollouts. Better Light then provided this new model to the FLAAR digital photo project. The lighting is Hellmuth’s personal style—not part of the camera software. We had a complete portable studio that we set up at Copan to accomplish this and other rollouts.

Fig. 91, a.



Also notice the difference in lighting styles.

Kerr rollouts have helped scholars for generations and are the leading research resource for epigraphers and iconographers. This particular Kerr rollout is not yet in the Dumbarton Oaks database but the new scanned edition will surely include a good resolution scan.

These two rollouts are at the identical height, but since in the pre-digital era there was no way to see the test rollout until the film was developed in a lab, the rollout speed (width) was with a tabulation.

Fig. 91, b.





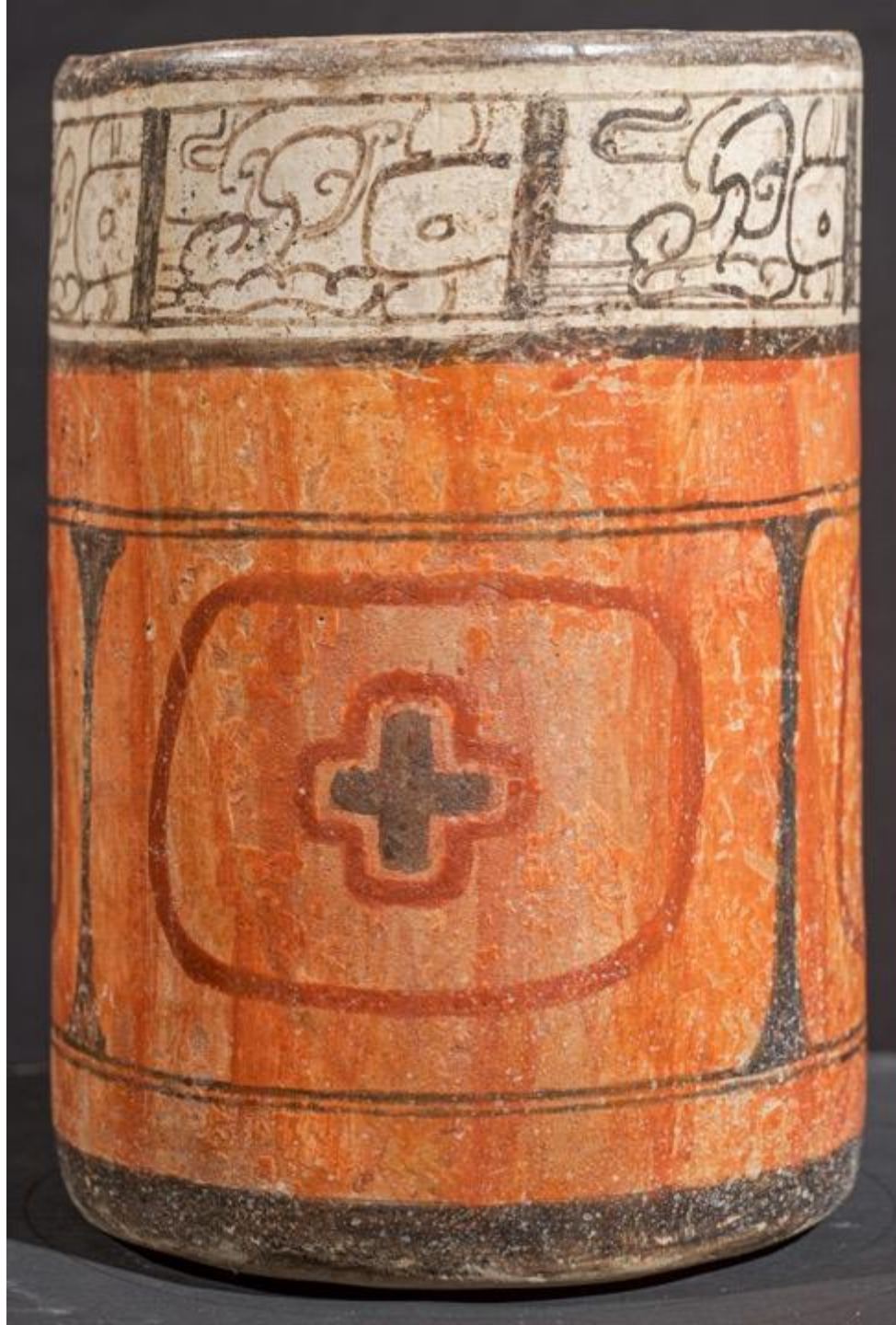
## Repeated Head Glyphs



Fig. 92. Surely a linguist and epigrapher can suggest a reading for the head-variant glyphs that are repeated.



Fig. 93. We like to show the size and shape of the actual vase so that colleagues can find other examples from the same atelier.





## Repeated Head Glyphs, Simplified



Fig. 94. Simplified, repeated head glyphs, with the bar-and-dot number eight front front (in one column) and the number 7 and then 6 in the other column (which also has two wandering ovals in two locations).

Museo Popol Vuh, Universidad Francisco Marroquin. Digital rollout.



## Repeated Head Glyphs



Fig. 95. The vertical glyphs are simplified and sometimes repeated.



## Repeated Head Glyphs



Fig. 96, b. It helps to show the size and shape of the actual vase so that ceramicists can estimate from what atelier or region they were produced.

The vertical columns of glyphs are more rudimentary and obviously pseudo-glyphs.

Fig. 96, a.





Fig. 97. Closeup of the hieroglyphs so that you can see that the horizontal glyphs have more detail than the crude vertical text.





Fig. 98. Digital rollout by Nicholas Hellmuth.



Fig. 99. Digital rollout by Nicholas Hellmuth, FLAAR Digital Photo Archive.

These two scenes are surely from the same area.







Fig. 100, a.



Fig. 100, b.



Fig. 100, c.





Fig. 101.



Two different vases,  
probably from same  
area.



Fig. 102, a.



Fig. 102, b.



## Repeated Geometric Glyphs



Fig. 103, a. Digital rollout by Nicholas Hellmuth with Better Light rollout camera. We show the complete digital rollout photography system in the final pages.



Fig. 103, b.

Repeated decorative glyphs that are either, “a repeated message” or dismissed as pseudo-glyphs. This artist was not inept, he knew what he was painting and what the message was.



## Repeated Geometric Glyphs



Fig. 104. The hieroglyphs are repeated and in decorative style. Might consider a “decorative” classification for these pseudo-glyphs.

All the individuals are “speaking with their arm position and hand gestures”.

I would appreciate learning from colleagues where they think this style of scene was painted?

Digital rollout by Nicholas Hellmuth, FLAAR Digital Photo Archive.



## Repeated Geometric Glyphs



Fig. 105.





Fig. 106.



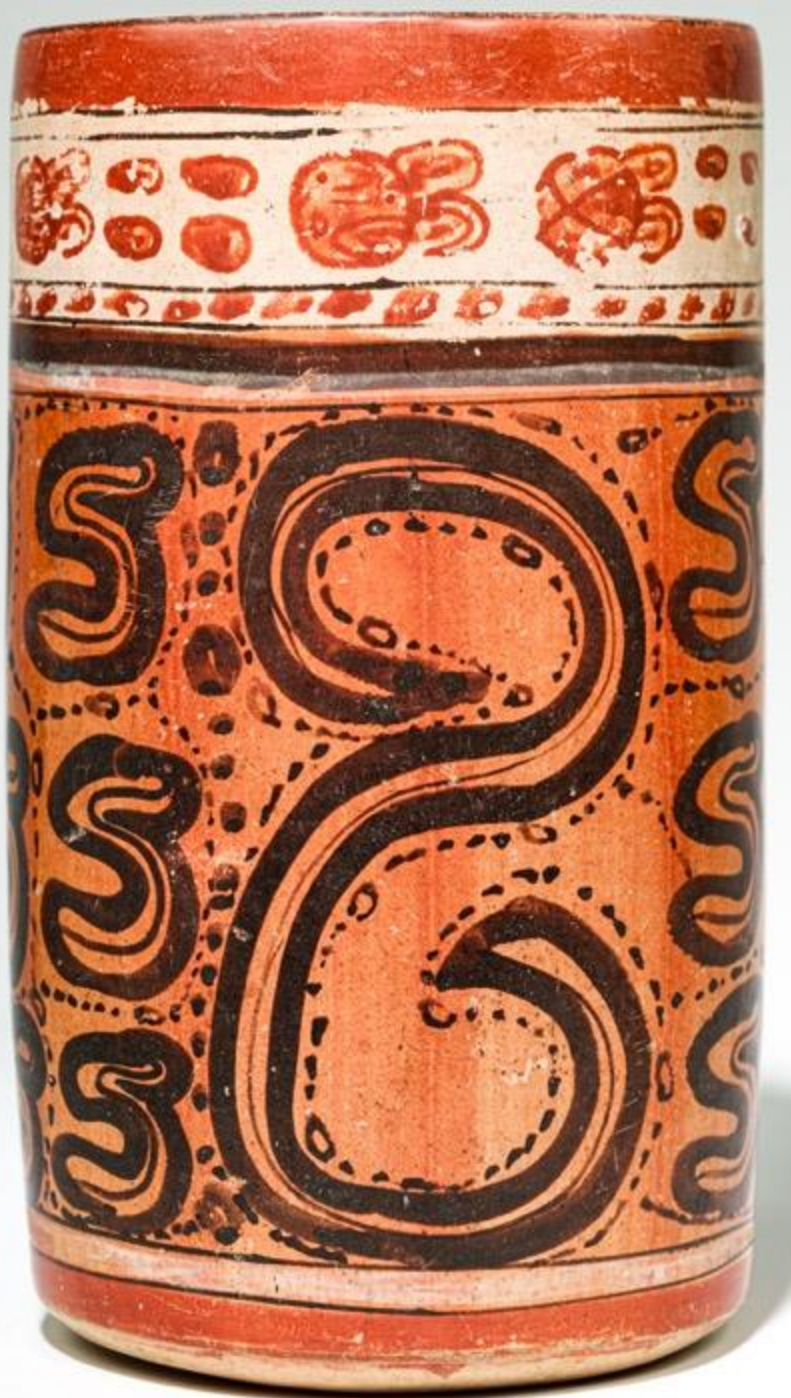


Fig. 107, a.



Fig. 107, b. Some repeated glyphs, the sets of ovals are more decorative than hieroglyphic.  
Beautiful perfectly preserved feline pelage but not jaguar spots, so margay or ocelot.  
Was exhibited in past decades and probably still is today.



## Repeated Hieroglyphs, also simplified (without abundant details)

Fig. 108. Even though these are simplified and repeated, clearly they had a message, or at least an intent to make a statement.

Great example of the Woven Mat, Pop, symbol.

Museo Popol Vuh,  
Universidad Francisco  
Marroquin.





Repeated Geometric Glyphs or Simplified Glyphs not filled with infixes





**Repeated Geometric Glyphs or Simplified Glyphs not filled with infixes**



Fig. 110, a.

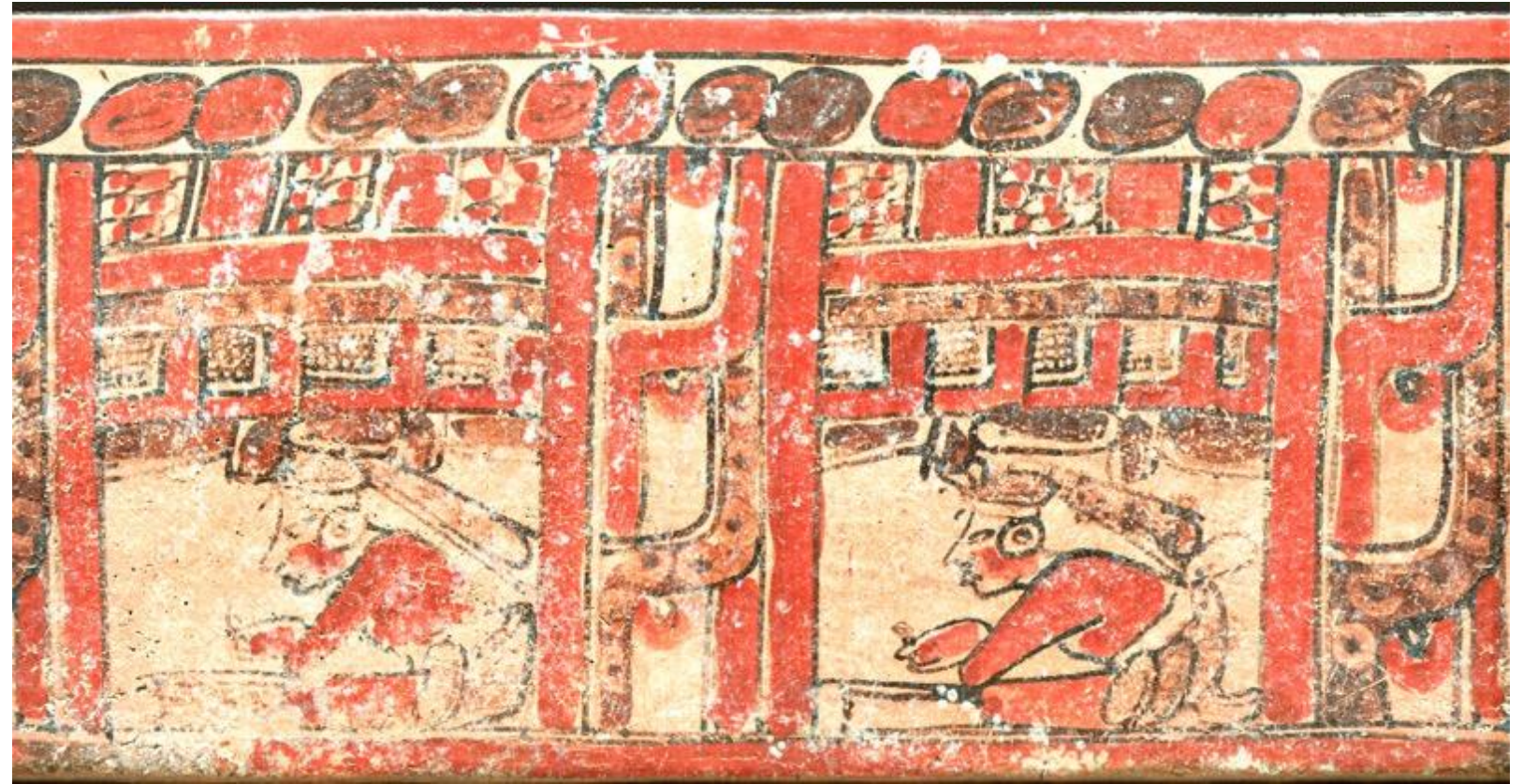


Fig. 110, b.



Simplified Repeated Hieroglyphs with lots of Empty Space with not many complex Infixes



Fig. 111.



Most (but not all) Simplified, and not all Repeated—but still potential Pseudo-Glyphs?



Fig. 112.



Central Upper Infix repeated, but not all other are totally Repeated—but still should be studied with Pseudo-Glyphs?



Fig. 113. Slightly different style and scene than Red Background Tepeu 1 style.



Simplified Repeated Hieroglyphs with Empty Space with only a few Infixes



Fig. 114. Nice stylized portrait of a waterbird. Fundacion La Ruta Maya, digital rollout by Nicholas Hellmuth.





Fig. 115. A million tourists a year across Mesoamerica (Mexico, Guatemala, Belize, Honduras and El Salvador) are told that the Maya were not allowed to play the ball with their hands. But, just as each country around the world today has multiple sizes, shapes, and kinds of balls and sports with balls, such as baseball, basketball, football, soccer, etc., no surprise that the Classic Maya (and their neighbors) played different kinds of ballgames. So here is the Classic Maya handball game. Notice that no kneepads, not ball deflector, just cloth wrapped around their waist, stomach, and chest.

There is also a handball game and players pictured on stone sculptures of the Santa Lucia Cotzumalhuapa area (also spelled Cotzumalguapa). Plus there are other Maya handball scenes on Late Classic vases (Hellmuth 2024: 1).

Mesoamerica also includes Nicaragua and northwestern Costa Rica, and there are also ballcourts there, but not many scenes as on Maya Lowland vases.



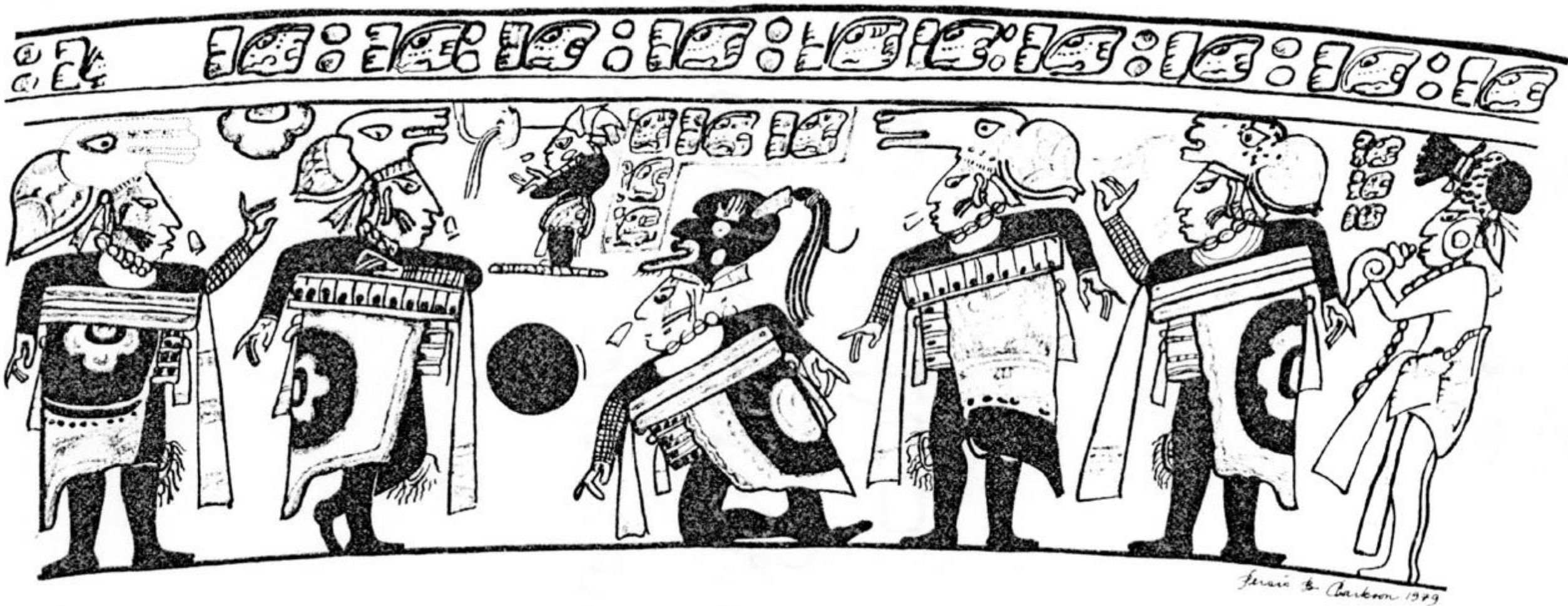


Fig. 116. Drawing by Persis Clarkson. The same rollout, but flat, is K1871, which suggests that Clarkson did her nice rollout from the actual vase or from photos before rollouts were available.

The iconography of the ballplayer outfits, especially their headdresses, is discussed in Hellmuth 2015: Fig. 9.

What is also worth studying are the dozen repeated simplified hieroglyphs—one is missing the two vertical circles in front of its prefix. The painter knew precisely how to show the ballplayers—but the scribe produced only repeated, simplified glyphs. So the same question: did some, or all, or no vases have one scribe for the glyphs and one painter for the scene?



**Simplified Repeated Hieroglyphs with lots of Empty Space with not many complex Infixes**



Fig. 117.



This vase and the rollout of another vase on the previous page are probably from the same atelier or at least the same area.

Since most iconographic research is on polychrome vases, plates and bowls, we don't study incised scenes as often.

The glyphs around the top are repeated but different, and the open circular areas are not well known elsewhere. Definitely need to find all the other sides of this vase to publish the entire scene.

Photo by Nicholas Hellmuth, FLAAR Photo Archive, Dumbarton Oaks, Trustees for Harvard University.

Fig. 118.





Fig. 119, a and b. This vase was incised and then sloppily painted. Using software over a decade ago, I was able to “remove” the brown paint and show only the original scene (before the details were obscured by the dark brown paint).

The scene is unprecedented. In a half century of studying Maya art I have never before seen the decorations on top of the oval “platforms”.

The potential pseudo-glyphs (or geometric decorations to replace glyphs) are also atypical.

Surely there must be several other vases by this regional atelier in collections and museums around the world.

Museo Popol Vuh, Universidad Francisco Marroquin.





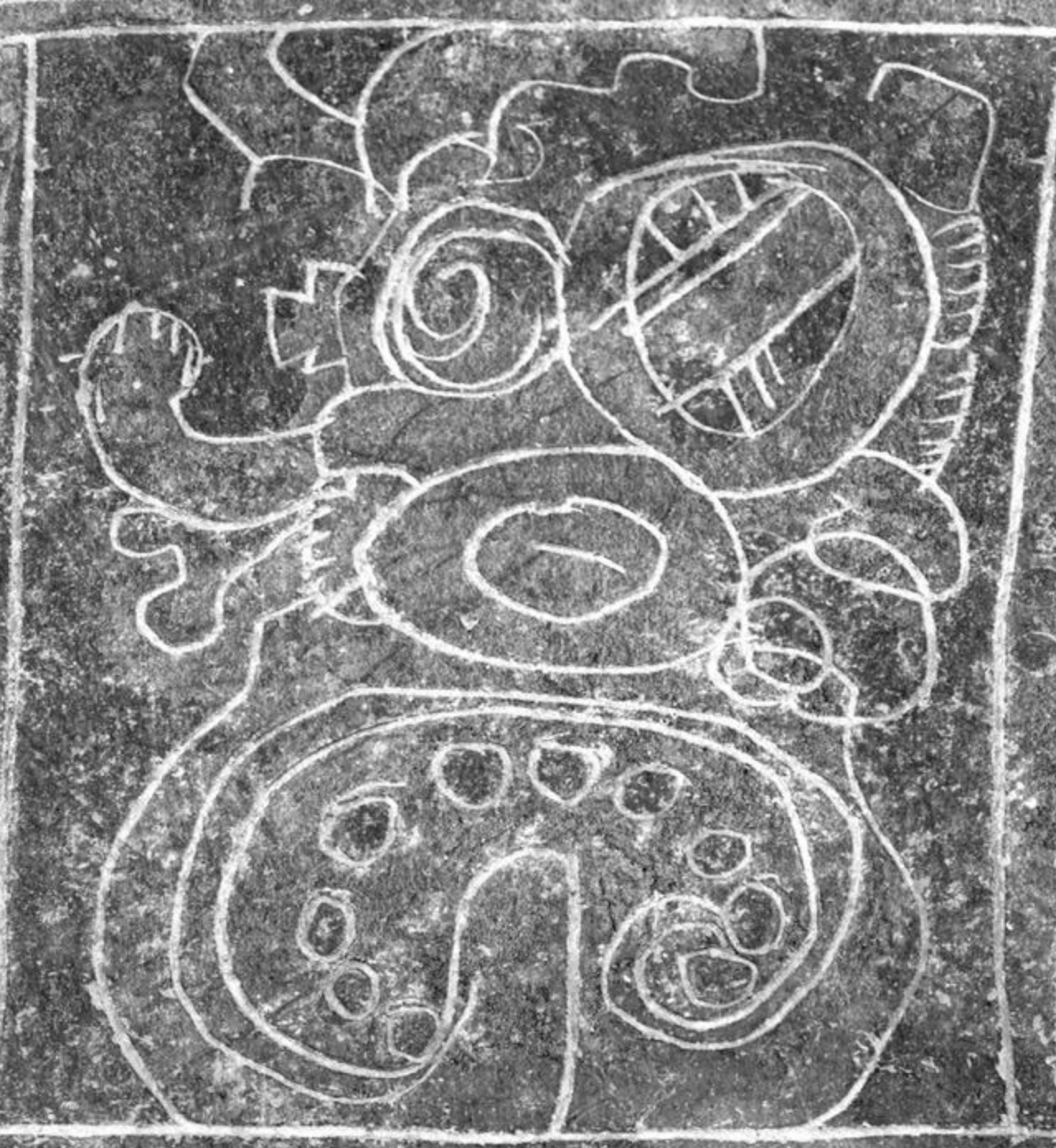


Fig. 120. I show this at large file size to encourage iconographers and epigraphers to figure out how to describe a scene as unexpected as this.



Mostly Repeated Glyphs, but no details Remain (or were these glyphs never finished?)



Fig. 121. Fundacion La Ruta Maya digital rollout by Nicholas Hellmuth.



