

# Ancient Geometry and Measure in Mesoamerica from the Middle East



By V. Garth Norman

[www.vgarthnorman.com](http://www.vgarthnorman.com)

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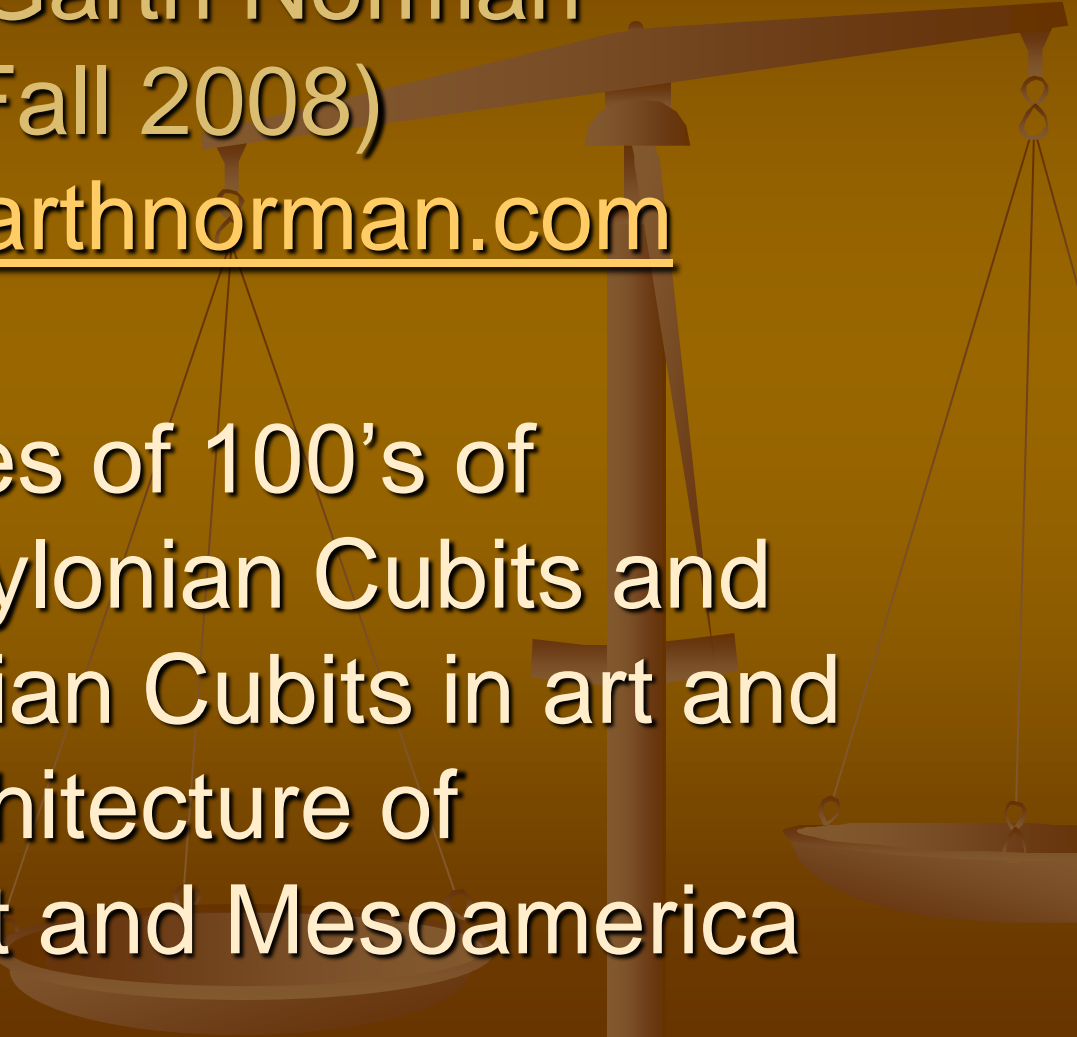
# *Ancient Geometry and Measures in the Old and New World*

by V. Garth Norman

(Fall 2008)

[www.vgarthnorman.com](http://www.vgarthnorman.com)

Tables of 100's of  
Royal Babylonian Cubits and  
Royal Egyptian Cubits in art and  
architecture of  
Middle East and Mesoamerica



# Mesoamerica—Mexico, Yucatan, Guatemala, El Salvador, Honduras





# Izapa, Mexico Temple Center

(Model constructed by Garth Norman for BYU Bean Museum)



# Izapa, Mexico Stela 5 “Tree of Life” Monument



Izapa S-5  
49.5 cm.  
Cubit  
Dimension  
from  
foot of  
large  
figure on  
the right of  
the tree