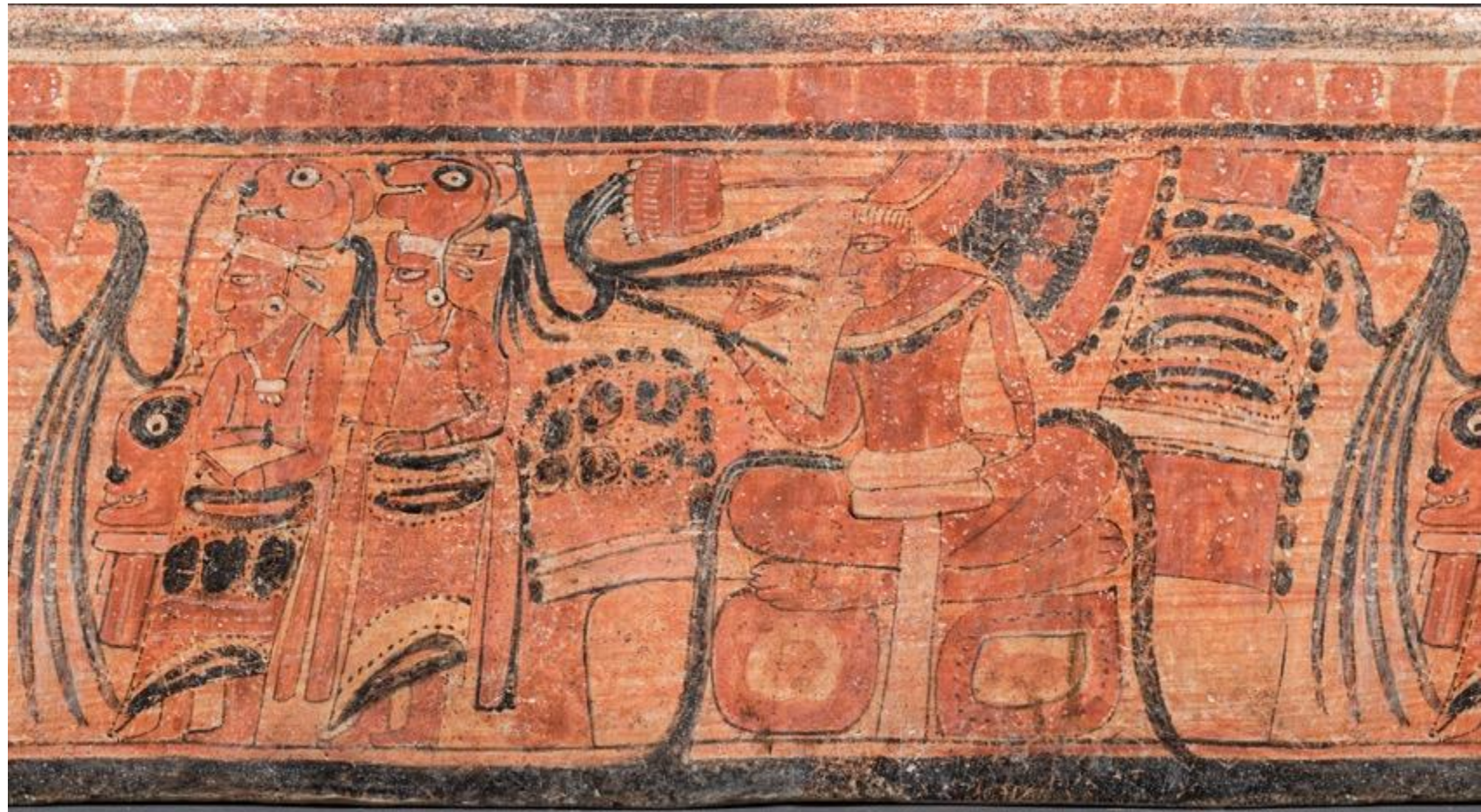


Fig. 122, b. Fundacion La Ruta Maya, digital rollout by Nicholas Hellmuth.

Mostly repeated glyphs, but no details remain (or were never finished?). In this throne scene, what is everyone looking to the left, and no one is looking at the seated elite person?

Fig. 122, a.



Repeated  
simplified  
pseudo-  
glyphs on  
Late  
Classic  
vase with  
Tlaloc,  
Yearsign  
and Kan  
Cross.

Hellmuth  
digital  
rollout.



Fig. 123.



On the next page we show the row of pseudo-glyphs of both these Mayanized-Teotihuacan-inspired Late Classic scenes so you can see their similarities.

This profile stylized snake-monster head has Tlaloc-like eyes and is a Maya adaptation of earlier Teotihuacan inspirations.

Fig. 124. Museo Popol Vuh, Universidad Francisco Marroquin. Digital rollout by Nicholas Hellmuth.







Fig. 125, a. MPV, UFM. Not all these glyphs are repeated following each other—the repeats of that glyph are widely separated. But the eight repeated glyphs here are amazing similar.



Fig. 125, b. All eight of these glyphs are very similar (but not identical) to eight repeated glyphs of the other vase. Both the scenes below the glyph texts are Maya recreations in the Late Classic of Teotihuacan motifs borrowed during the Early Classic.

So I estimate both these vases were produced in the same region of the Maya Lowlands.

Surely Inga Calvin has found more than one instance of several vases having shared pseudo-glyphs, but in the FLAAR Photo Archive we have found several examples.



Fig. 126. This scene is a completely Maya adaptation of the profile serpent face monster that often has a Tlaloc eye (but not here).

The hieroglyphs are simplified and repeated and could presumably be named pseudo-glyphs. That said, these glyphs were painted by a knowledge-able Maya who clearly was writing a message.

I do not have rollouts of every vase that I photographed because often I was photographing in museums in Japan or Australia or elsewhere and had no way to fund bringing the entire digital rollout camera system on an airplane that far. Plus only had rollout cameras in the late 1990's, so decades of photography in the 1960's, 1970's, and 1980's and early 1990's was with Leica for 35mm and Hasselblad for medium format, plus 4x5" and 8x10" Linhof for monumental architecture and in museums across Mesoamerica for the Japanese coffee table book of Yoshiho Yasugi of MINPAKU. All that was before I had a rollout camera.







Fig. 127. Spaces prepared for holding hieroglyphs, albeit rather small spaces, but no glyphs or even geometric designs were added.



## Simplified Repeated Hieroglyphs

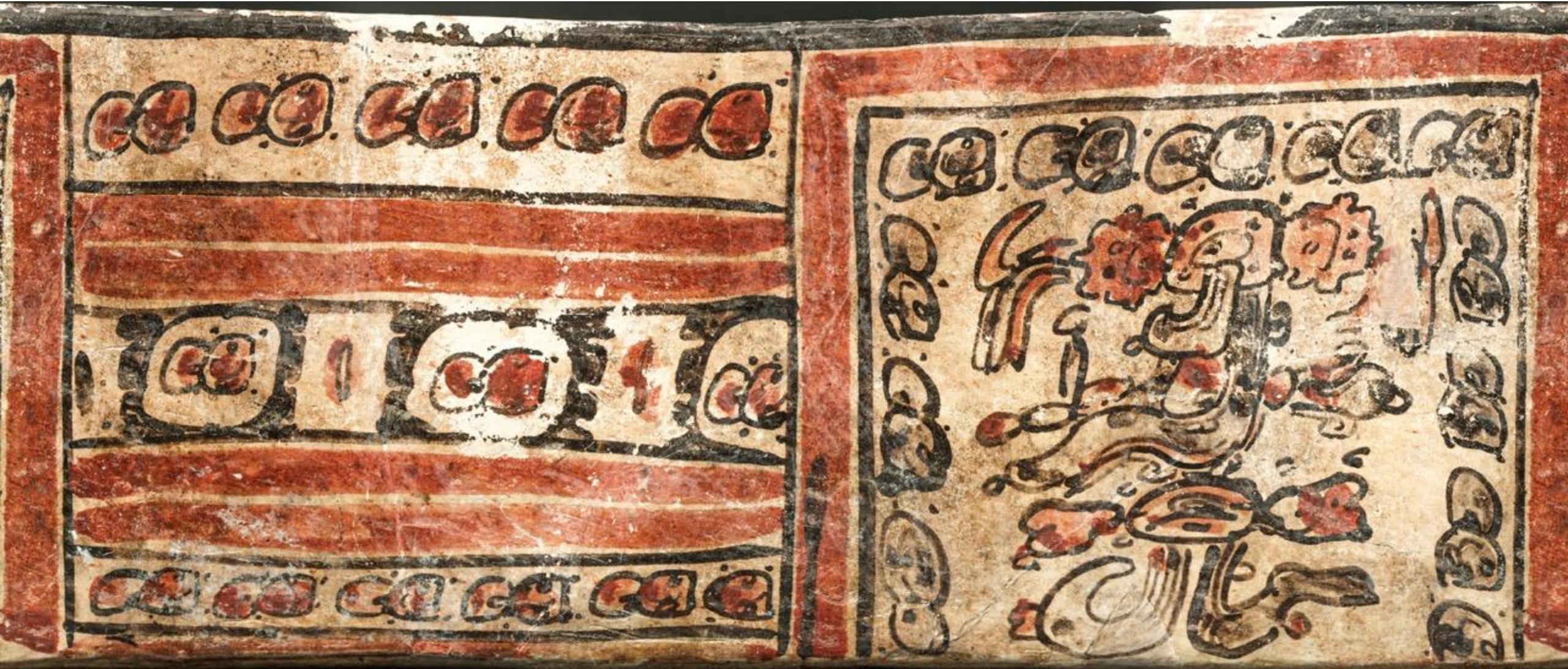


Fig. 128. Repeated, simplified, pseudo-glyphs. But the painter shows plenty of detail on the deity head.

Two-part scenes like this are often created by Maya vase artists. Museo Popol Vuh, Universidad Francisco Marroquin.



Repeated Hieroglyphs, also simplified (without abundant details)



Fig. 129.



**Repeated Hieroglyphs,  
also simplified  
(without abundant details)**

Fig. 130. Simplified variant of standing individual that should be compared with “Uaxactun Dancer” plates (also called Tikal Dancer).

He is standing with his feet facing away from each other. Both his arms are held out—as though he is staging a performance in front of people.

Museo Popol Vuh, Universidad Francisco Marroquin. Photo possibly by Hellmuth and/or Edwin Sacayon, either way, FLAAR Digital Photo Archive.







Fig. 131, a. Enlargement of the better preserved part of the horizontal row of simplified often repeated pseudo-glyphs.

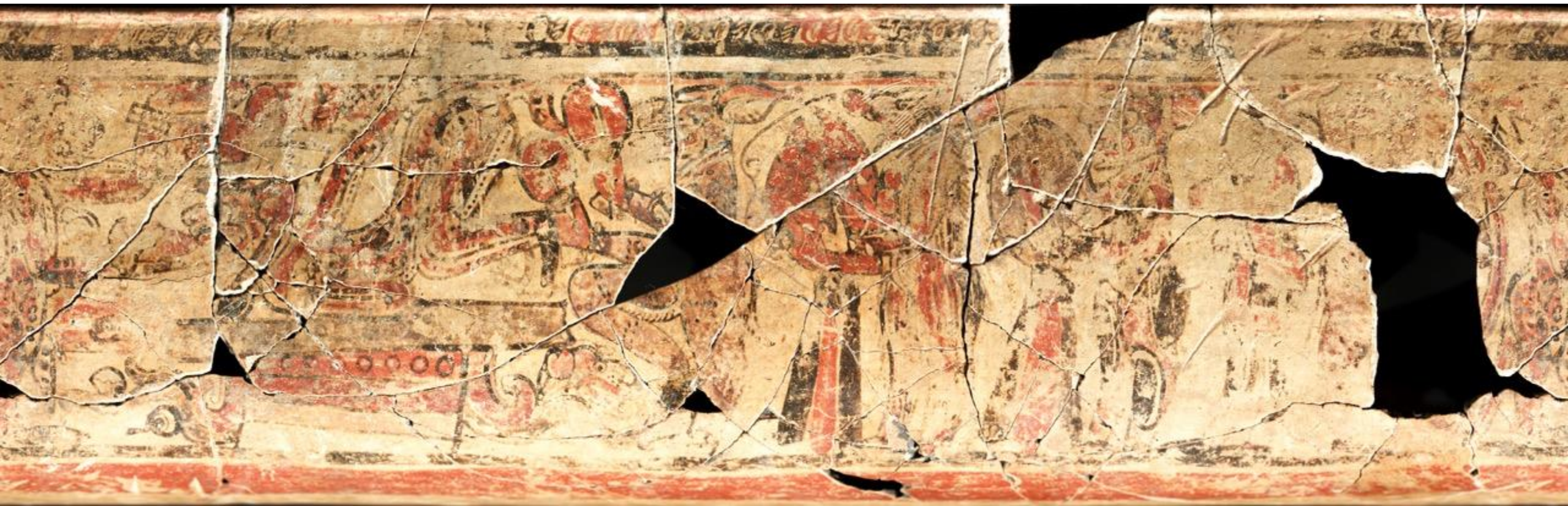


Fig. 131, b. Bizarre “throne scene”. This scene needs to be drawn to show the parade of people carrying large objects and one man who seems to have his butt raised up in a rather awful pose. The person behind hopefully has musical rattles, not enema clysters.



These pseudo-glyphs are tiny. It is rare to have so little space to show a hieroglyphic text. And there is plenty of space available (the thick black line and empty space below it).

The actor holding the rattles has an animal face. There is a feline-faced individual rising up from under the right side of the throne or platform.

This scene definitely needs an accurate line drawing (black-and-white, with no color background) so iconographers can focus on the scene.

Fig. 132. All digital rollouts are in the FLAAR Digital Photo Archive. But the individual photos of the vase or bowl could have been taken with a digital camera (hence in the same archive) or taken with a 35mm Leica or Nikon or with a medium format Hasselblad, in which case they were donated in 2024 to Dumbarton Oaks, Trustees for Harvard University.





**Simplified Hieroglyphs, One Panel appears to be Unfinished. Was each panel by a different scribe?**



Fig. 133.



**Repeated, Simplified Hieroglyphs, with interior geometric shapes**

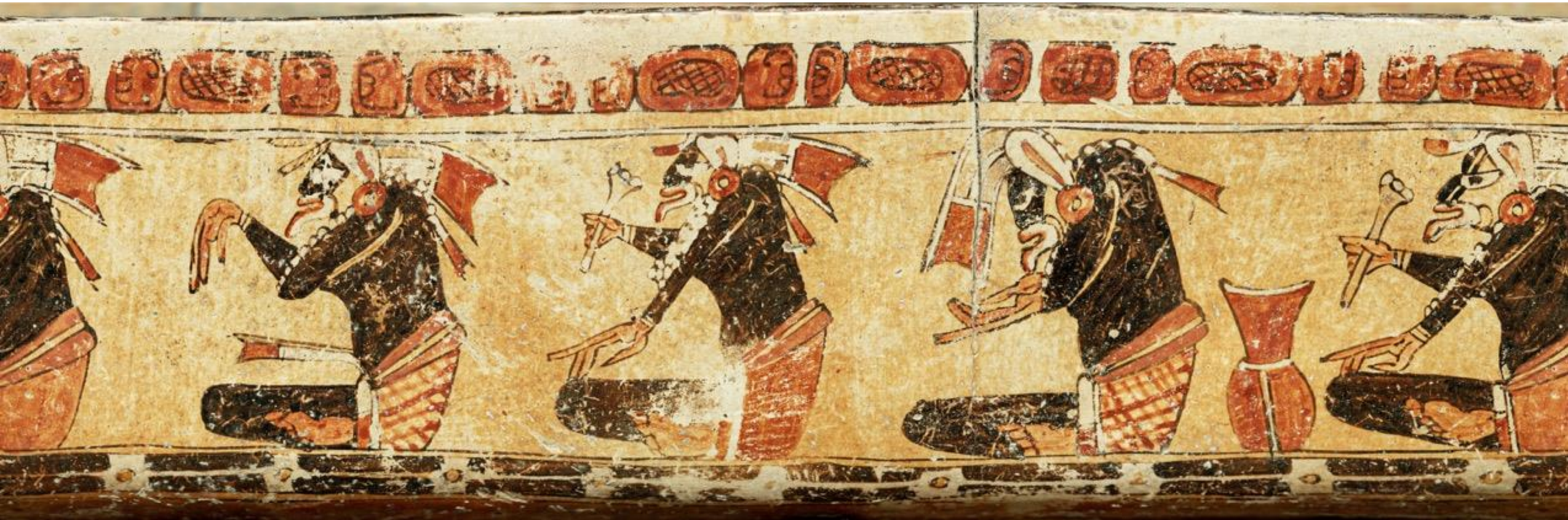


Fig. 134. Hieroglyphs with cross-hachure, often a symbol in Maya art to mean that area is the color black. The glyphs are also simplified and repeated.

It is very common for Maya men to paint themselves black. Their actual skin color is visible on their hands (here with very elongated fingers often on their left hand).



## Simplified, Repeated Pseudo-Glyphs

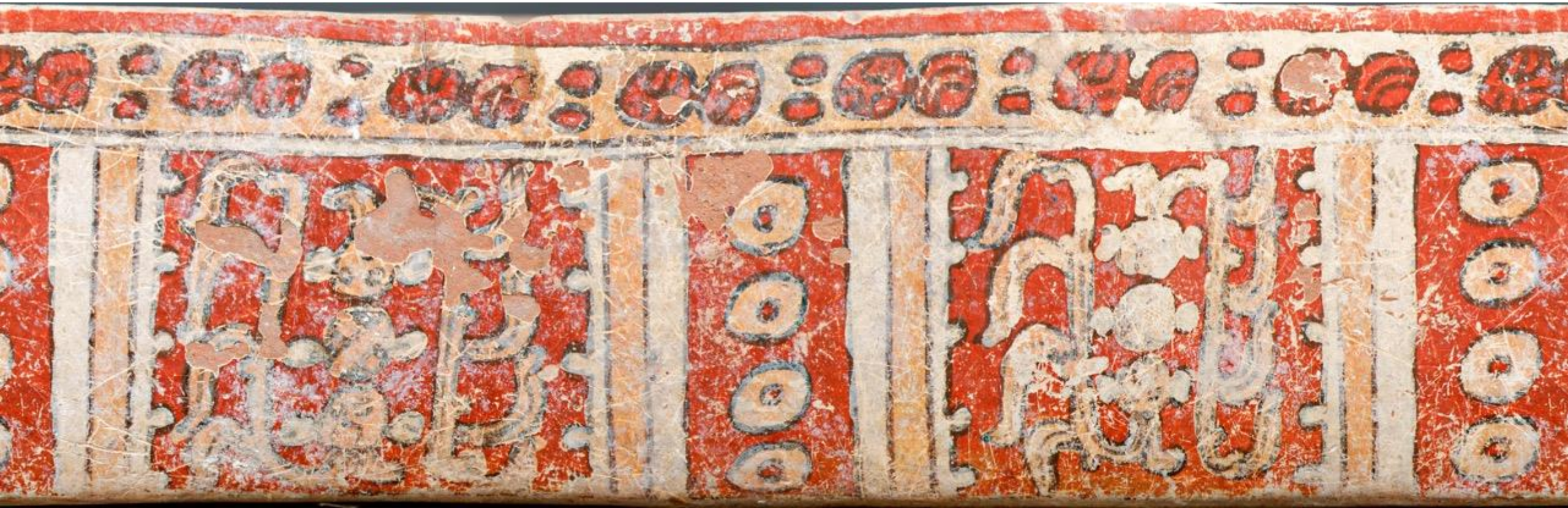


Fig. 135. There are hundreds of Maya vases, bowls, and plates with simplified repeated hieroglyphs that are considered pseudo-glyphs. Would help if the vase here could be documented with the name of a regional style (like Chama Style, Uaxactun Dancer, etc.) so that all the pseudo-glyphs from this same area (and often from same regional atelier) could be compared and contrasted. I have long ago recognized Red Band Tepeu 1, Red Background Tepeu 1, Catfish Red Style and a few others. Hopefully the projects of Ron Bishop and Dorie Reents-Budet can name where each of these styles was produced.



Fig. 136. Repeated, simplified pseudo-glyphs.

Digital rollout by Nicholas Hellmuth of polychrome Maya vase.





## Hieroglyphs mostly Repeated

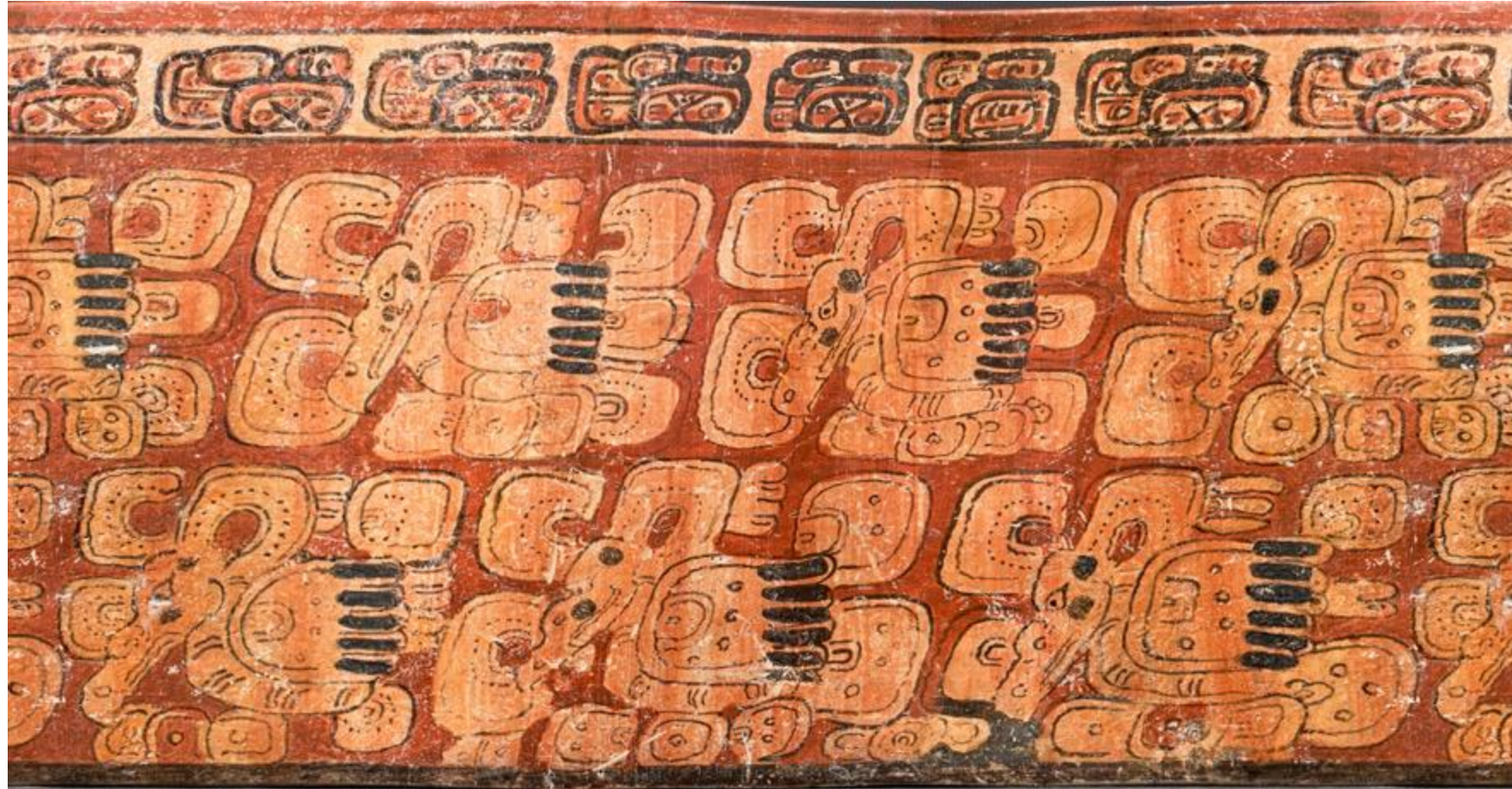
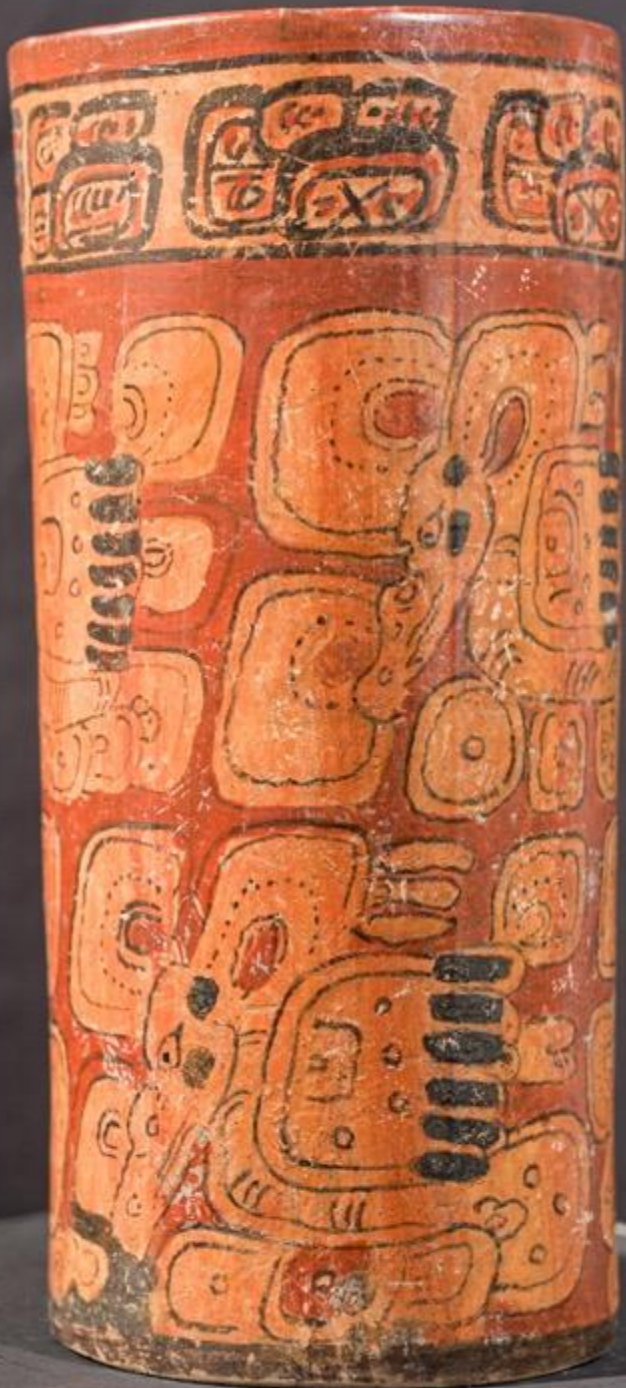


Fig. 137, a and b. Seven glyphs are repeats, one glyph is not. But they would be called pseudo-glyphs.

The long-necked birds are obviously waterbirds. The raised part of the upper center of the beak is a male white pelican, *Pelecanus erythrorhynchos*, during mating season (Hellmuth 2024). The reason that we can recognize and identify birds, mammals, insects, and flowers in Maya art is because we have dedicated many decades to field trips to explore different parts of Guatemala, to learn about all the plants and animals of importance to the Maya by studying them up close and in-person. We have one of the largest digital photo archives in the world of flora, fauna and ecosystems of the Maya areas of Guatemala, especially for the RBM, Alta Verapaz, and Monterrico.





Fig. 138, a.



Fig. 138, b. Hopefully photos of all the other hieroglyphs on this vase will become available to epigraphers, linguists and iconographers when Dumbarton Oaks has organized and scanned all the FLAAR Photo Archive. The bottom text looks more like pseudo-glyphs than the upper text.



Fig. 138, c.



**Repeated Hieroglyphs, also simplified (without abundant details)**



Fig. 139, a. With no red rim, this style is slightly different than traditional Codex Style painting. Digital rollouts by Nicholas Hellmuth.



Fig. 139, b.



Repeated, Simplified Hieroglyphs, but what if this is an important message that the scribe wishes to repeat?



Fig. 140. Digital rollout by Nicholas Hellmuth, Codex Style or related (though most Codex Style vases have PSSequence dedicatory formula).





Fig. 141, a, b and c. If you rotate these rectangular heads 180 degrees they also look like a stylized face. Whoever this is has a typical “deity eye”.





Fig. 142. Repeated pseudo-glyphs, in clusters of three, separated by sloppy red-filled circles.

The wandering Kan-like symbol reminds you of Codex Style scenes as does the red band around the top. But the background here is more cream-colored than Codex Style white. So I suggest this may be a regional variant inspired by the Codex Style ateliers.

Digital rollout by Nicholas Hellmuth. The FLAAR Photo Archive would like to put together all the Codex Style vases that were not yet available to Robicsek and Hales to put into their helpful corpus of Codex Style vases, bowls and plates.



**Repeated Hieroglyphs,  
also simplified (without abundant details)**

Once all the 35mm color slides and black-and-white contact sheets are scanned and cataloged by Dumbarton Oaks we should be able to find all the other sides of this pedestal-based vase.

The face is a stylized God K, the same undulating upper lip as on the Tikal burial vases, but the style in this scene is from some totally different other area.

The hieroglyphs are repeated, simplified and would be considered as pseudo-glyphs.



Fig. 143.



Repeated Hieroglyphs, but I would not automatically call these Pseudo-Glyphs



Fig. 144. Beautiful incised animal heads. Postfix over the head and “ear” glyph are repeated but not the lower glyph in the earring area. The two glyphs in the “empty” horizontal area each have identical prefix and postfix but main sign is not identical (other than in shape). Fundacion la Ruta Maya. Very professionally incised by this Maya craftsman.



## Repeated Geometric Glyphs



Fig. 145. Repeated simplified pseudo-glyphs around the upper area.

The 2-dimensional heads are a rare feature on a Maya vase.

Museo Popol Vuh, Universidad Francisco Marroquin.



## Pseudo-Glyphs that are More Decorative than a Written Message?

Fig. 146. I put a question mark on this concept because what may be viewed as “decoration” would normally have a “message” or definitely a meaning.

So pseudo-glyphs need to be studied, in-depth, by

- Iconographers
- Linguists
- Epigraphers

Photo by Nicholas Hellmuth, FLAAR Photo Archive, Dumbarton Oaks, Trustees for Harvard University.





## Hieroglyphs on Gouged Incised and then Tepeu 3 Molded-Carved Vases and Bowls



Fig. 147. This is not a Pabellon Molded-Carved scene but it is either very late Tepeu 2 or more likely early Tepeu 3. The hieroglyphs around the top could be considered pseudo-glyphs. The glyph-like designs around the bottom were surely “readable” to the Classic Maya but are definitely not normal hieroglyphs.





Fig. 148, a.



Fig. 148, b.

Molded-carved vase and bowl scenes have been studied but would now help to focus on their hieroglyphs.





Fig. 149. The horizontal band may have pseudo-glyphs but is primarily Tepeu 3 variant of Sky Band motifs. But the vertical motifs look more like pseudo-glyphs.







Fig. 150.





Digital rollout photo by Nicholas Hellmuth

Fig. 151, a and b. The horizontal band is more likely a regional Tepeu 3 variant of a “pseudo” Sky Band.

The vertical bands would tend to be hieroglyphic texts, though vertical Sky Bands are known for Tikal Bu. 116.



Pseudo-Glyphs on 13 Gouged-Incised Vases from Tomb of the Jade Jaguar, Tikal Bu. 196



Fig. 152, a and b. Most of this series of this same kind of pottery have sloppy glyphs or simplified designs filling the space that should be a row of Maya hieroglyphs. Most of these glyphs are pseudo-glyphs because these vases were all decorated by friends or relatives of the deceased royal personage in Tikal Bu. 196 (who was probably a son of Ruler A, a brother of Ruler B). I am estimating that each friend or relative was supposed to decorate their gift-vase themselves—but since some were youths and others may have been grandparents, and since some clearly did not know how to portray the intended deity—the designs in the panels are sloppy or even incomplete. And the sloppy ones have geometric decorations instead of hieroglyphs in the horizontal “glyph area” around the upper part of the vase. I also feel that the simplified polychrome throne scene paintings on vases from Temple I Burial 116 were also “rudimentary” because they too were hastily painted gifts that individuals were expected to donate to the ruler’s burial and entry into the afterlife.



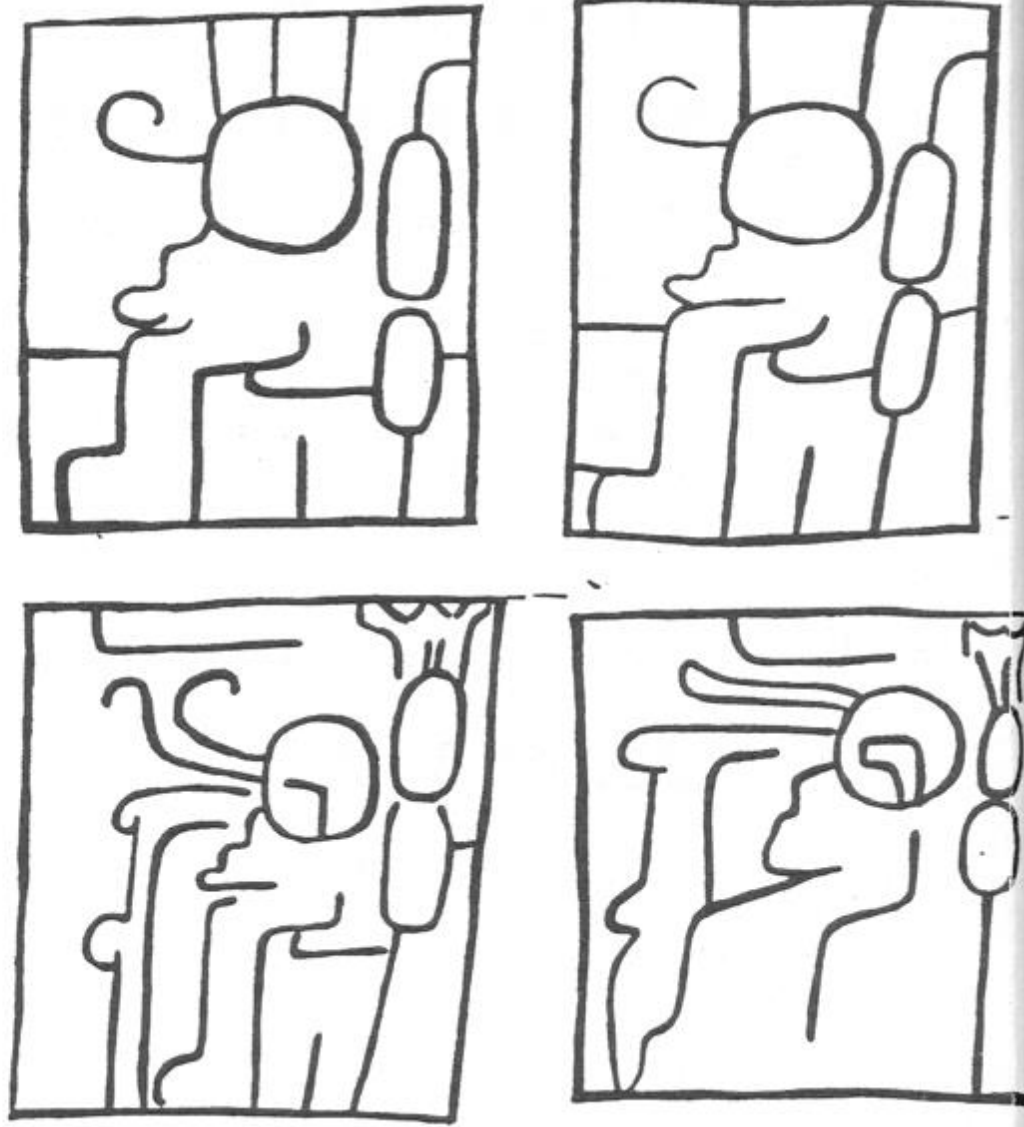
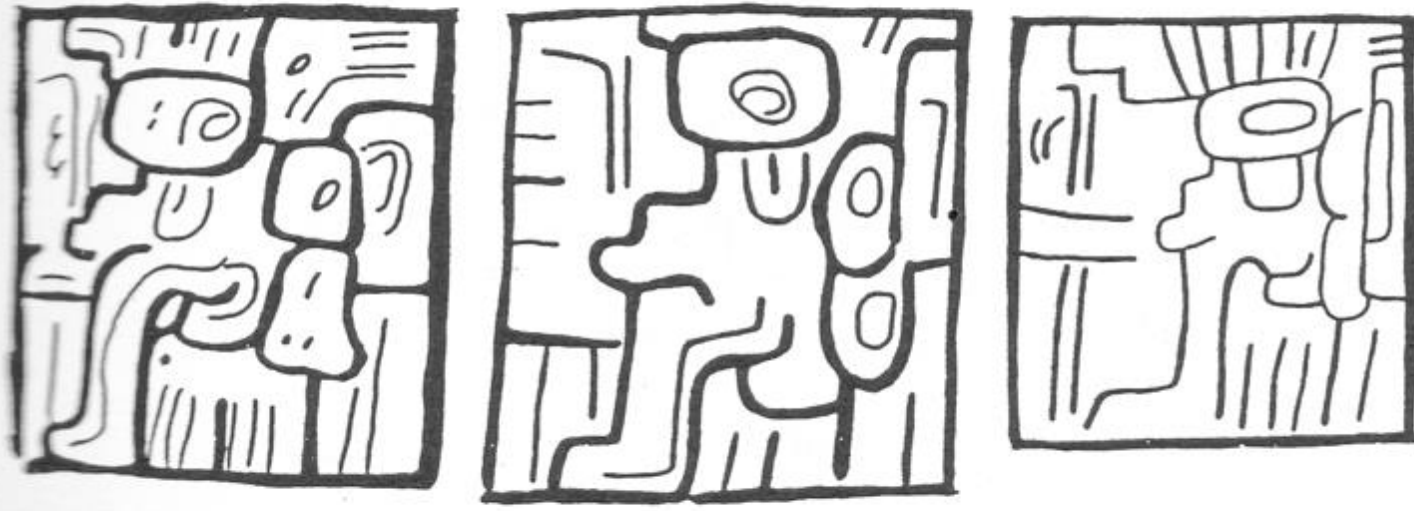


Fig. 153. Each vase is an obvious copy of the previous vase.

Each vase is by a person with less knowledge of Maya deities and glyphs.

These drawings are from my Harvard undergraduate honors thesis, that is available on-line as an easy download.



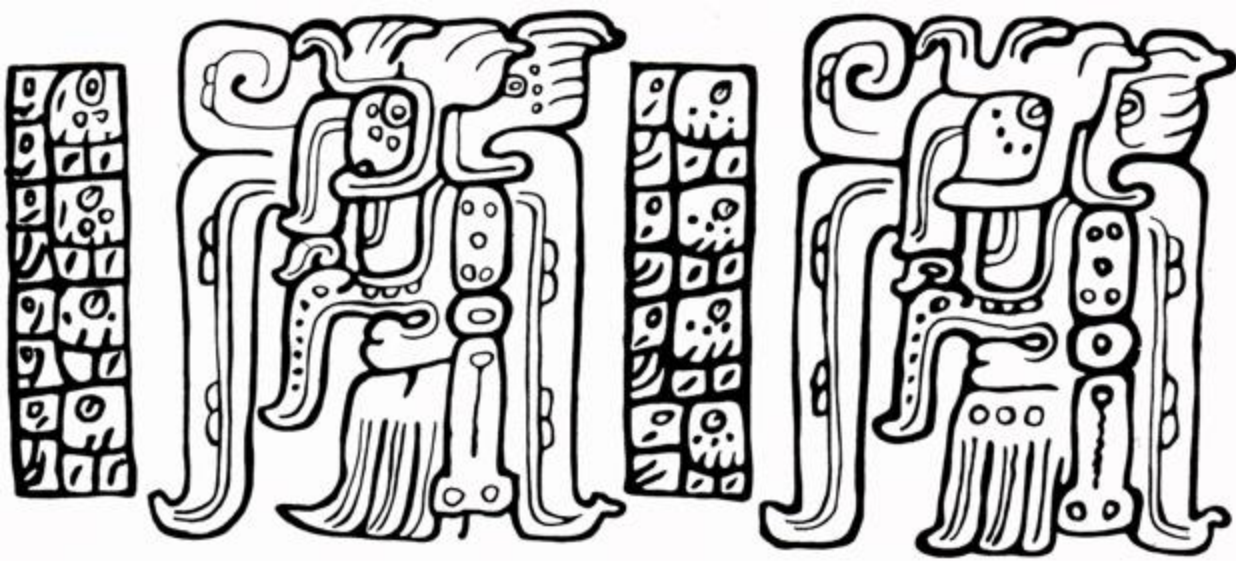


Fig. 154, a. Since this vase was entered under Temple I, we don't know whether it was available for the grieving people making copies for Bu. 116. But this full-detailed portrait of the long-lopped deity is well rendered.

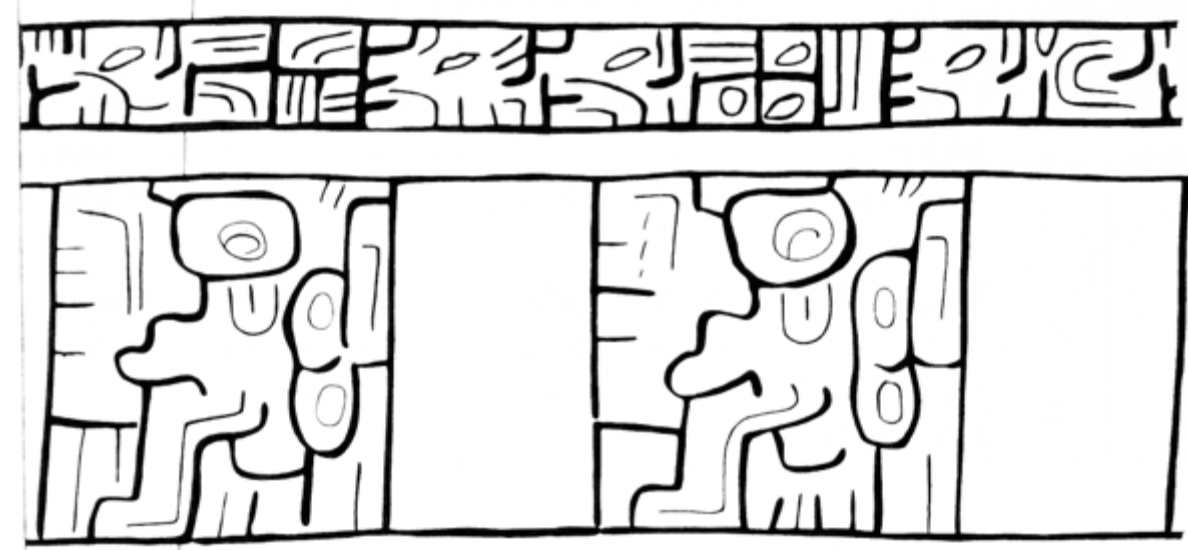
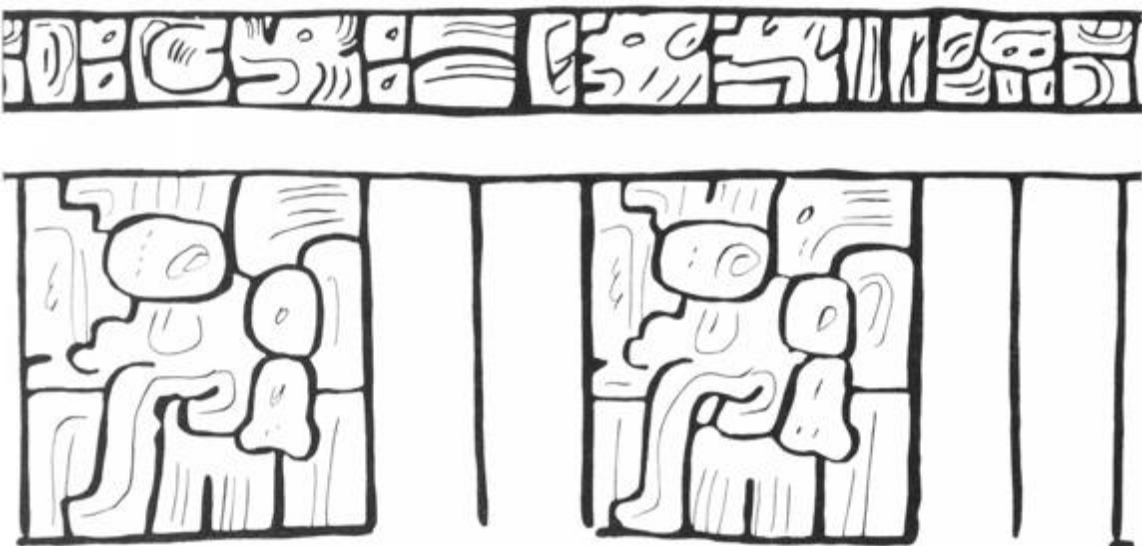
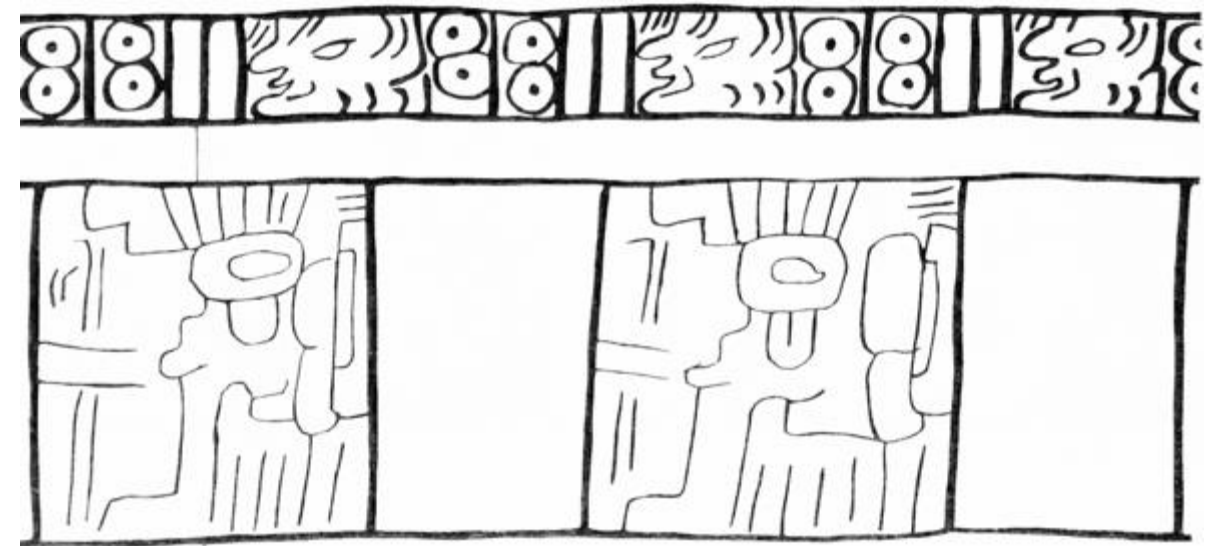


Fig. 154, b. All the dozen examples in the Tomb of the Jade Jaguar (Tikal Bu. 196) are simplified.



c



d



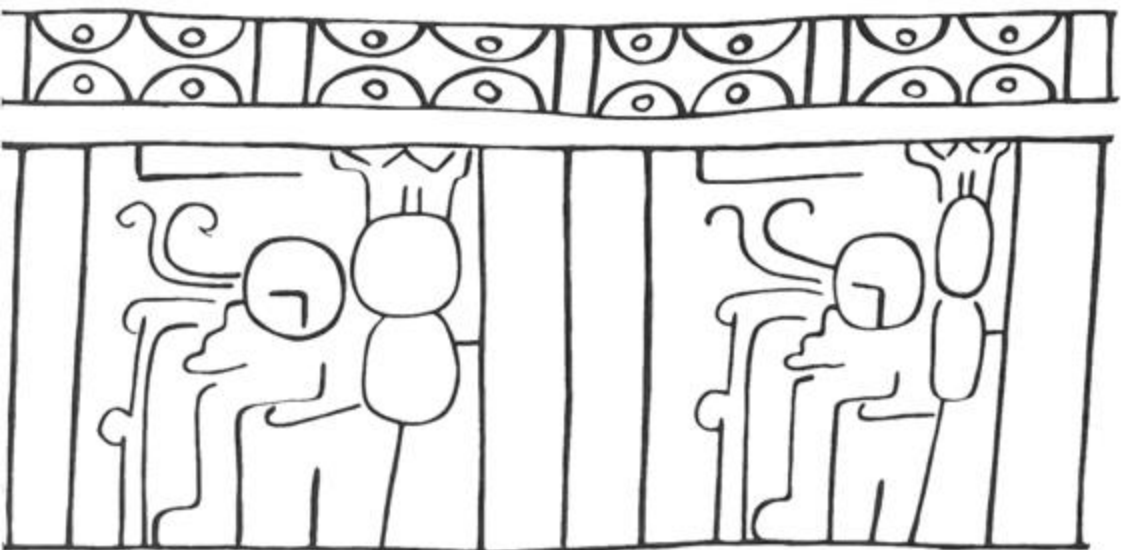
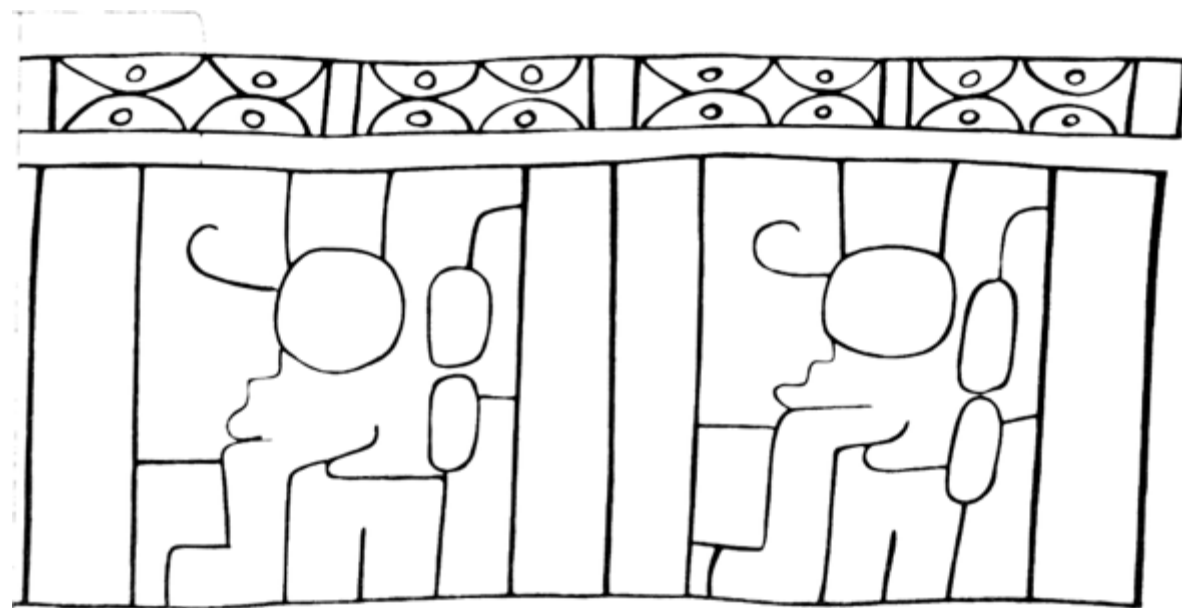
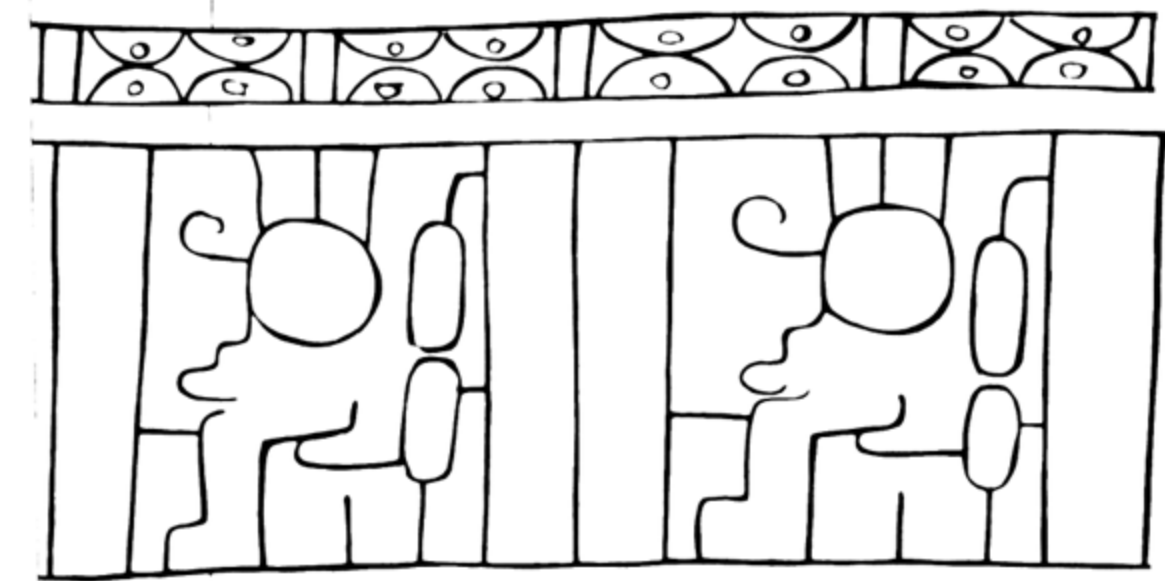


Fig. 155, a, b, c, and d. All four have the same geometric motifs in the horizontal band around the vase.





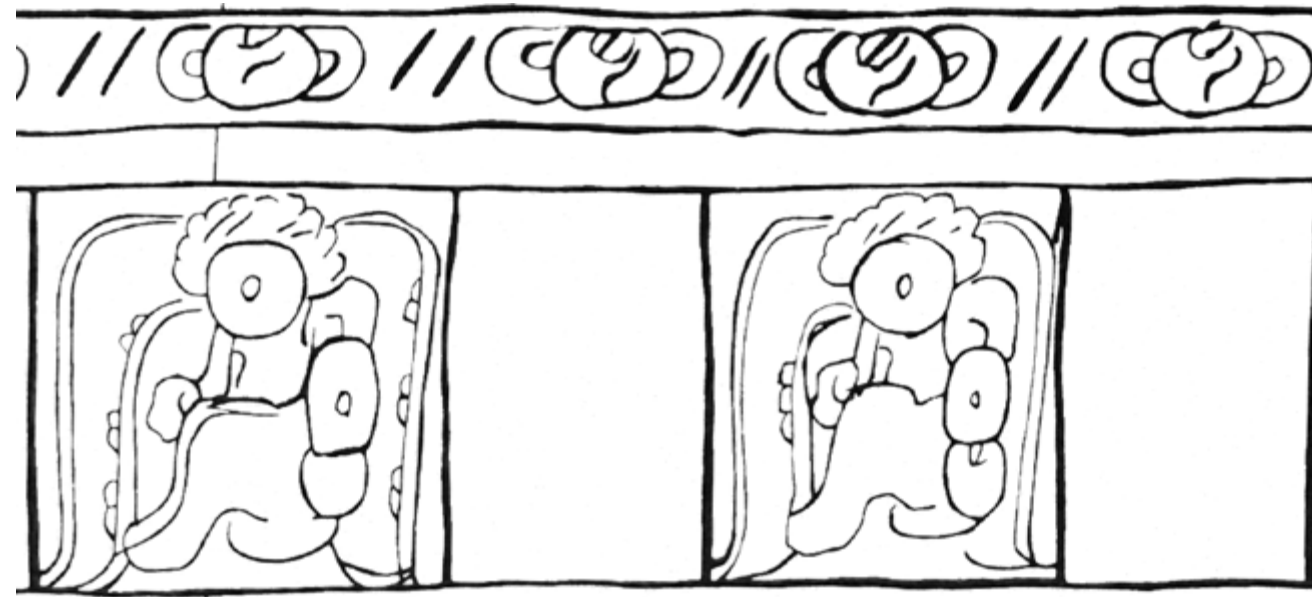
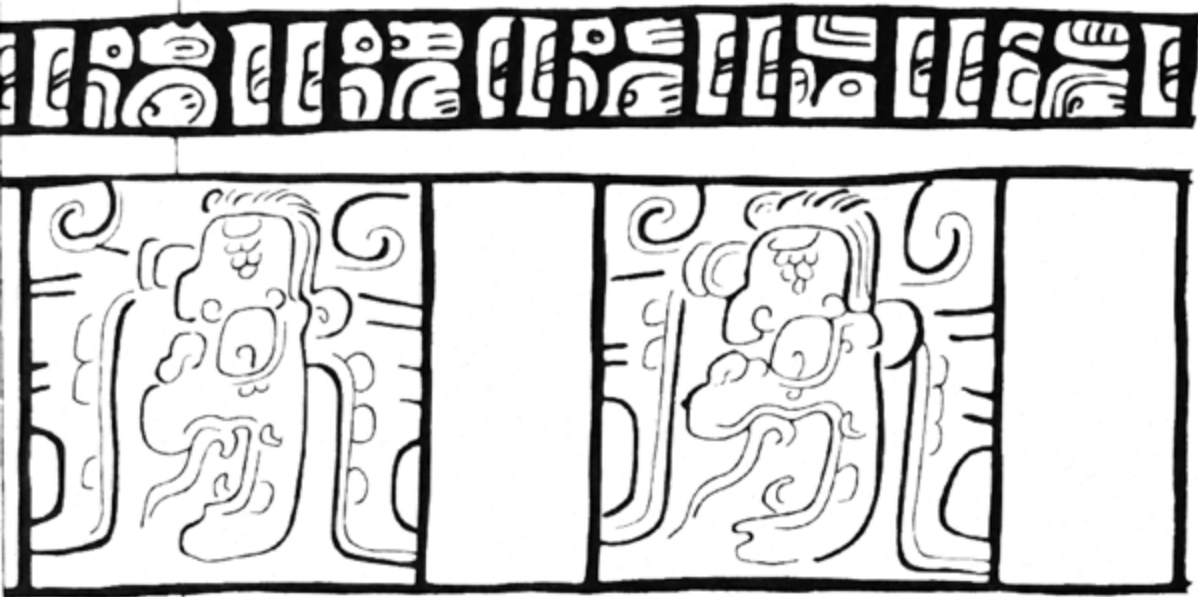
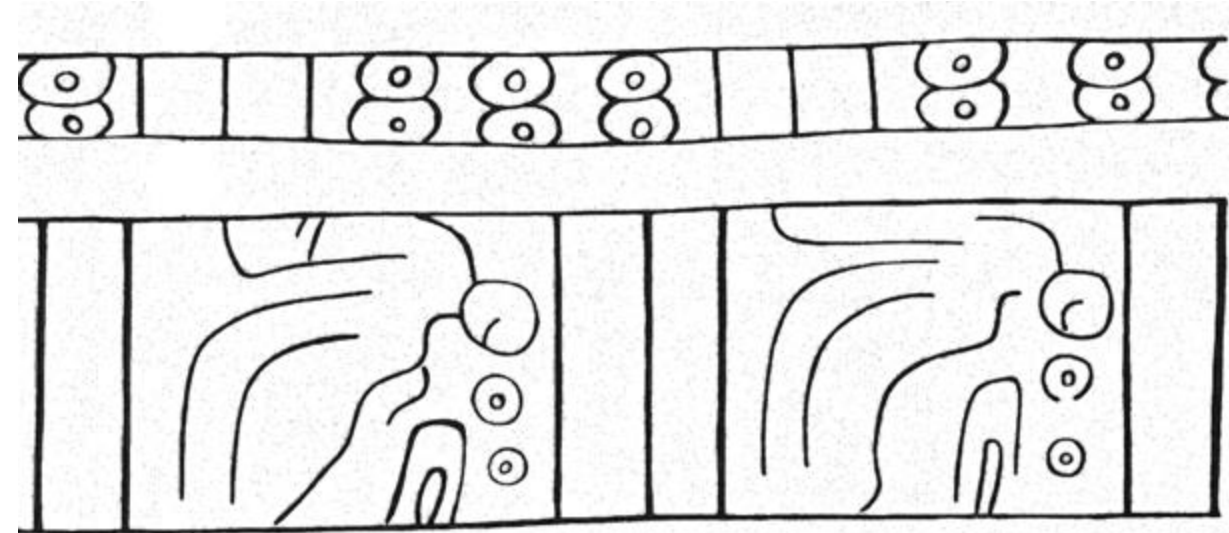
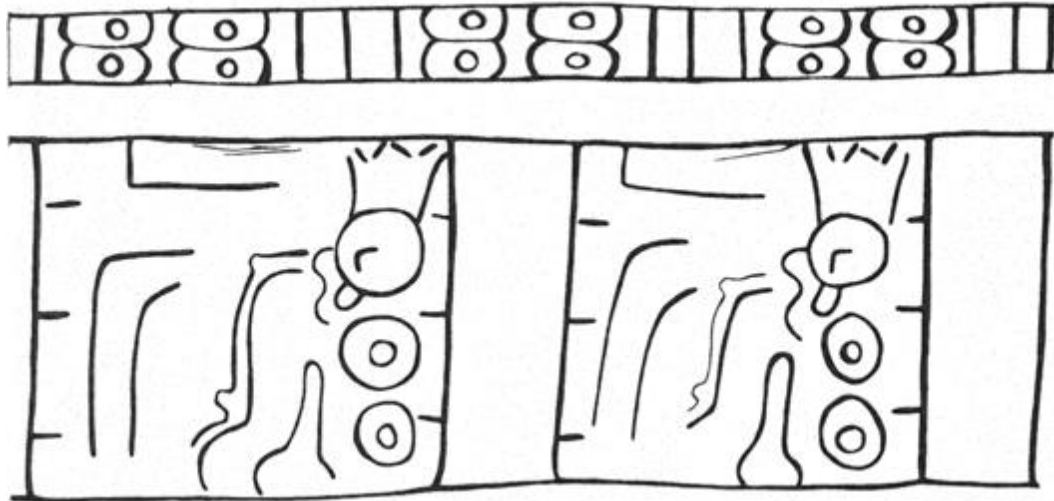
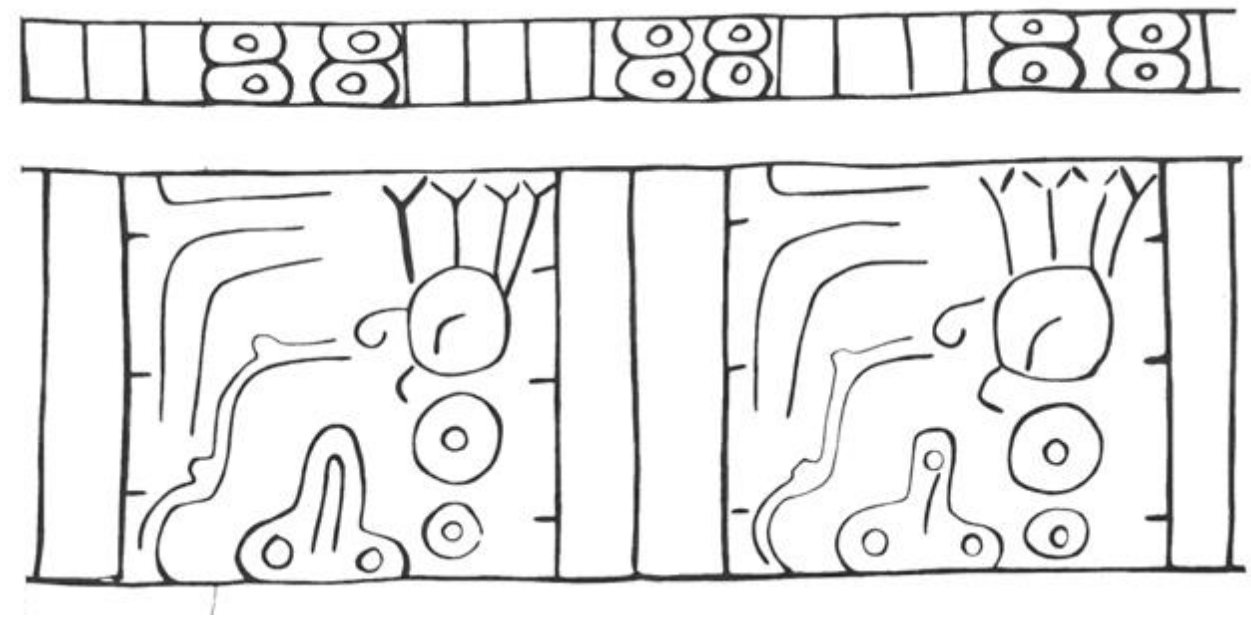


Fig. 156, a and b. These deity faces are difference concept, with volutes issuing from both sides. The series of copies had only a cascading upper lip.



Fig. 157, a, b and c. Clearly, the people who incised these three vases are copying from the previous simplified sloppy version. None of these people had the original portrait available.







This is the example gouged-incised by a master craftsman, from Tikal Bu. 116, under Temple I.

Fig. 158, a.

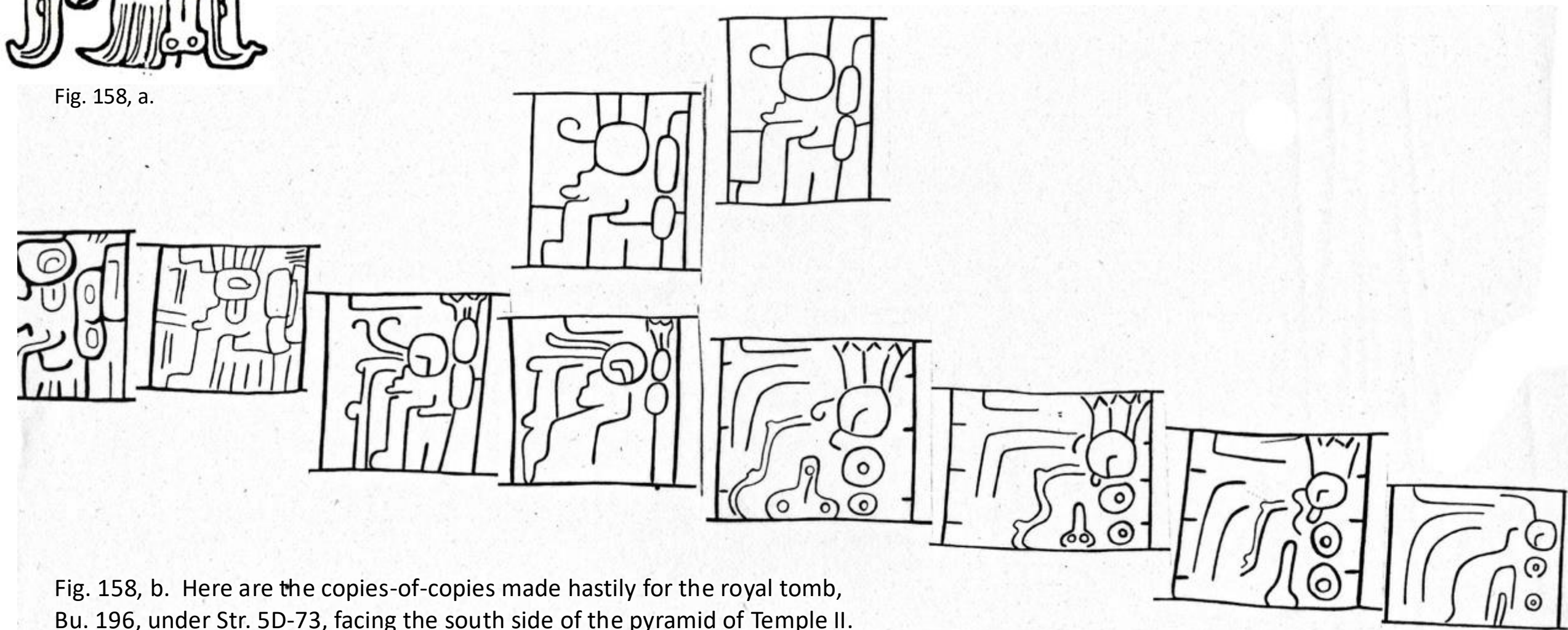


Fig. 158, b. Here are the copies-of-copies made hastily for the royal tomb, Bu. 196, under Str. 5D-73, facing the south side of the pyramid of Temple II.



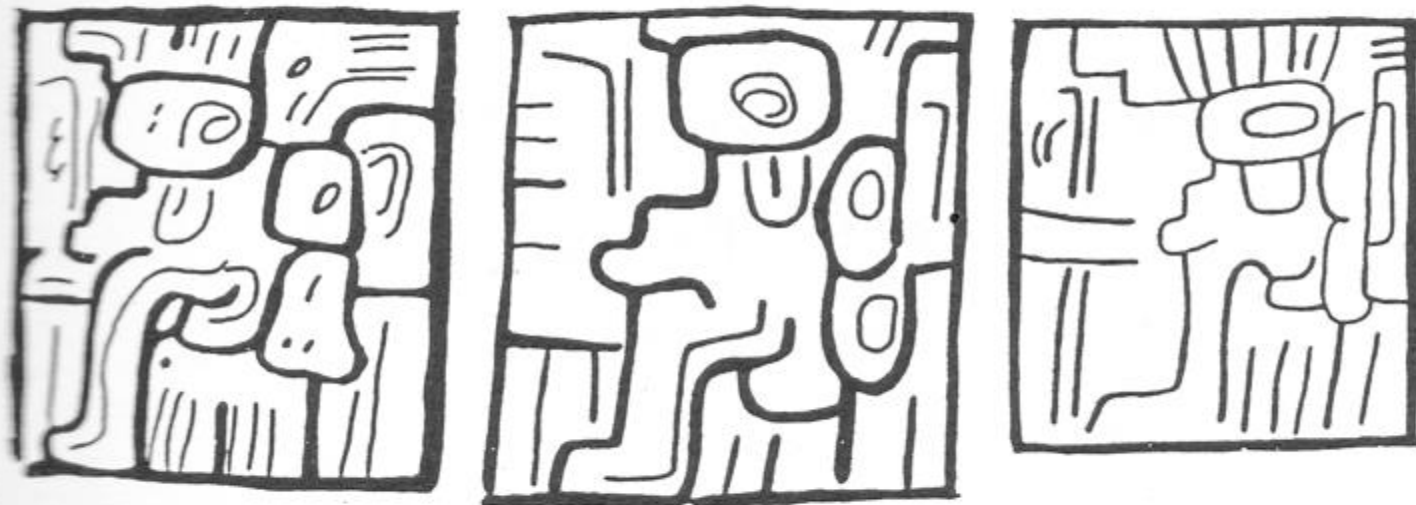
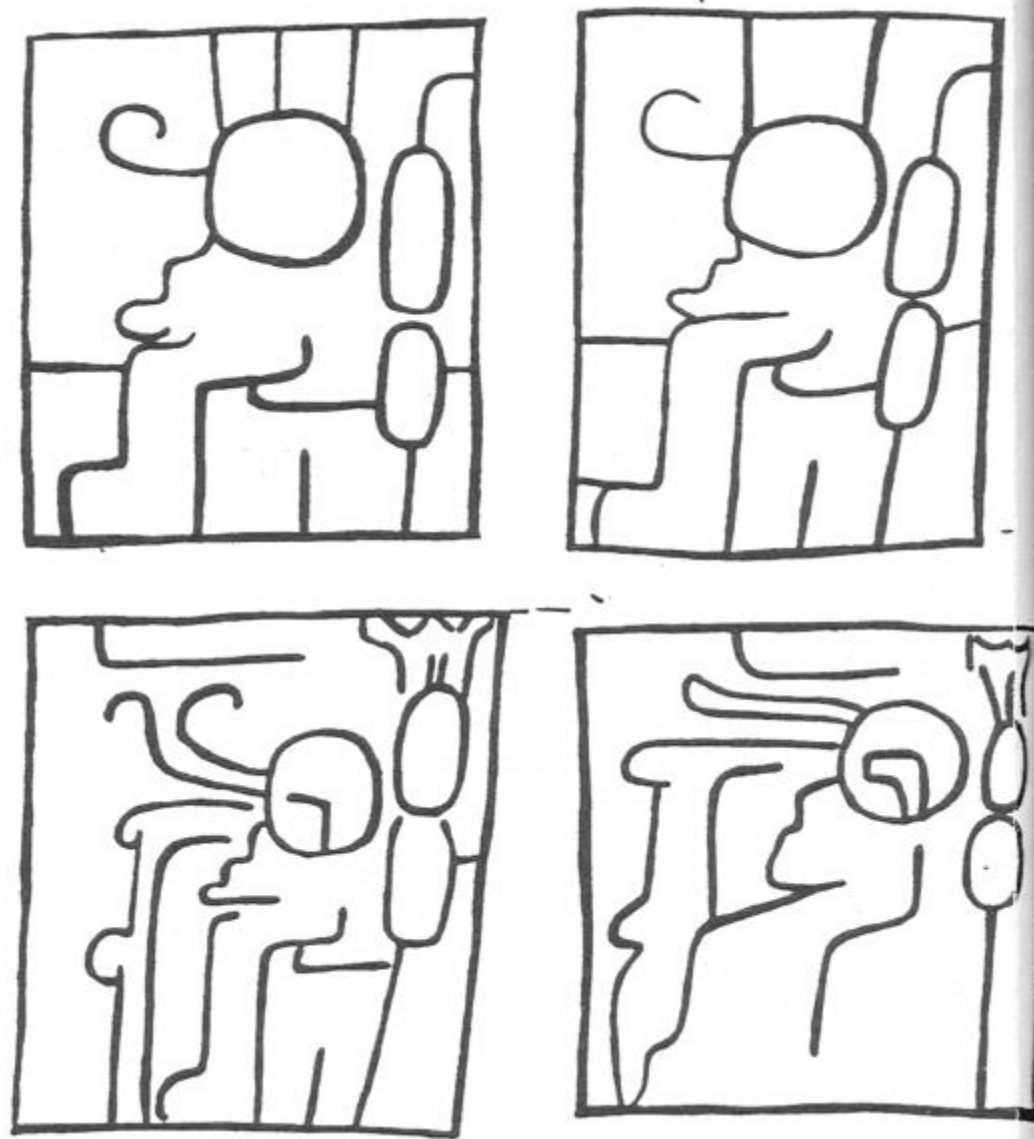


Fig. 159. Every deity face is a copy of the previous one.





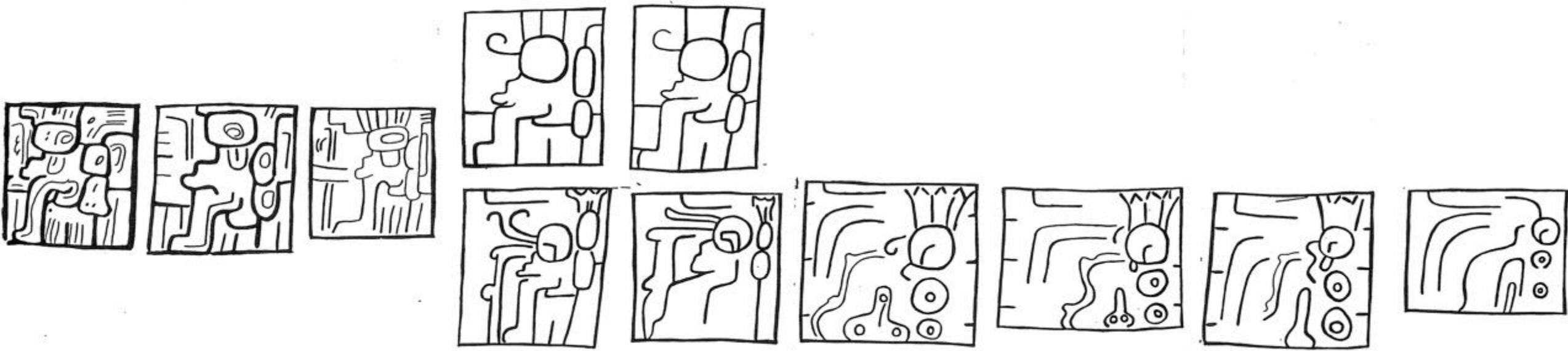


Fig. 160. Already in 1965 I had noticed that the faces were copied from one vase to another—with each following person only having one vase to see as a model. Each person was more inexperienced (or inept) than the previous person. I estimate that the “original model” was like the one in Tikal Bu. 116.

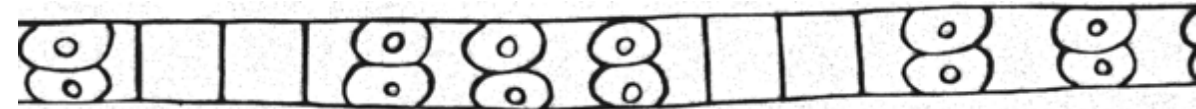
One key question is whether the artist of a Maya vase was also the scribe—or whether two individuals produced most vases? But clearly whoever did the upper band of pseudo-glyphs as copying from a text made by another person.

I have always estimated that each family member had to provide vases for the burial (filled with cacao or other foods to assist the deceased to survive into the afterlife). If you were a king or at comparable level, you would normally hire an artist and a scribe. But there may have been a tradition, or rule, that each individual also had to decorate the vase that they were going to donate to the burial. Plus there was haste and urgency—while the body is in-waiting it is rotting. And even surrounded by flowers of dramatic fragrance, the body had to be buried as soon as the workers could dig down into the edge of the Great Plaza and prepare the tomb chamber.





This has the same facial concept was two other vases in this series but was also the model for four copies of the stacks of two circles.



This horizontal design was not copied from or to any of the other vases in this series.

Fig. 161. All cropped by Hellmuth from excellent line drawings by Penn Museum Tikal Project illustrator, published by Culbert 1993.



Fig. 162. I had come to Tikal as a backpacker in 1963 and again in 1964 and stayed an entire week each time—so the Penn museum project staff got to know me. Harrison and Chris Jones noticed that I was a photographer with a Leica camera and was studying Architectural Sciences at Harvard. Peter Harrison asked me if I could return to Tikal for an entire year to help with documenting architecture. Bill Coe then assigned me to excavate and draw the entire north and east sides of the North Acropolis and Chris Jones asked me to excavate Strs. 36, 37, 38, and 39 (facing the East Plaza). Only Str. 38 had a masonry building (a typical Peten palace). So all reconstruction 3D renderings of Tikal that show masonry buildings on 37 or 39 are totally wrong. After successfully excavating and drawing all the back and east side of the acropolis and all the buildings facing the East Plaza, I was assigned to excavate Str. 5D-73—to try to ascertain why it had no temple on top of the pyramid—was it so late that Tikal collapsed before a temple could be built?

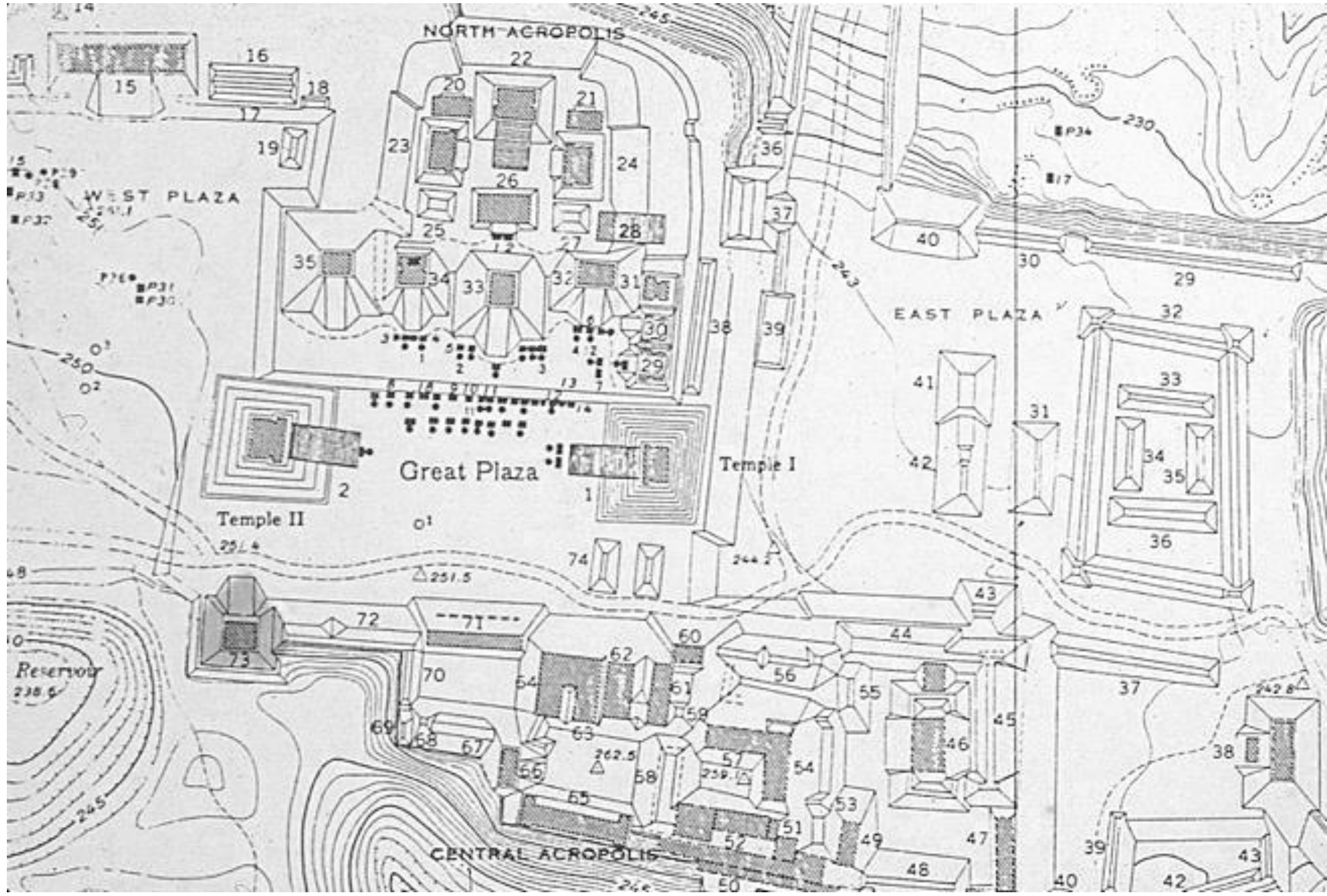




Fig. 163. At age 19, this is my isometric drawing of what the pyramid and building platform of Str. 5D-73 looked like. Obviously most of the upper terraces were collapsed but we found enough on the lower levels to document the inset stairways, identical to those of Temple I. The building platform (on top of the pyramid) was well enough preserved to document that it was completely finished but there was no intent to have constructed a masonry temple whatsoever. Graffiti at Tikal show wooden temples with palm thatch roofs atop pyramids. Obviously the front was not a slope, it was endless steps to climb to the top (with no handrail to hold onto).

All the drawings and photographs of the pyramid and the tunnelling into the pyramid to find the tomb are in the Harvard undergraduate honor's thesis available on-line.

Officially this is Tikal Burial 196 (Bu. 196), but I call it the Tomb of the Jade Jaguar (though it could have been a different feline but was unlikely a puma).

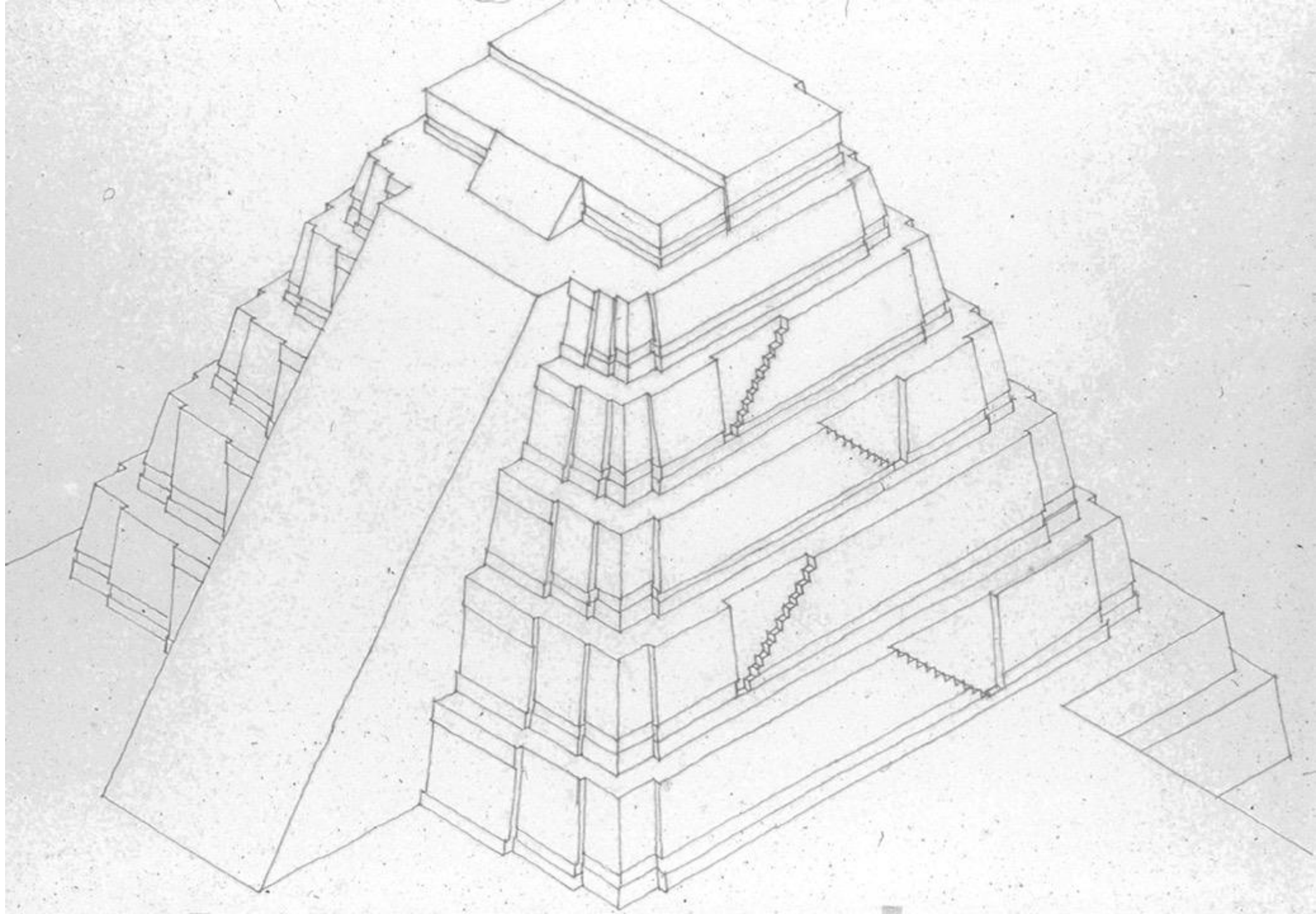
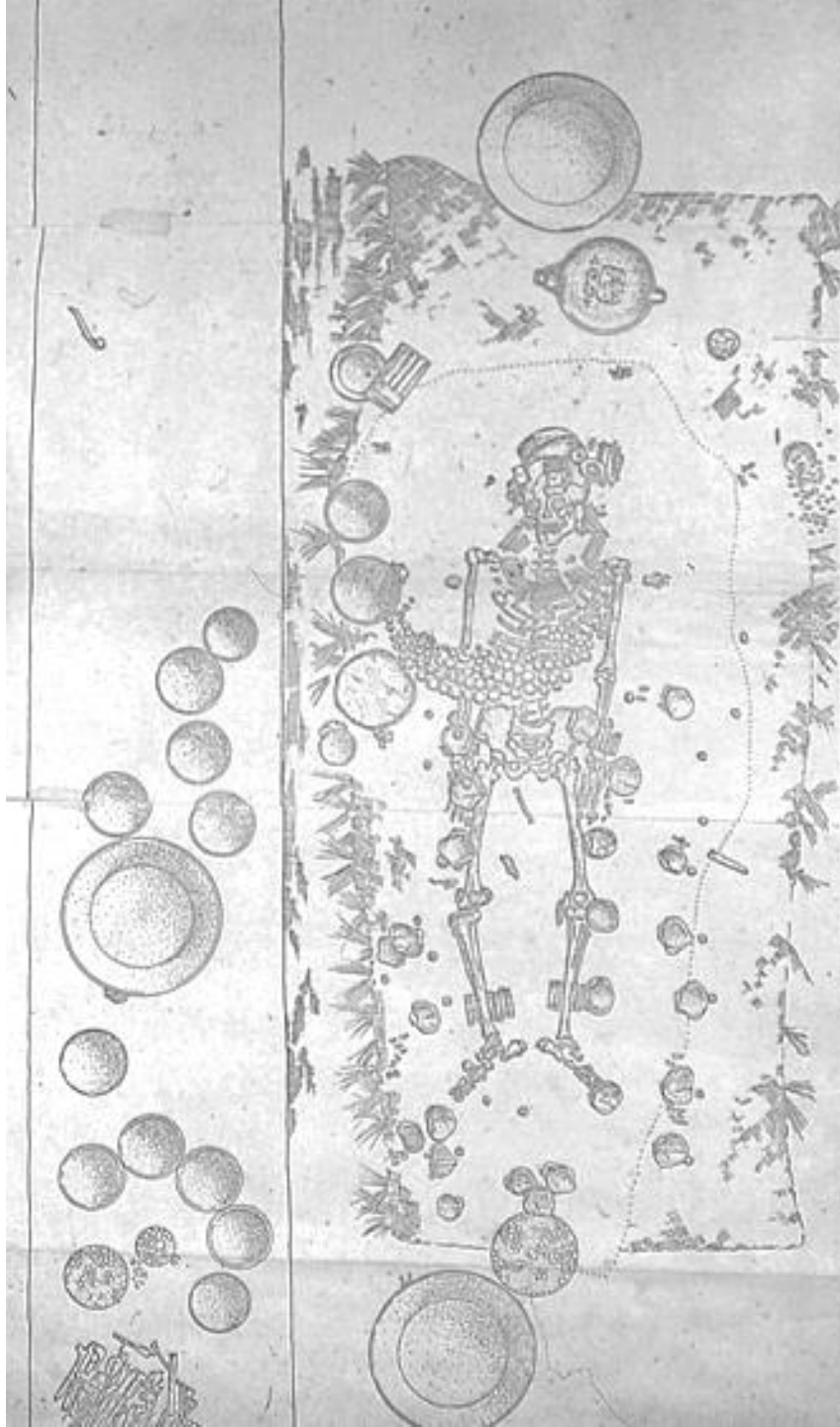




Fig. 164, a. Tikal Bu. 116.



Both tombs had plates that were by the same atelier. Ruler A had three, Nicholas' tomb had ten!

Both tombs had pyrite mirrors—Nicholas' tomb had at least three including one of the largest every found.

Both tombs had vertical rows of spondylus shells.

Both tombs had jade mosaic-covered wooden vases. The jade mosaic vase in Bu. 196 was noticeably more elaborate.

Fig. 164, b. Tikal Bu. 196 had noticeably more ceramic offerings than Bu. 116. So overall was a richer tomb—but the pyramid Str. 5D-73 was only 5 terraces (identical to design of the 9 terraces of Temple I—but 5D-73 had no temple.

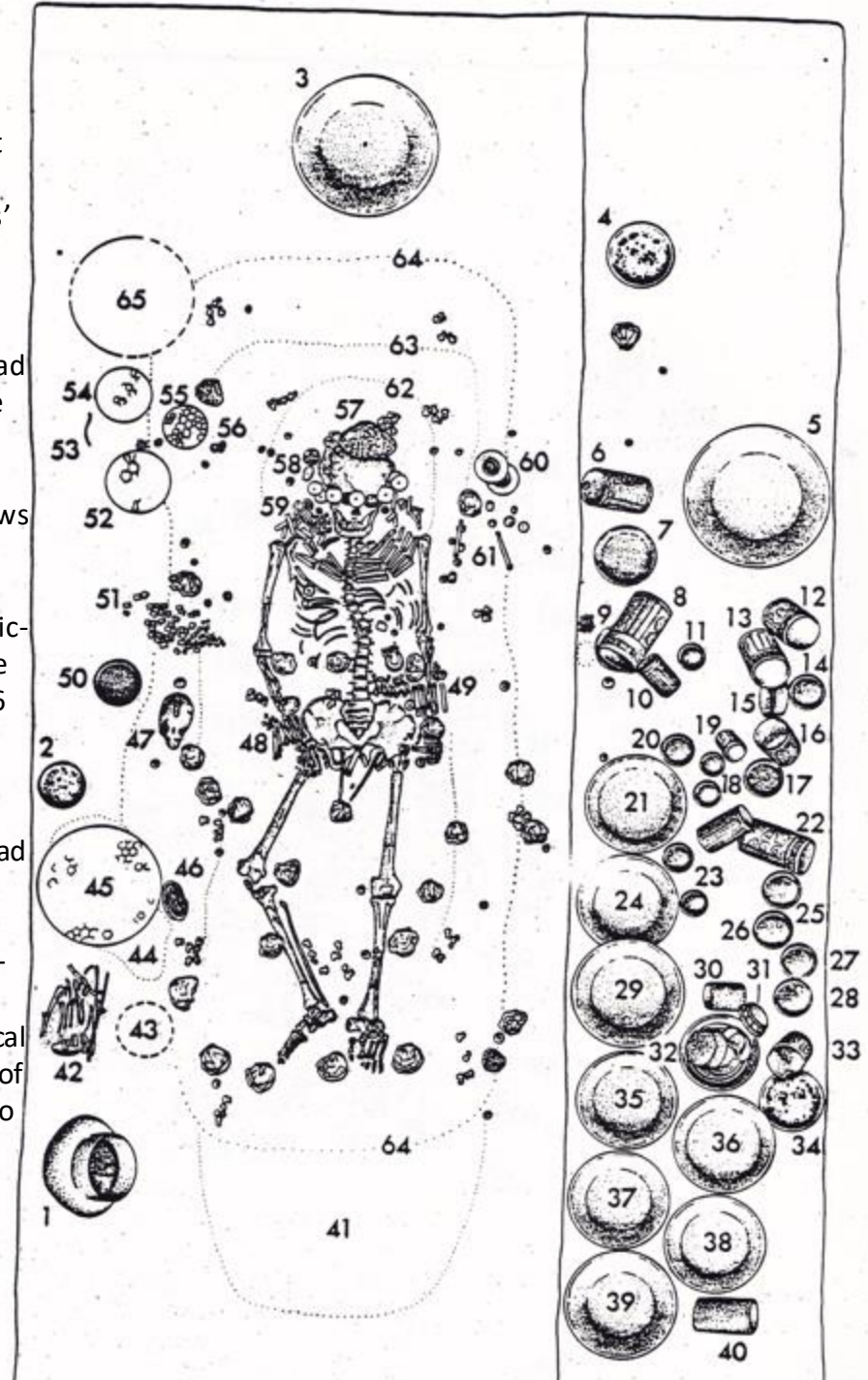


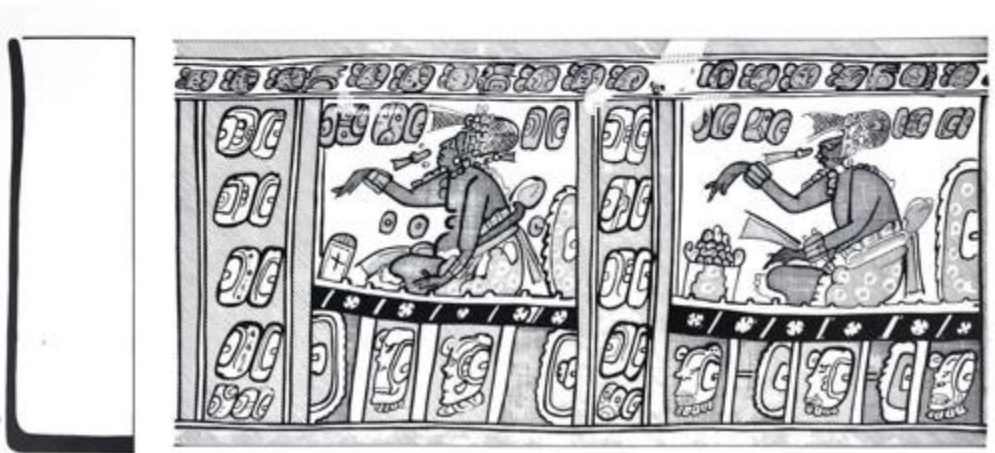
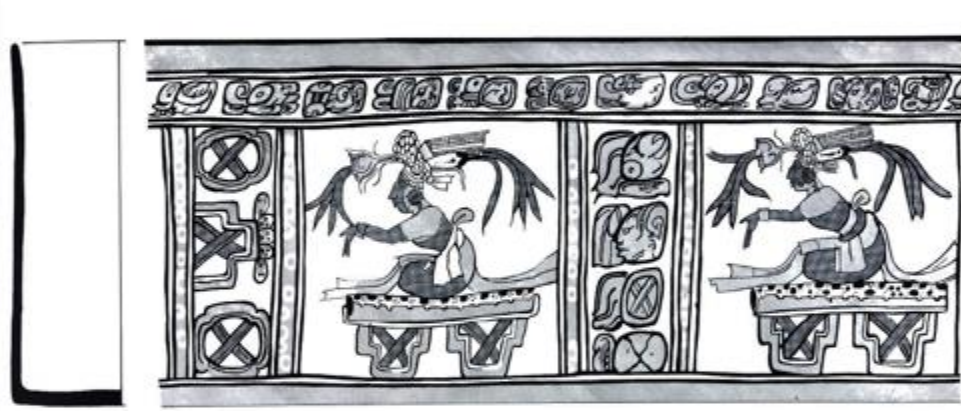
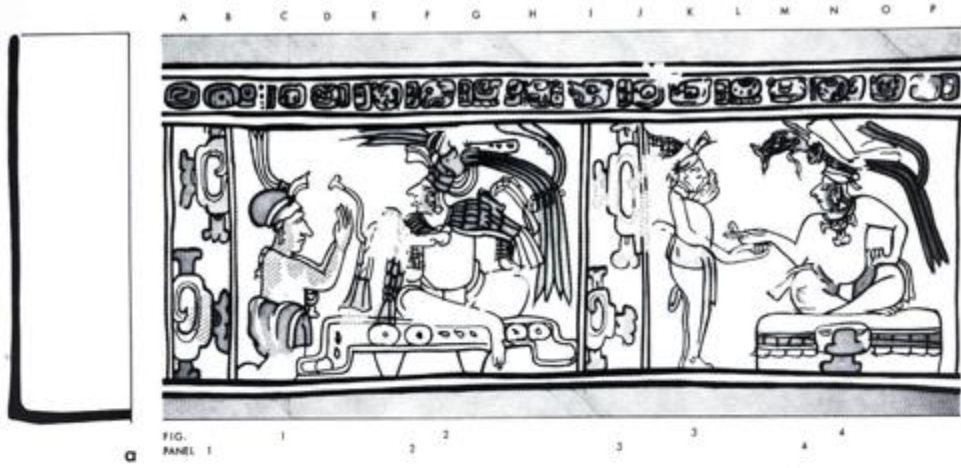
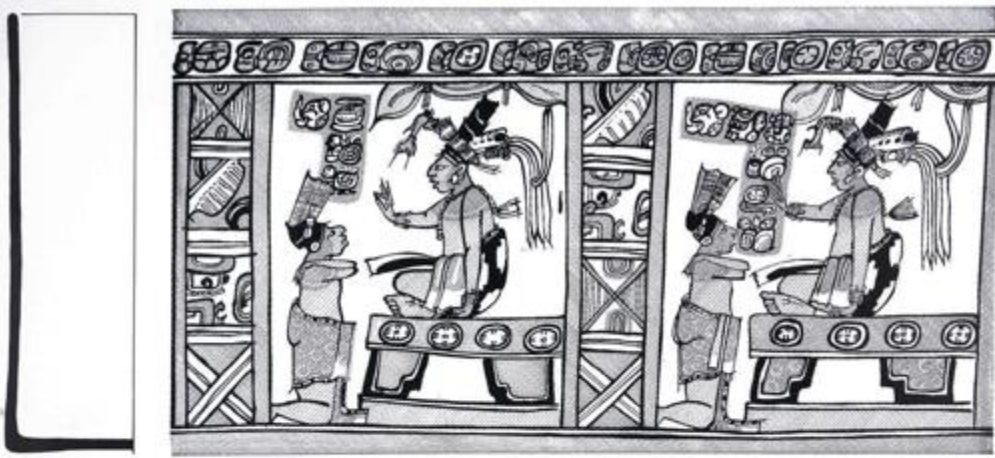


Fig. 165. A sample of polychrome vases from Tikal Bu. 116.

The hieroglyphs vary from simplified to repeated but not total junk. But none of these six vases had a scribe of the quality of the “Bonampak vase” of the same Tikal Bu. 116 (that we show later in this presentation).

We will now show rollout drawings of all the vases plus rollout photos by Justin Kerr of the few that are available on Maya Vase Data Base.

All the drawings are by the Penn Museum team, in Culbert 1993.





Some repetition, and not in an ornate style, but I would not list these as pseudo-glyphs, especially not the glyphs in the scene below. This text is not the expected PSSequence dedicatory text. The two throne scenes and the vertical Sky Bands are higher quality than most of the following vases from the same Tikal Burial 116, Temple I. Several (but not all) of the glyphs in the vertical text are similar to those in the other Temple I vase, that we show on the following page.

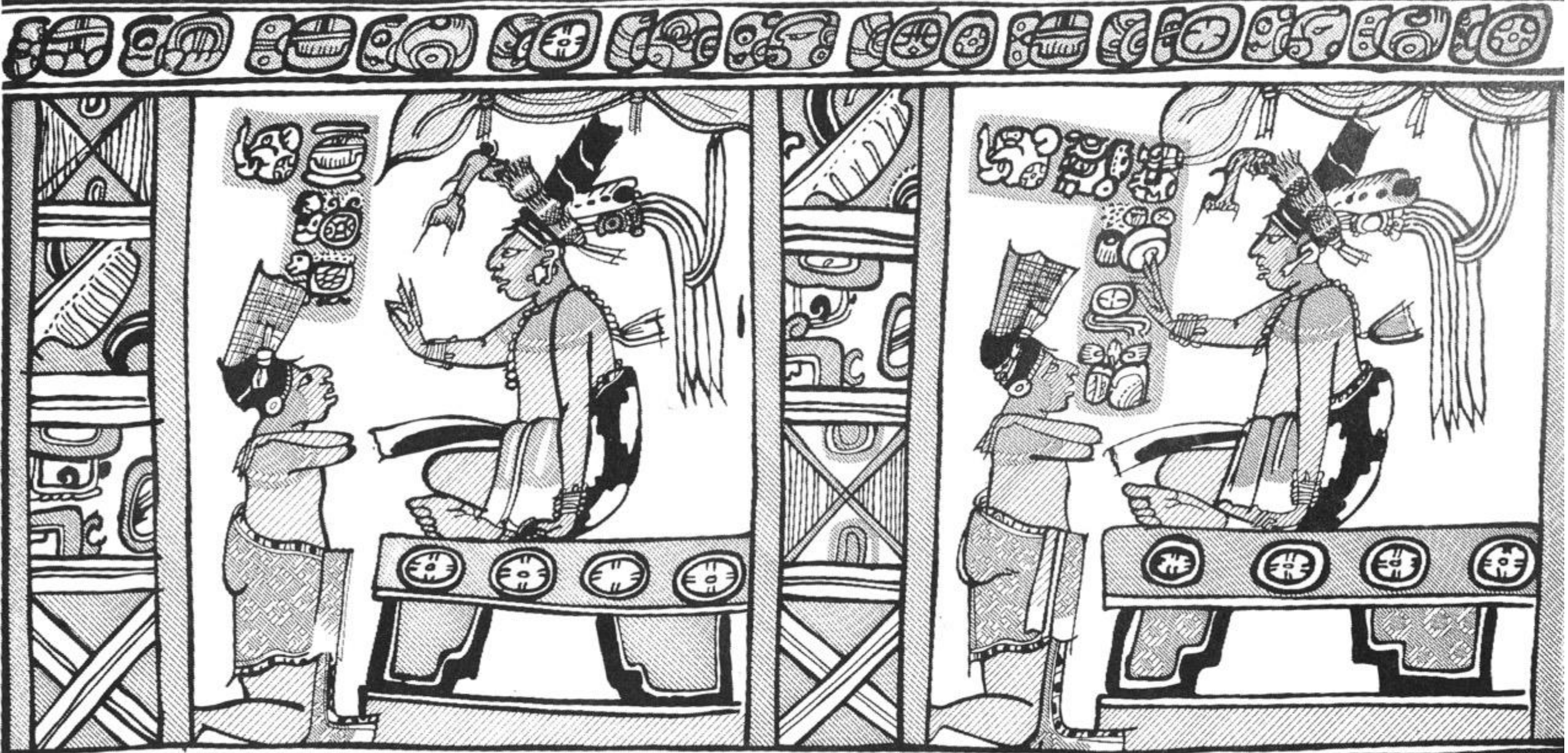


Fig. 166.



Acceptable PSSequence dedicatory text, even has a full-figure *kakaw(a)* fish glyph. But nowhere near as sophisticated details as on the Humming-bird Vase of Bu. 196 nor as detailed as most PSSequences on Codex Style bowls and plates. The vertical glyphs are decorative geometric motifs—not hieroglyphs. The two throne scenes are simplified but the fish-nibbling-on-a-water-lily headdress and the curtains hanging from the ceiling are all traditional, albeit a bit simplified. Discussed by Coggins in 1975, on her pages 515-516 in her Volume 2. For several vases Coggins suggests it is the kneeling attendant who painted the vase—not the lord on the throne.

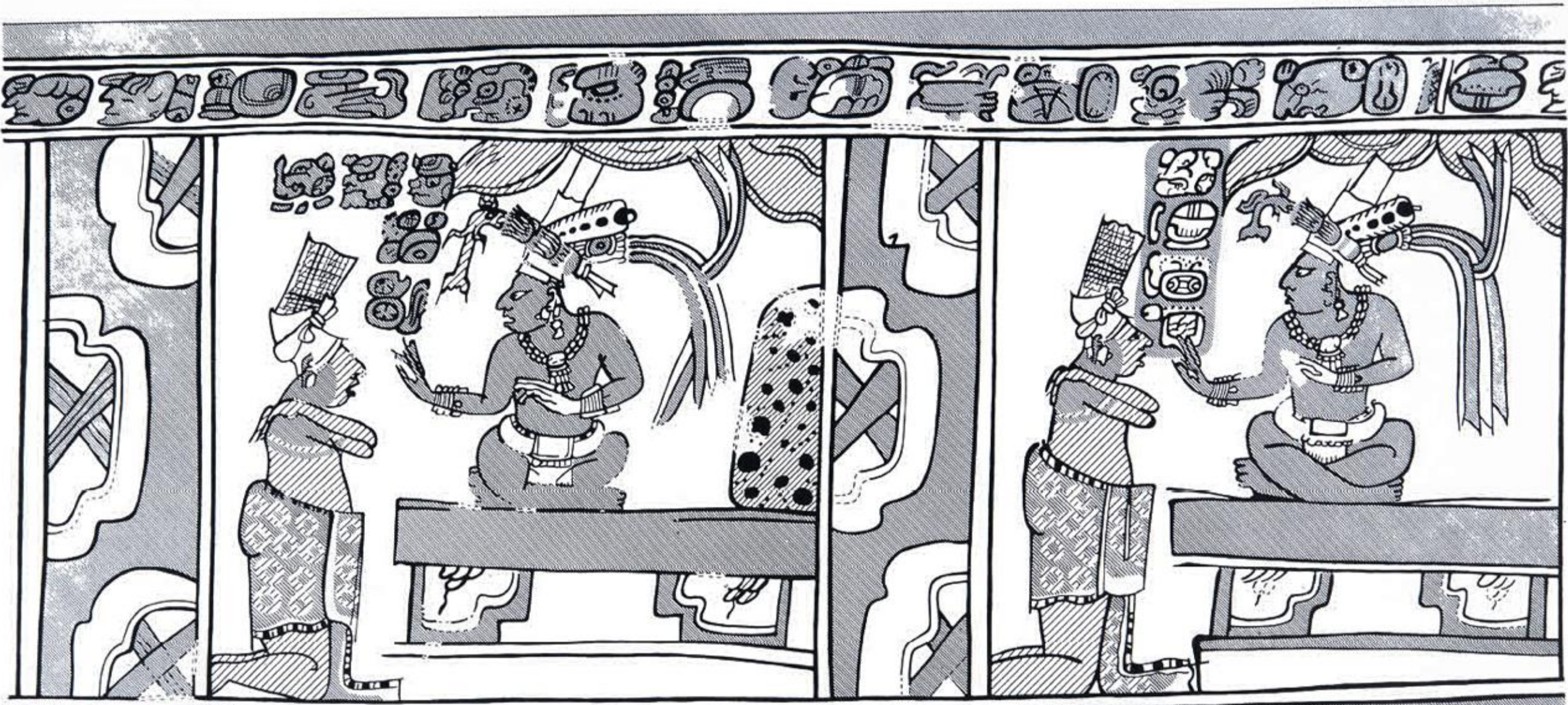


Fig. 167.



Scene is simplified (no one is in front of the throne...yet the seated noble is clearly gesturing to a person in front.

The vertical glyphs have enough features not to encourage me to label them as pseudo glyphs. The horizontal text is a bit crude but not inept so I would not yet label these as pseudo-glyphs—but they are definitely not from an elite scribe. Amazing that the offerings in the tomb of a royal personage of top “international” status had so many people bringing and donating such simplified scenes. Maybe there was simply not enough time to find enough accomplished scribes to produce these for the burials. I estimate that the gouged-incised vases of Bu. 196 were made in haste for that royal tomb.

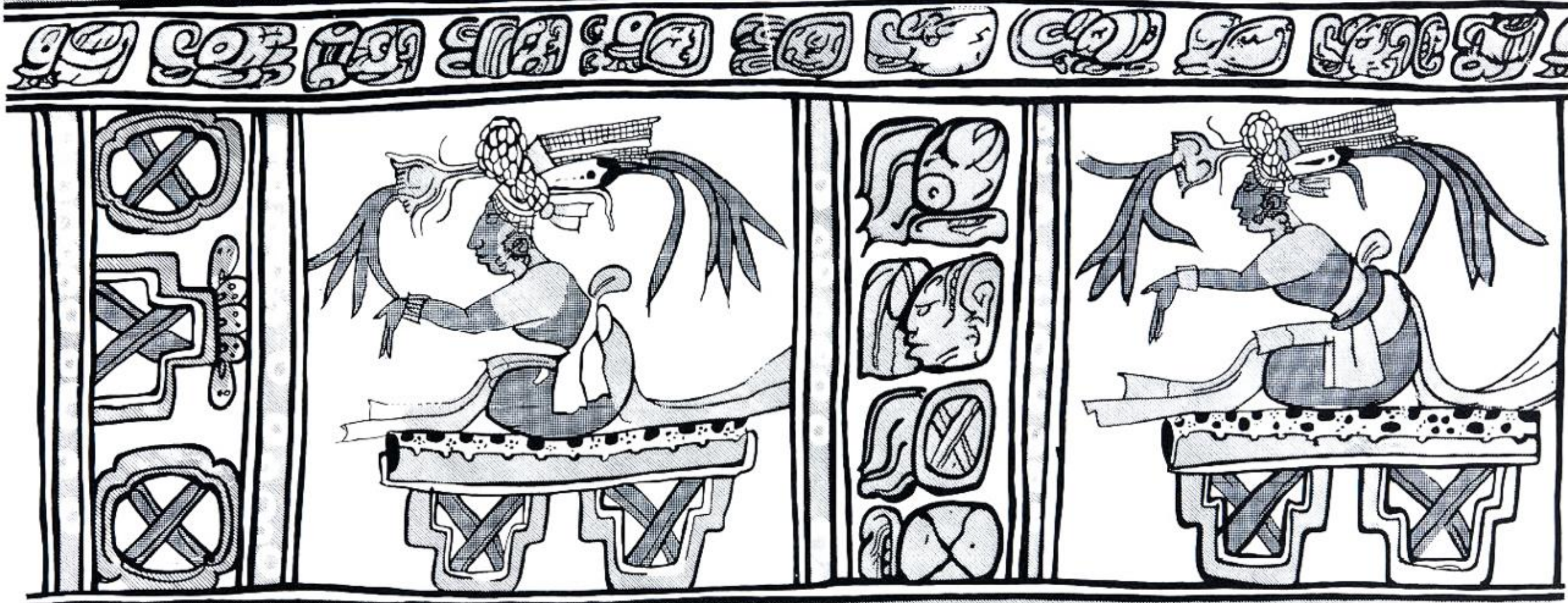


Fig. 168.



Glyphs are very simplified, as is the scene, so not from a “royal atelier” that would be expected for the great Ruler A of Tikal.

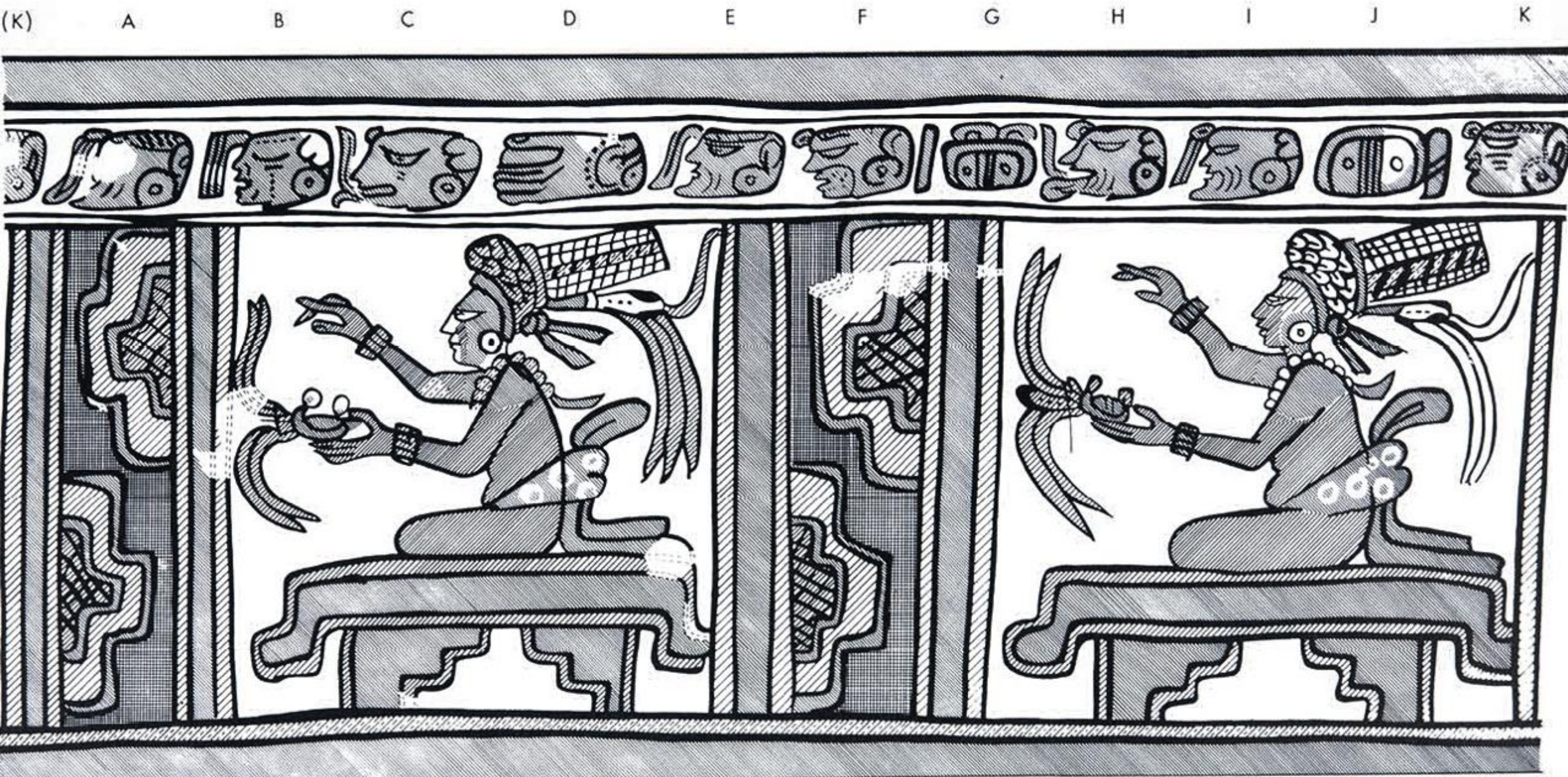


Fig. 169.





Fig. 170, b.



Fig. 170, a. This vase above is from Tikal Bu. 116. It has a simplified throne scene but not painted by a young person or grandparent or person that knew nothing about Maya hieroglyphs or throne scenes. The hieroglyphs (starting with a God N) are acceptable as a simplified and/or rudimentary PSSequene—I do not consider this text as pseudo-glyphs. But with glyph E and I repeated, perhaps we need to define a category nomenclature for simplified and/or rudimentary hieroglyphs but that clearly can be read by the Classic Maya even if not the text expected of the remarkable PSSequene dedicatory formulae on Codex Style Pottery or on the Hummingbird Vase of Ruler B excavated by Hellmuth from Tikal Bu. 196. I have always estimated that this skeleton was a son or brother of Ruler A—the pyramid is too small and lack of temple with majestic roof comb is too simple for a person as powerful as Ruler B.



Fig. 170, c. This vase scene shares with Tikal Bu. 116 a lack of anyone seated or standing in front of the enthroned lord. Lots of repeated pseudo-glyphs. Digital rollout by Nicholas Hellmuth, Museo Popol Vuh, UFM.



Symbols on the side of the throne are sketchy and crude. Glyphs of smiling faces below the throne are humerus—like a literal joke. Glyphs in the two vertical panels have same postfix and some of the main sign aspects are repeated. The horizontal glyphs in the throne scene are simplified. The intent to render a PSSequene by this scribe is a diagonal slanted style but although simplified (or you could say crude), the probable Wing-Quincunx and other glyphs at least attempt to render a PSS.

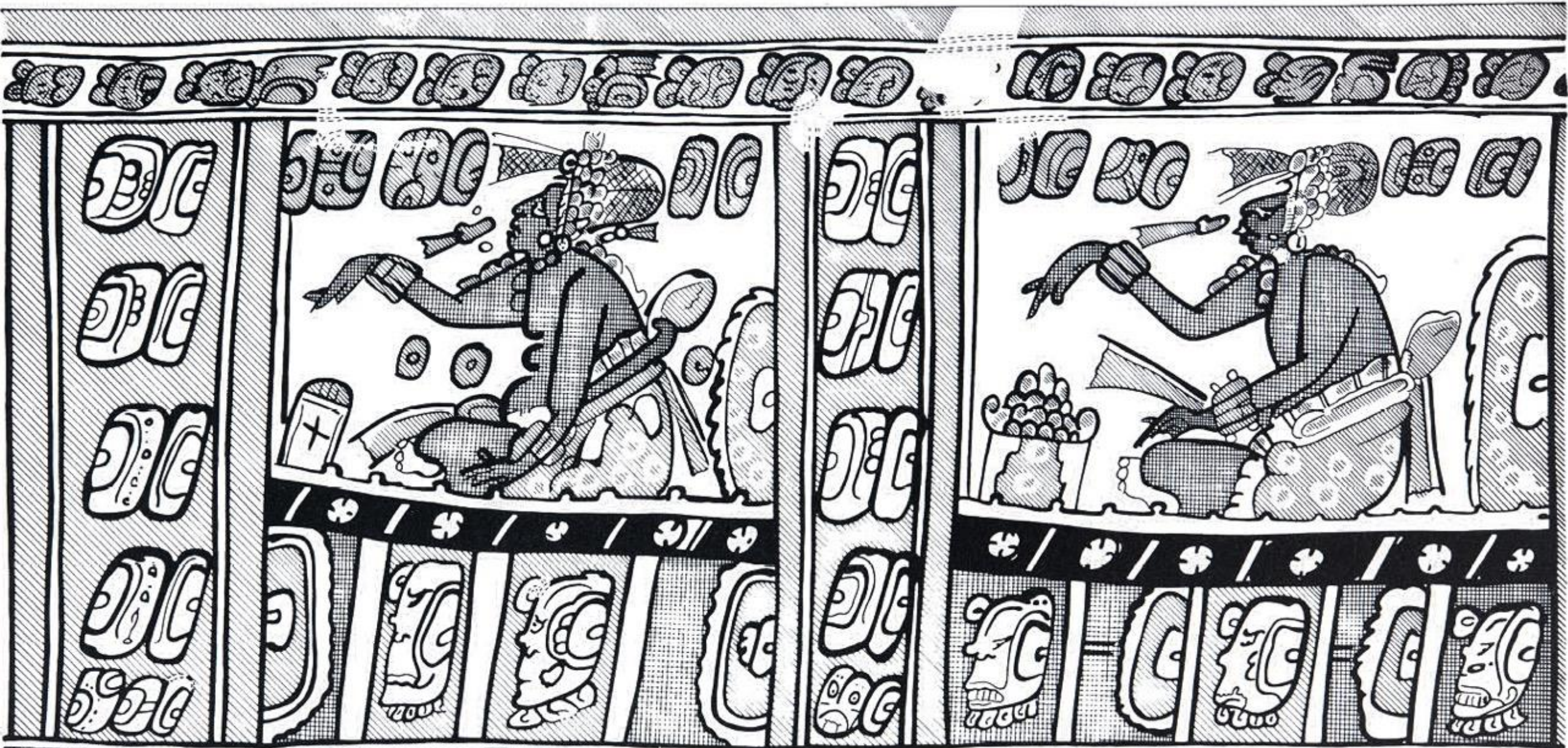


Fig. 180. Culbert 1993: Fig. 71.



Scene is simplified but not inept. Glyphs are not ornate but I would not label them as pseudo-glyphs. Simplified glyphs yes.



Fig. 181.



Scene is not just simplified, it is sloppily painted. It is also unexpected to have a person standing on a throne. But the painter shows the head of the standing person (in the left panel) at the usual proportions. I am curious whether the panel at the right was painted by an even more novice painter.

The row of horizontal glyphs express a lot of “messages” but not in traditional manner of Maya hieroglyphs. So not painted by an experienced scribe nor a trained painter for the scene itself.

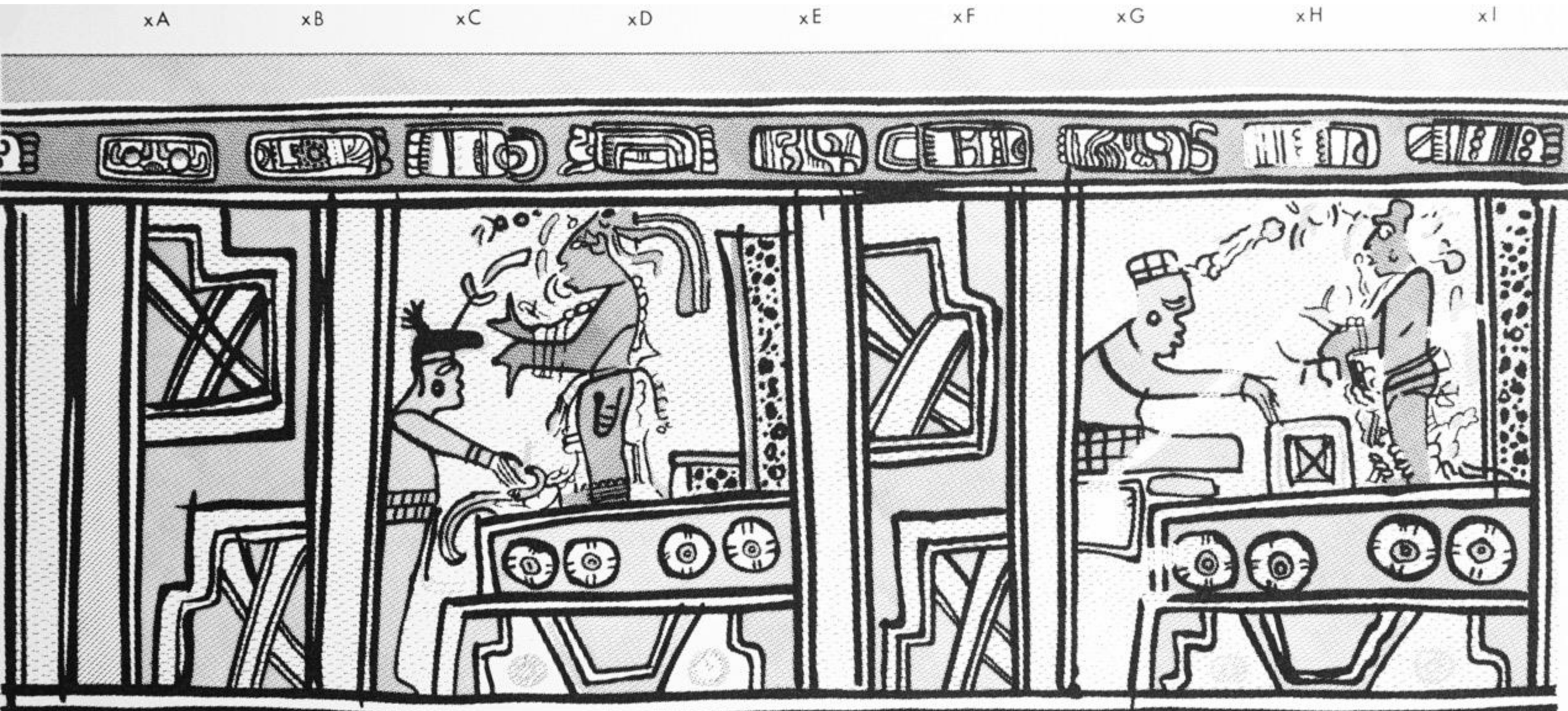


Fig. 182.



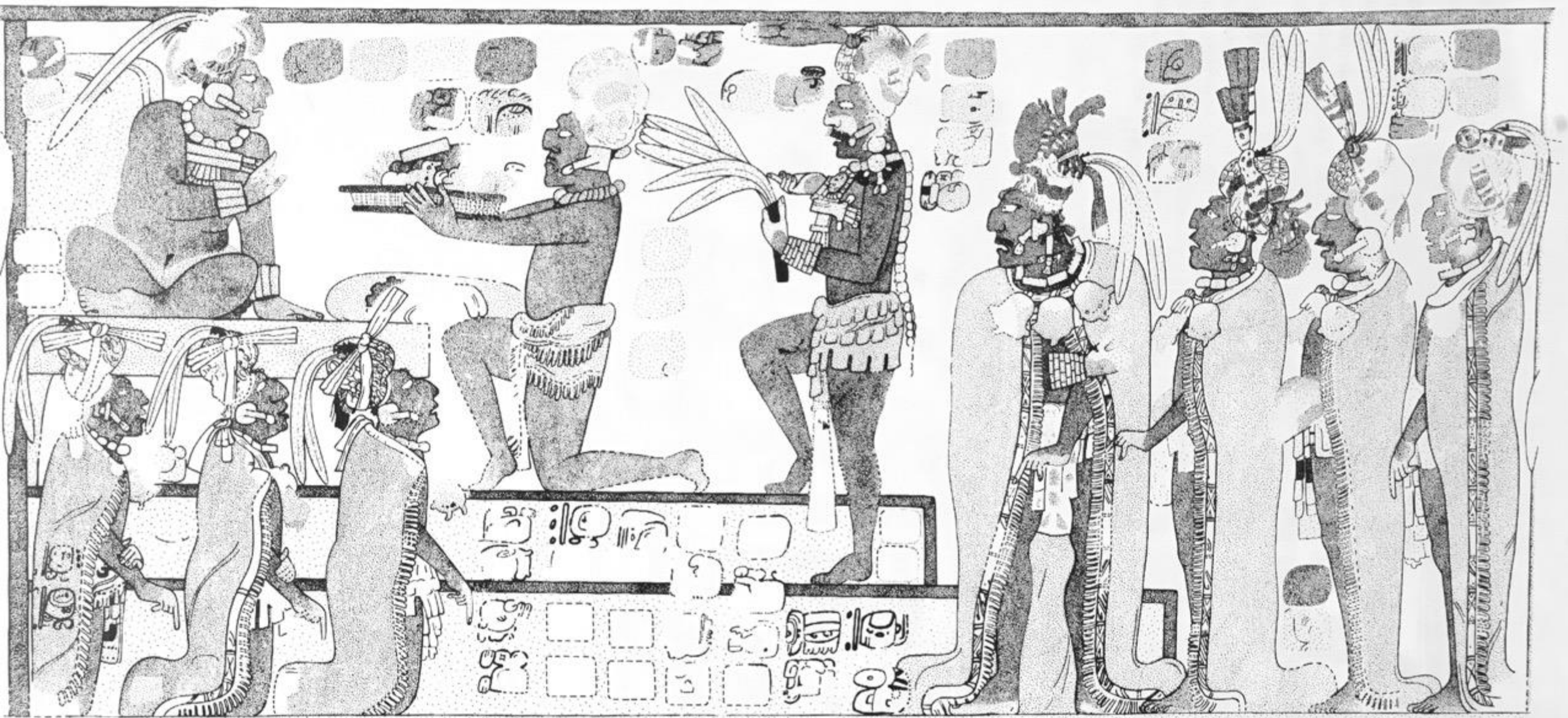


Fig. 183. Expertly painted vase from Tikal Bu. 116 (Culbert 1993: Fig. 68,a). The Penn Museum Tikal Project illustrator who draw this was as capable as the original Maya painter(s) of the Late Classic. Although there is no PSS there are plenty of Maya hieroglyphs. None are pseudo-glyphs. Same in Tikal Bu. 196—several vases had traditional Maya hieroglyphs but a dozen had atypical and/or pseudo-glyphs. This is called the “Bonampak Vase” because the outfits worn here are very common in the Bonampak murals. Did elite Bonampak lords come from Bonampak to provide a tray of gifts for Ruler A of Tikal?



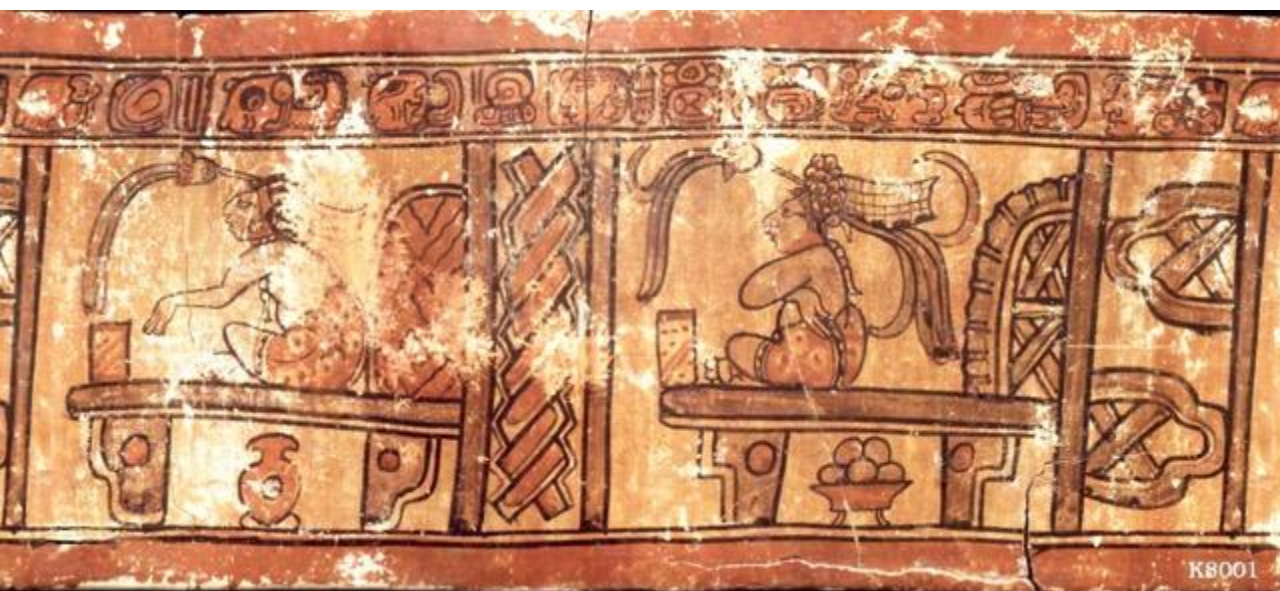


Fig. 184, a, b and c. Kerr 8003 and K8002 have the same vertical divider panel and the same supports on the feline pelage throne.

K8003 vase scene was not painted by an expert but was painted by someone who tried hard.

The other two scenes were painted by knowledgeable painters but the person to the left of the throne is missing in all three scenes.

I would not automatically call the text on K8001 or K8002 pseudo-glyphs—they were painted not by a master scribe but by someone who understood at least the basics of Maya hieroglyphic writing. K8003 is not well preserved and the glyphs are small—because I estimate that this is a real text and the scribe needed to say a long message.

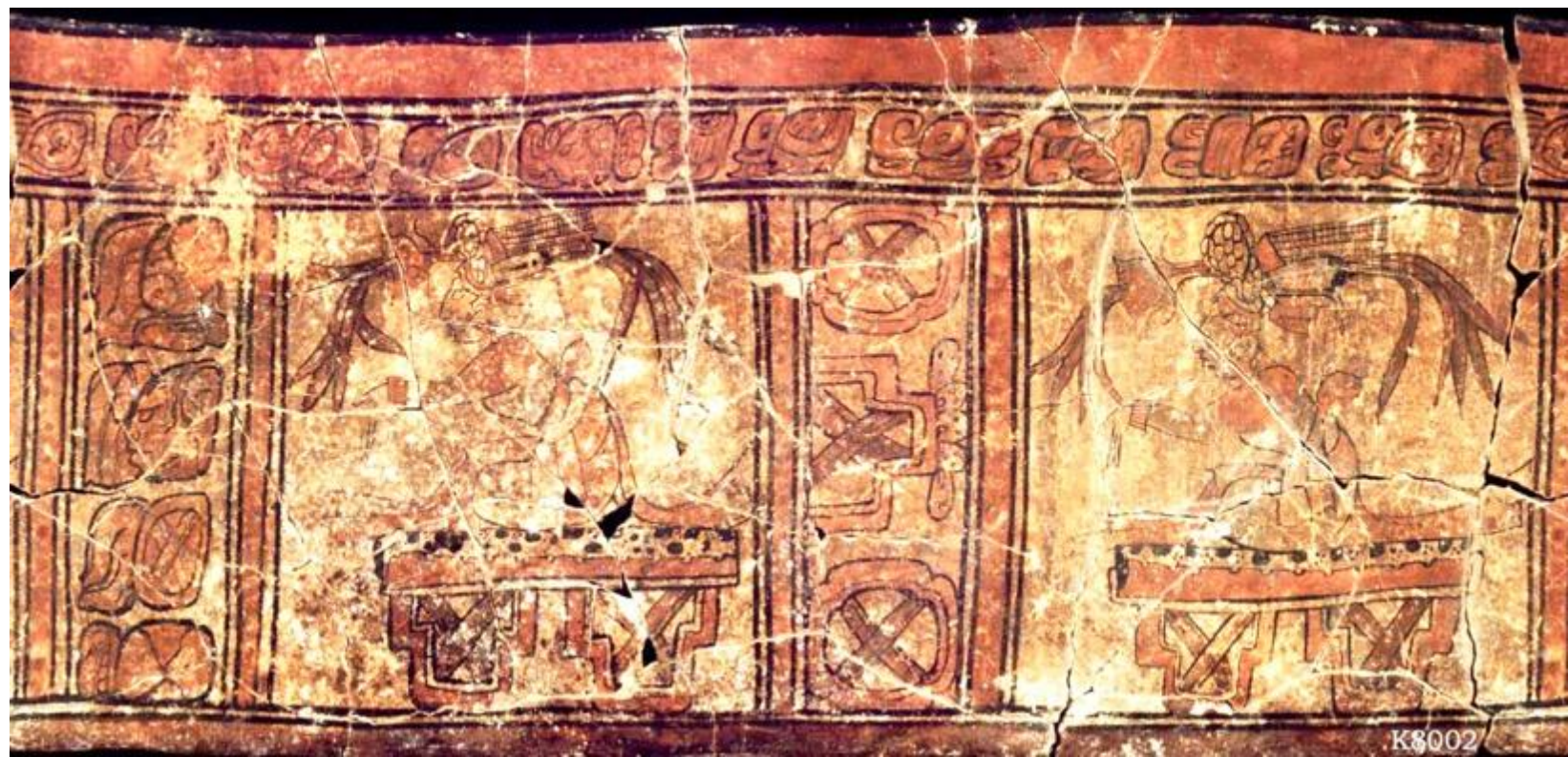






Fig. 185.

A youthful God N has enthroned (probable) God D wanting to speak to him. Rudimentary but not crude or sloppy. But the glyphs are repeated, very simplified, and would be called pseudo-glyphs. Kerr rollout from Tikal Burial 116 under Temple I

K8004



Ceramic vessels of Tikal Bu. 116 are covered by Coggins starting on page 491 of Volume 2 of her 1975 PhD dissertation: “The polychrome cylinders were probably gifts from other rulers” (page 492). The polychrome vessels are described starting on her page 498. The series of ten simplified throne scenes begins on page 513, after a discussion of the Bonampak Vase.

Coggins concludes that the 10 vases were painted by nine different hands (p. 513). She estimates that these were all made locally at Tikal—so not imported as gifts from other Maya sites. Page 515 has her suggestions that how and who prepared the scenes. She said that the two vases in her Fig. 122 (a and b) were both painted by the same hand. Neither had pseudo-glyphs.

Coggins initiates her discussion of Tikal Bu. 196 on her page 552 of her Volume 2. Curiously my thesis explanation of each vase being a copy of the previous one is not featured in her discussion. That is one reason why I repeat my earlier assessments in the present year 2025 discussion of pseudo-glyphs (a term not used in the 1960’s).

Independently I concluded that the occupant of Bu. 196 was a son of Ruler A of Bu. 116. Whether Coggins came to that conclusion independently or from my Harvard undergraduate honor’s thesis is unclear (1975: Volume 2, 554).





Fig. 186, a. Digital rollout circa 2000-2010 by Nicholas Hellmuth.



Fig. 186, b.



Fig. 186, c. Tikal Bu. 196, photos by Nicholas Hellmuth, circa 1967, scanned from 35mm slide.





Fig. 187. This scribe was clearly gouging and incising a message. I would not dismiss these as pseudo-glyphs. If they can't be read it's because studies are based on glyphs on stone stelae, panels, lintels or painted texts on pottery—simplified incised hieroglyphs need to be studied in-depth. The God K portraits were potentially by two different artists. Digital rollout circa 2000-2010 by Nicholas Hellmuth.





Fig. 188, a and b. Would help if the The Maya Polychrome Ceramics Project of Ron Bishop, Dorie Reents-Budet and their colleagues could find all these Tepeu 2 gouged-incised vases and tabulate which are from Tikal and which are from other sites. These two rollouts from a quarter century ago show vases similar to the one gouged-incised vase of Tikal Bu. 116 and the 13 comparable vases of Tikal Bu. 196. The Justin Kerr archive has several more. The two rollouts here are digital rollouts by Nicholas Hellmuth.

The questions include, how many of these come from the same atelier and at what site? And which ones come from elsewhere in Peten but not from Tikal? Another question is about the ceramic material itself: Culbert calls the 13 vases from Bu. 196 “Stuccoed over Kanalcán Gouged-incised” (1993. caption of Fig. 86). Culbert says “The incised decoration varies greatly from one vessel to another in both technique and style, a matter that Coggins (1975:562-566) discusses in detail. The vessels bear a close similarity to a cylinder included in Bu. 116 (Fig. 68b).” But the caption there says “Stuccoed over Zaccé Black” so the two sets of gouged incised vases are not given the same type-variety name. True, they are not identical, but all 14 from Tikal and all unprovenanced examples have two panels each with the head of a deity in each panel. Each vase repeats the head in each of its panels.

The two vases pictured above are professionally created—neither is a copy by a non-artist to be buried quickly in the tomb of a respected individual.



Fig. 189, a. Codex Style bowl or low vase, digital rollout by Nicholas Hellmuth. These are painted by someone who knew Maya hieroglyphs but was a sloppy painter or a youth or grandparent. This is a very important text for linguists, epigraphers and iconographers—which is why I rolled it out decades ago. The question is, are these pseudo-glyphs are simply sloppy glyphs?



Fig. 189, b. Codex Style plate, has one of the most beautiful PSSequences. If this is original and not repainted it is one of the best painted text that is available to study. Would help greatly to have each glyph photographed at 1:1 macro close-up and then made into a rollout (the plate in this photo is at an angle, the rollout needs to be parallel to each glyph).





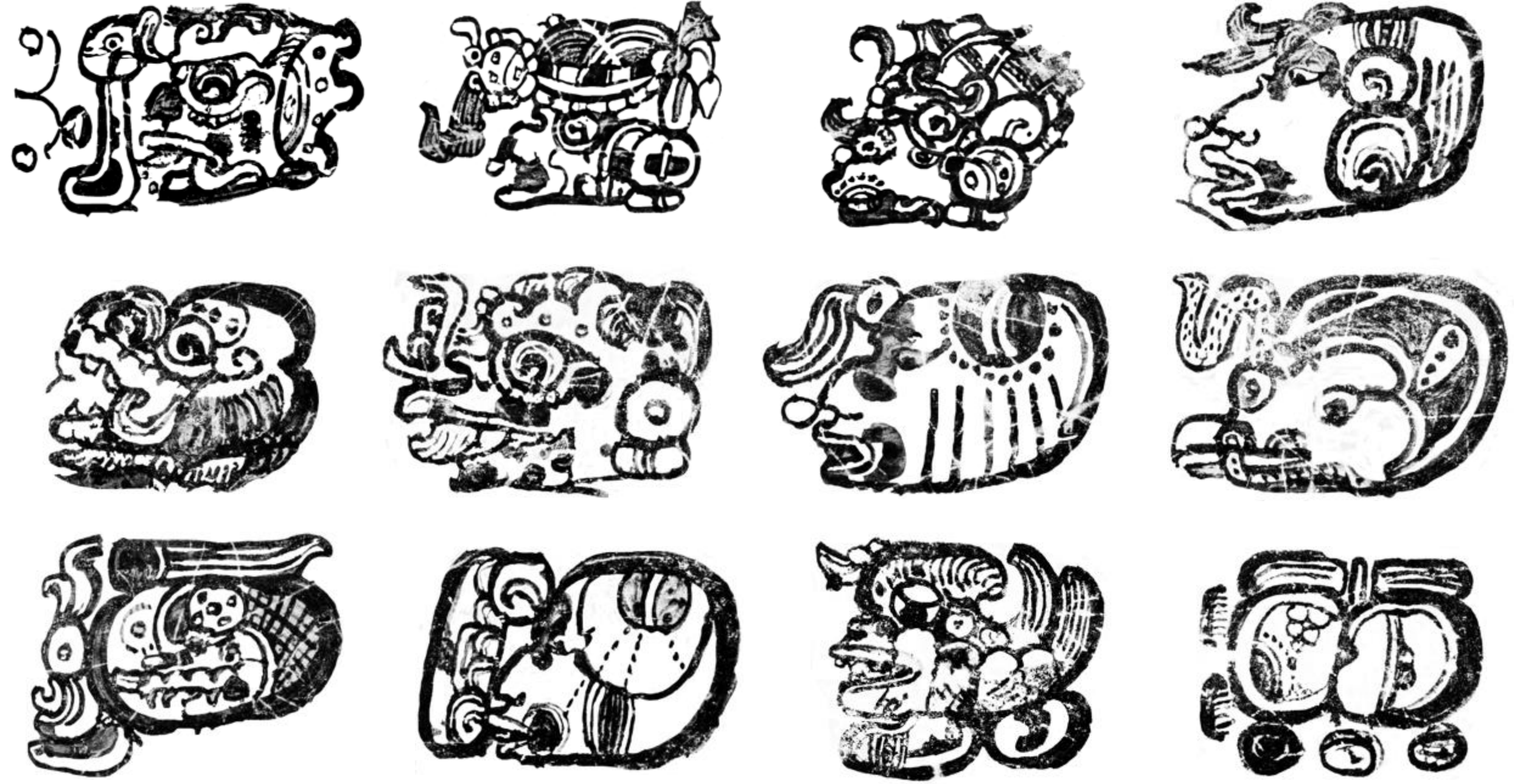


Fig. 190. So what do we call this remarkable PSSsequence? “Overly-detailed”? Is this more sophisticated than the text on the Codex Style plate? So just as we need to classify pseudo-glyphs, it might help to have a linguistic, epigraphic and iconographic classification of such atypical styles as this impressive PSS text. Photos by NMH, FLAAR, cropped and cleaned by Norma Cho, FLAAR Mesoamerica, cropped so that the vase scene and background color would not distract from the pure text.



Copador and other ceramics from the southern frontier of the Maya are often produced by bi-lingual people, so it is no surprise that their hieroglyphic texts on their ceramics vary from atypical to unexpected. But these are not from the Maya heartlands—my Maya pseudo-glyph research is focused on the purely Maya-speaking areas. Copan is an interesting case since it had pure-Maya (and also greatly Teotihuacan influenced) art but also was obviously influenced from further south, areas of languages not related to the Maya. But my focus for the presentation at MPV, UFM is on “Maya” pseudo-glyphs.

So hieroglyphic texts from Honduras and El Salvador need a special classification. My focus is on Classic Maya glyphs. Obviously lots of texts at Copan, Honduras, are Classic Maya but others are influenced from lower Central America.



## **Additional Research would help**

Study all the Chama examples to see if the pseudo-glyphs in that area share features with each other.

Study all the gouged-and-incised examples of pseudo-glyphs. See if there are workshops producing more than one example.

Find more examples like the one from Tikal Bu. 116 and the dozen or so from Tikal Bu. 196.

See if any other Maya burials had a sequence of copy-of-copy-of-copy of scenes on ceramics (polychrome or incised)

Re-study the Molded-Carved bowls and vases of Tepeu 3 to learn which are Tepeu 3 versions of Sky Bands and which are Pseudo-glyphs. Also study whether any of the “pseudo-glyphs” elsewhere are potentially variants of symbols on Sky Bands.

And realize that the Tikal royal tombs are one documented example of the cause of pseudo-glyphs (produced by youths, grandparents, or other individuals not fully literate in either glyphs or portrayal of deities—but NOT the only scenario.

The Inga Calvin inventory (2009) is impressive. Need to check the museum in Uaxactun and the new museum and bodega of La Ruta Maya, and museum and bodega of Museo Popol Vuh, UFM to find additional examples.



**Rollout Cameras are essential  
for documenting  
all Maya hieroglyphs  
on vases, bowls, and plates**

DIGITAL rollout photos are obviously higher resolution than photos taken with film in the previous century. That said, transparency film can be scanned at high resolution and produce impressive digital file size—but the scans sent from New York to Dumbarton Oaks were low-resolution and often with a yellow tint.

FLAAR experimented with four different rollout cameras and was the beta-tester for the early generation of Dicomed-Better Light. The next generation of Better Light was significantly better for accomplishing rollouts based on all the input by Hellmuth.

Fig. 192. As you can see in this photo, the Better Light scan back is inserted in an incredible Made in Germany Linhof 4x5" camera.





Fig. 193. This is the Linhof 4x5" camera. In front is the Better Light turntable on a wooden tripod. The camera is on a Bogen metal tripod.

To accomplish a panorama you put the camera on a turntable. To accomplish a rollout the camera is stationary and the vase or bowl or plate is on the turntable.

Hellmuth has accomplished the only rollouts of the PSSequence dedicatory texts on the insides of plates. We will be publishing these examples later in 2025 or 2026.







Fig. 194, a, b and c. The tripod head (middle photo) is one of the strongest, sturdiest and best made tripod heads in the world.





Fig. 195, a and b. This is an example of the complete studio (at the right): Mac laptop computer, metal suitcase filled with the Better Light computing system and software, one tripod and tripod head for the 4x5" camera. Another tripod for the Better Light turntable to hold the vase. Lights from each side.

None of the size and shape of connecting cables of a late 1990's-early 2000's Better Light work with any computer today, nor does the software of a quarter-century ago function with OS of today's Mac computers. So we have not used any of this for over a decade. Camilo Luin and Jimmy Estrada each have year-2025 capability of doing rollouts of Maya vases with the own systems that they have developed. An engineer has kindly helped design and build a Nikon-based complete rollout camera system but we have not yet tested it.





Fig. 196. The rollout camera that Nicholas Hellmuth and FLAAR developed as beta tester was so precise and powerful that it could print a rollout of the Museo Popol Vuh "Castillo Bowl" 12 meters long (26 and a half feet) by 40 inches high. You can see the quality of Hellmuth digital rollouts especially on page 5 that shows 12 people of the FLAAR staff holding up the entire rollout.

You can see this incredible quality rollout being printed in a report by Hellmuth (2017).





## Appendix A

### Penn Museum, Tikal Project Drawings of the series of gouged-incised Vases of Tikal Burial 196, Tomb of the Jade Jaguar

I show these drawings as an appendix because the allowed slot is best filled with all the other illustrations, but for the published FLAAR Reports edition, best to show everything.

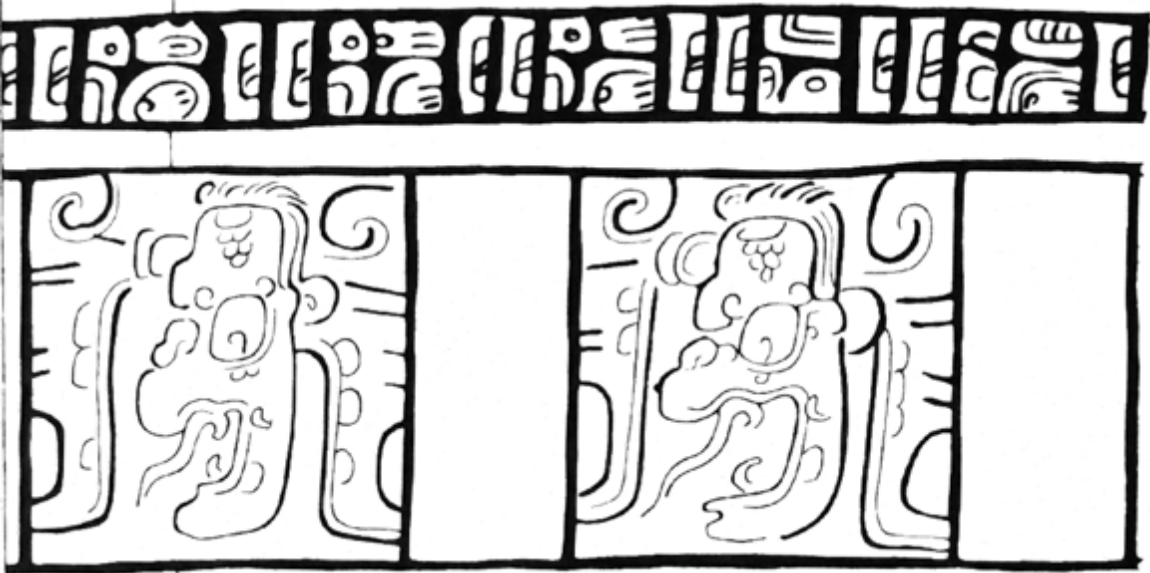


Fig. 197, a.

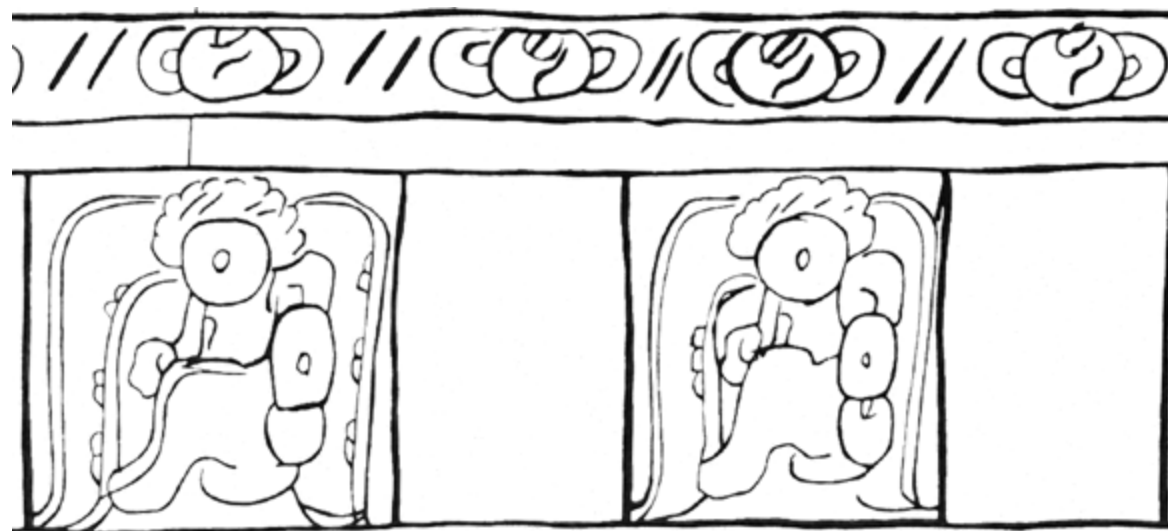


Fig. 197, b.



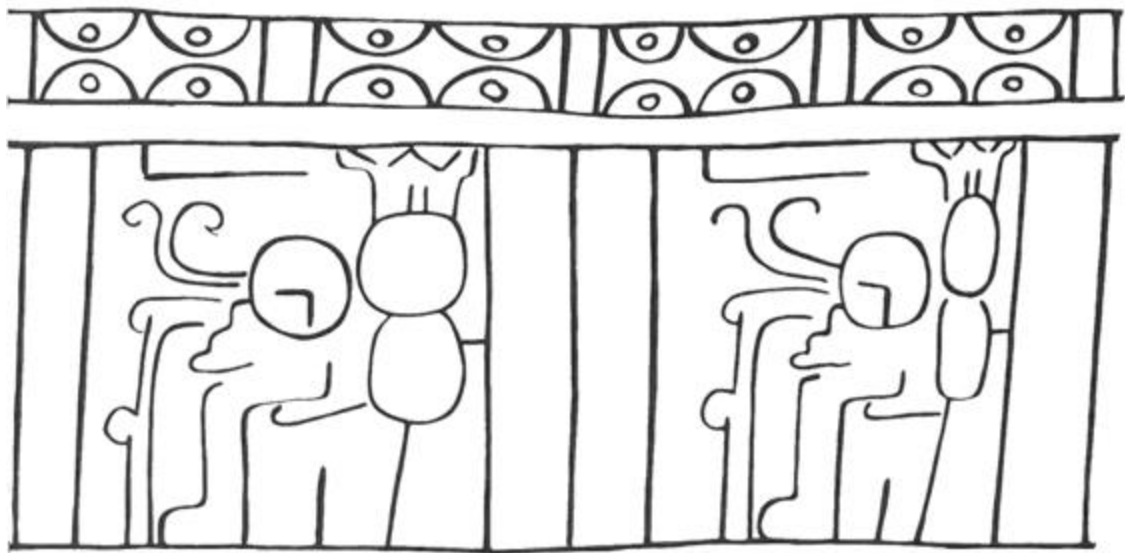


Fig. 198, a.

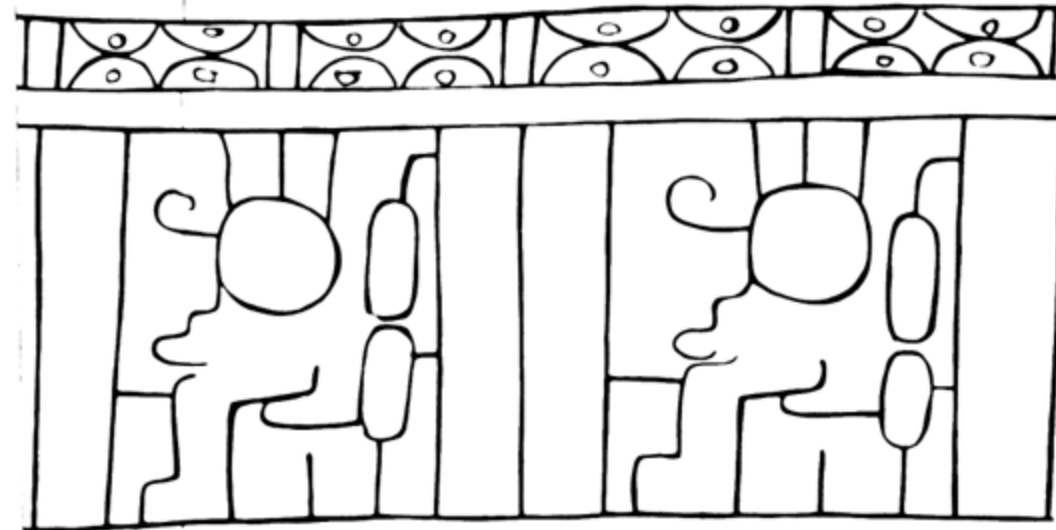


Fig. 198, b.

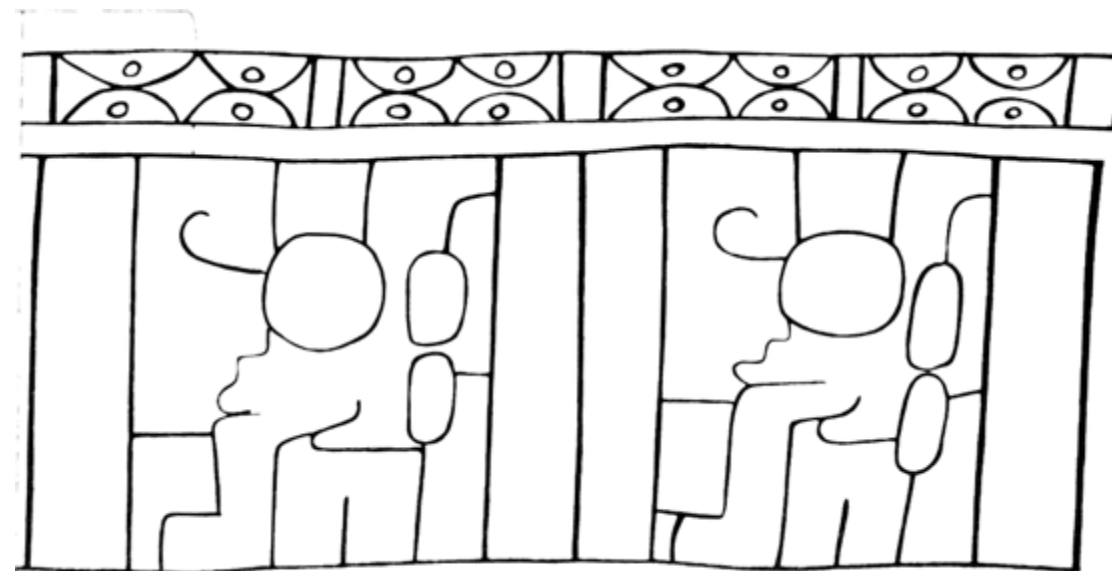


Fig. 198, c.



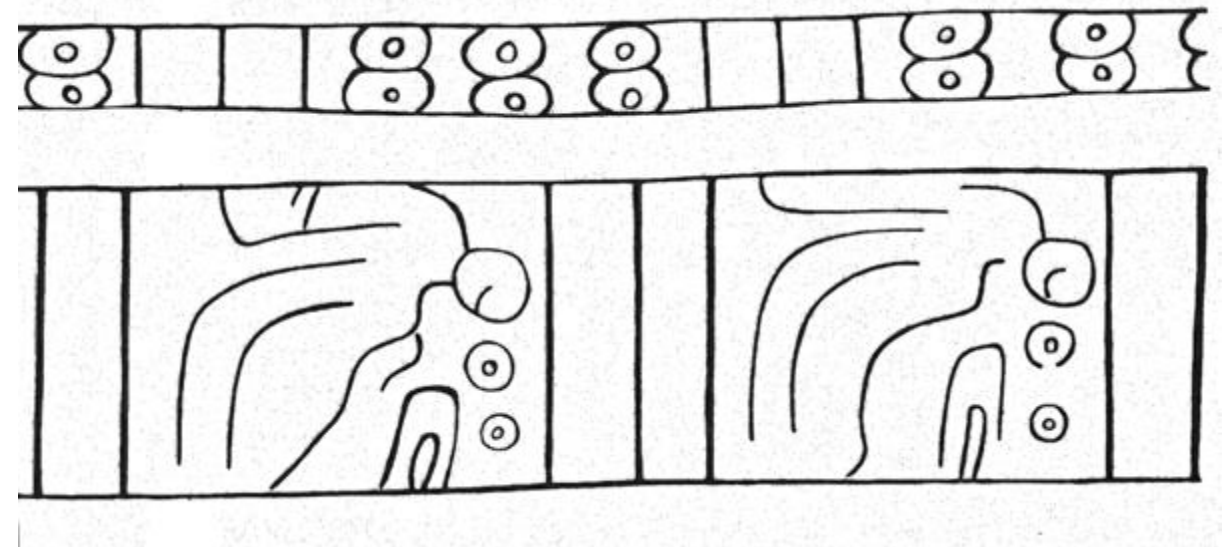
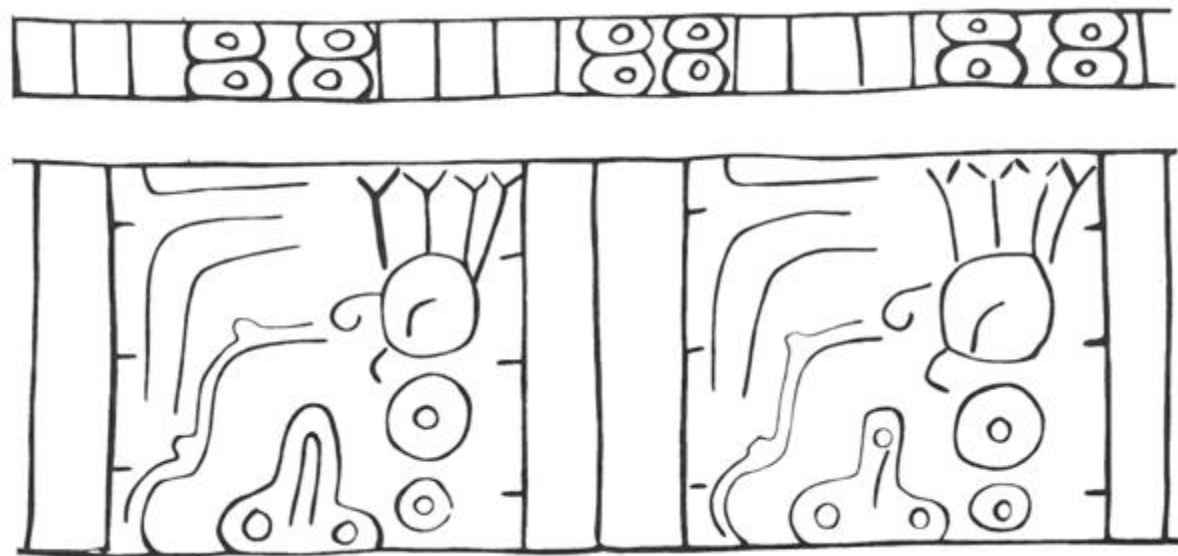
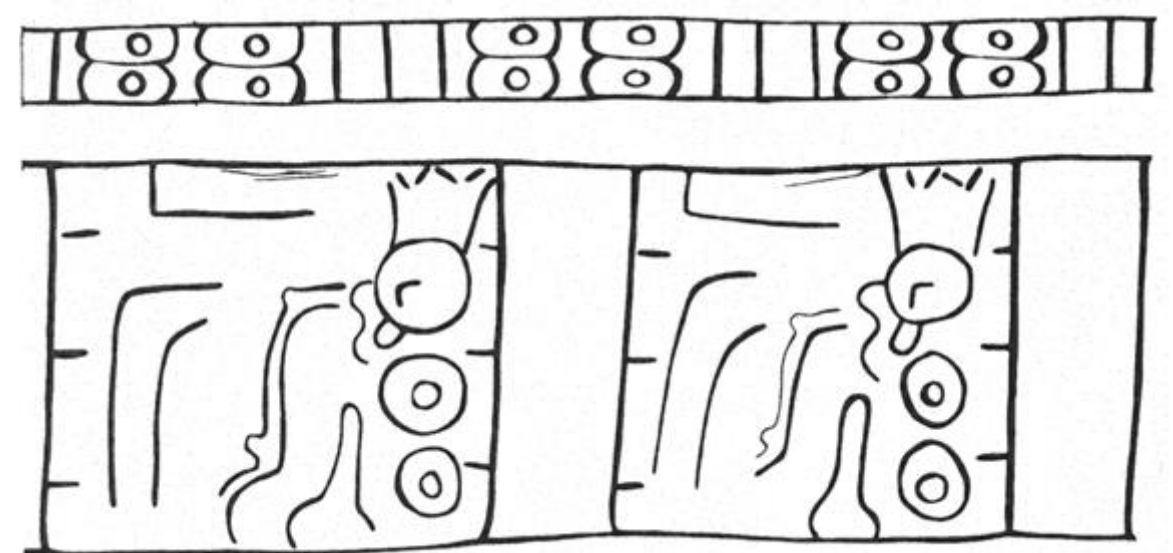
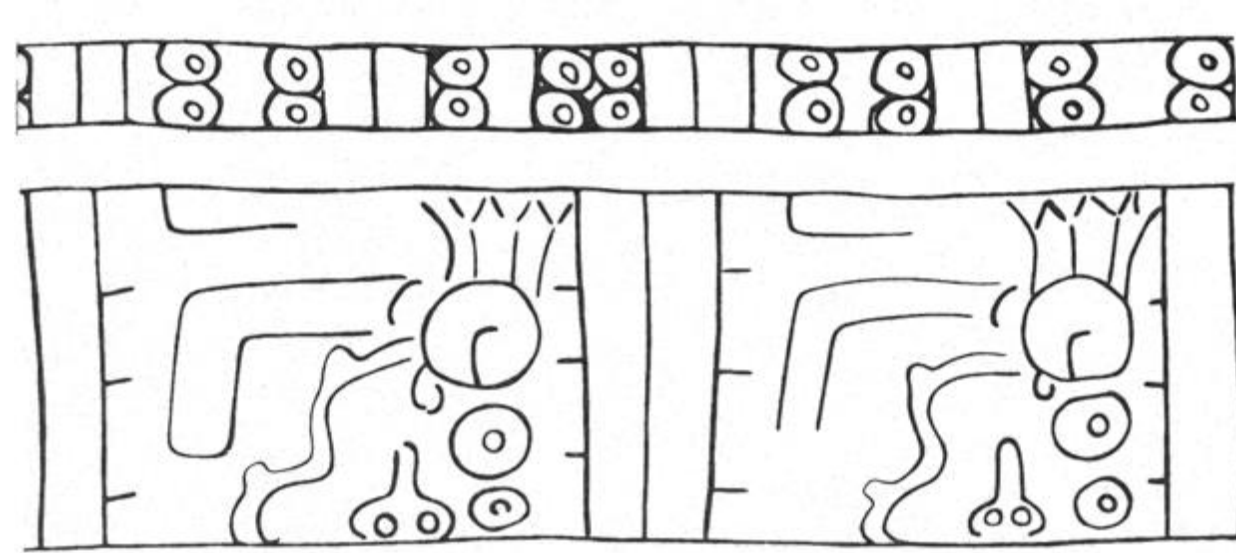


Fig. 199, a, b, c and d.



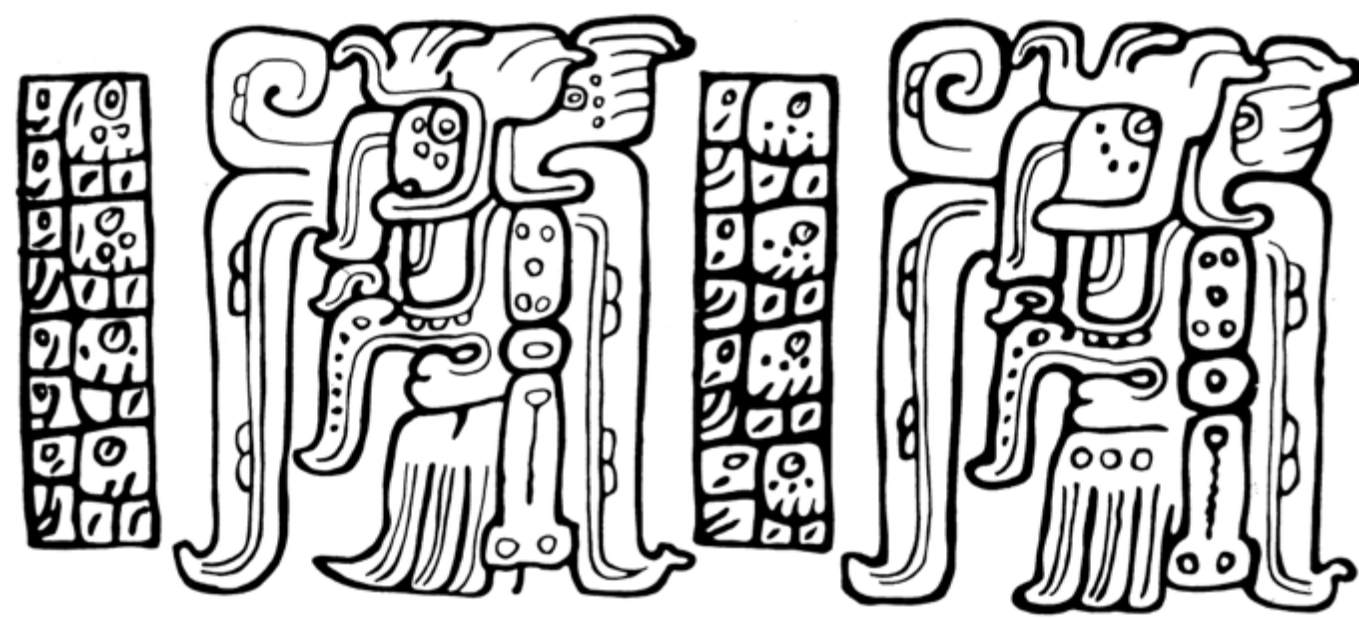


Fig. 200, a. Tikal Bu. 116 (Culbert 1993: Fig. 68, b).

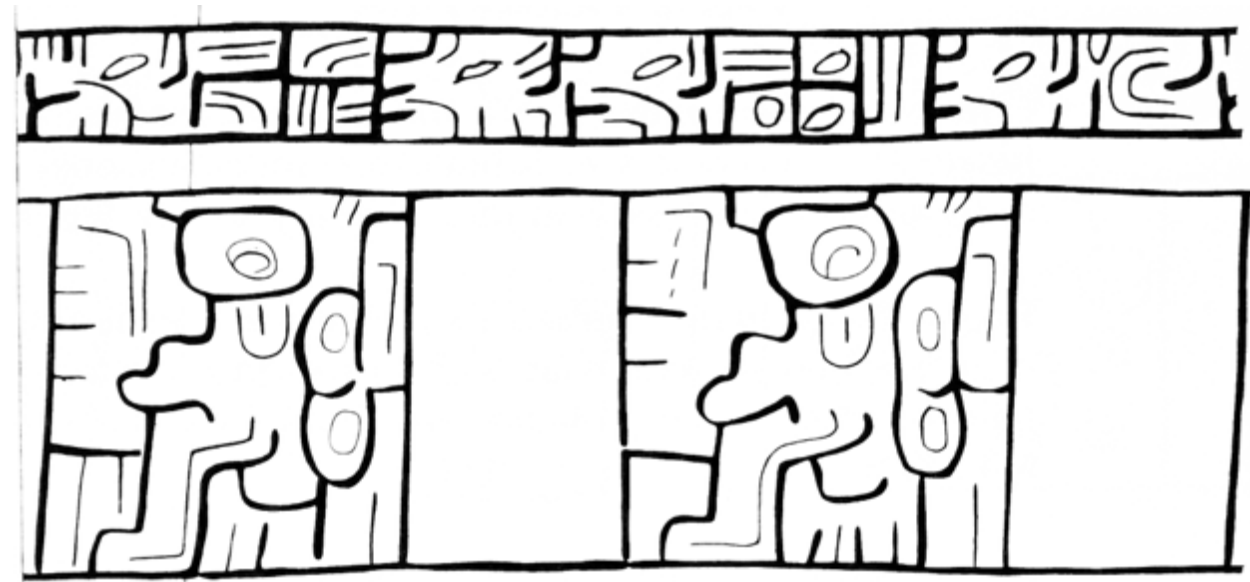
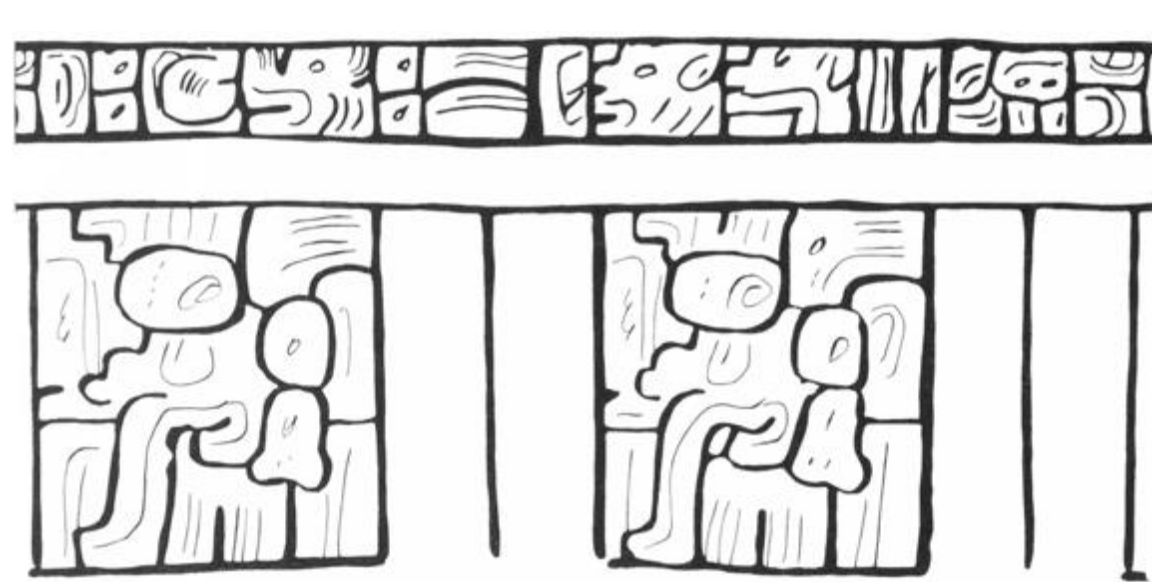


Fig. 200, b and c. These Tikal Bu. 116 vase scenes are a simplified version of the more complete portrait of this deity from nearby Bu. 116. The face at the left even has an upside down Ahau-like earring pendant. All three have their upper lip curling downward and then outward



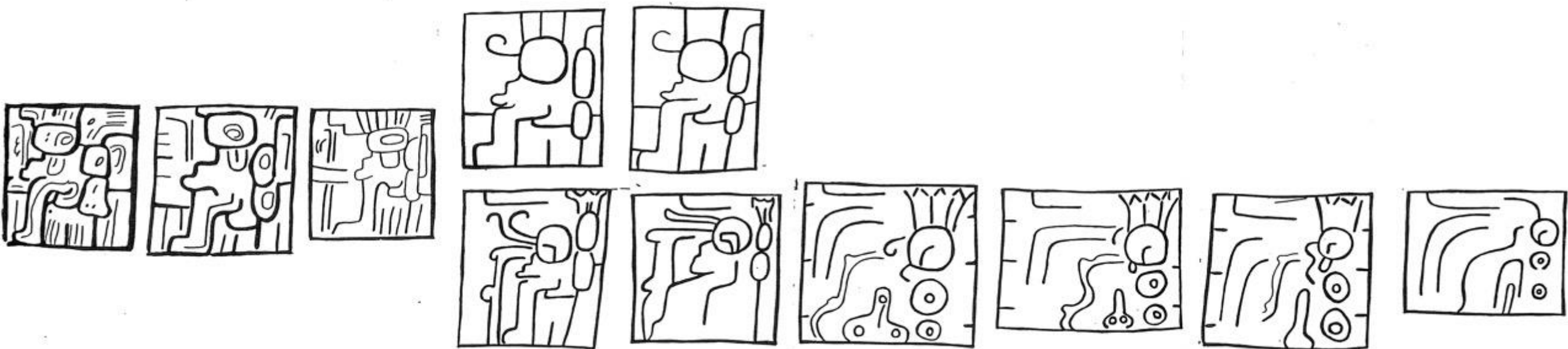


Fig. 201. Eleven of these vases were a series of copies, one after the other. Two others were separate, different, scenes.

This was already recognized by Hellmuth in 1965 and published in his 1967 thesis, volume 2, no pagination or figure numbers. I was focused more on iconography during the 1960's-1990's-2000's. My dedicate to learning about epigraphy began with research on the iconography of full-figure hieroglyphs several years ago with initial publications on full-figure glyphs of Copan (circa 2024 onward).



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FAMSI website is defective for about a month (since June 2025), so no Calvin PDFs on FAMSI website open as a PDF after they initiate downloading. There is no phone number or email on AA at LACMA to report this. I reported it to Press at LACMA—no surprise, no response. Would he helpful if the hundreds and hundreds of research reports from FAMSI are not lost. Fortunately the helpful PhD on pseudo-glyphs can be downloaded from <https://colorado.academia.edu/IngaCalvin>
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Shows a Hellmuth digital rollout of such high digital quality that it could be enlarged to print 12 METERS long (by 40 inches high, so about 1 meter high). This single digital rollout was 320 MB file size because the Castillo bowl is one of the widest (longest) polychrome Maya vase scenes in the world.

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We appreciate the space for research and for installing a digital rollout photo studio in the Museo Popol Vuh. We thank the Junta Directiva and the curators of the Museo Popol Vuh for hospitality and access for more than literally half a century (we were already studying in the museum when it opened in Zona 1, in the 1970's and then when the museum was on Avenida Reforma and then subsequent addresses. We thank the Universidad Francisco Marroquin for providing a position as Guest Visiting Professor in digital research, digital photography, and wide-format digital inkjet printing, plus providing office space for the entire FLAAR team for several years on their campus. We thank the curators over these decades and the curator today, epigrapher Camilo Luin.

We appreciate access to the collection of Fernando Paiz, Fundacion La Ruta Maya, and the hospitality by him and curator Sofia Parades. Their helpful collection has lots of pseudo-glyphs plus one of the most remarkably iconographically rich Red Band Tepeu 1 vases.

We thank Eduardo Sacayon for assisting during several years of digital rollout photography.

It was super helpful that Dicomed, the initial distributor for Better Light, provided a complete panorama/rollout system to Hellmuth, for him to be a beta tester—which means for using the software and hardware and reporting what works and what should be added to make it work even better. Then Michael Collette gave Hellmuth/FLAAR the newer improved model to both use and to report back on how it was functioning. Since this digital camera produced rollouts of 45 to over a hundred MEGabytes, we wanted to print the rollouts at enormous size, so Encad provided us a 36" printer. The printer results were so impressive (to see a single photograph several meters wide and one yard high) that HP asked us to test their printer, then Canon donated several printers as did other brands—so we could print our rollouts at enormous size. FLAAR had a digital imaging test lab at Universidad Francisco Marroquin and then at Bowling Green State University for several years. We printed our rollout of the Castillo Bowl of MPV UFM over 42 inches high by over a dozen meters long! At beautiful digital resolution. We phased out this digital imaging research division during COVID because there were no more technology expos and trade shows around the world plus in those same years so many national parks and areas in Guatemala were asking for us to have our team study the flora, fauna and biodiverse ecosystems of their parts of Guatemala. So we now focus primarily on studying plants, animals, and ecosystems utilized by the Classic Maya over a thousand years ago.

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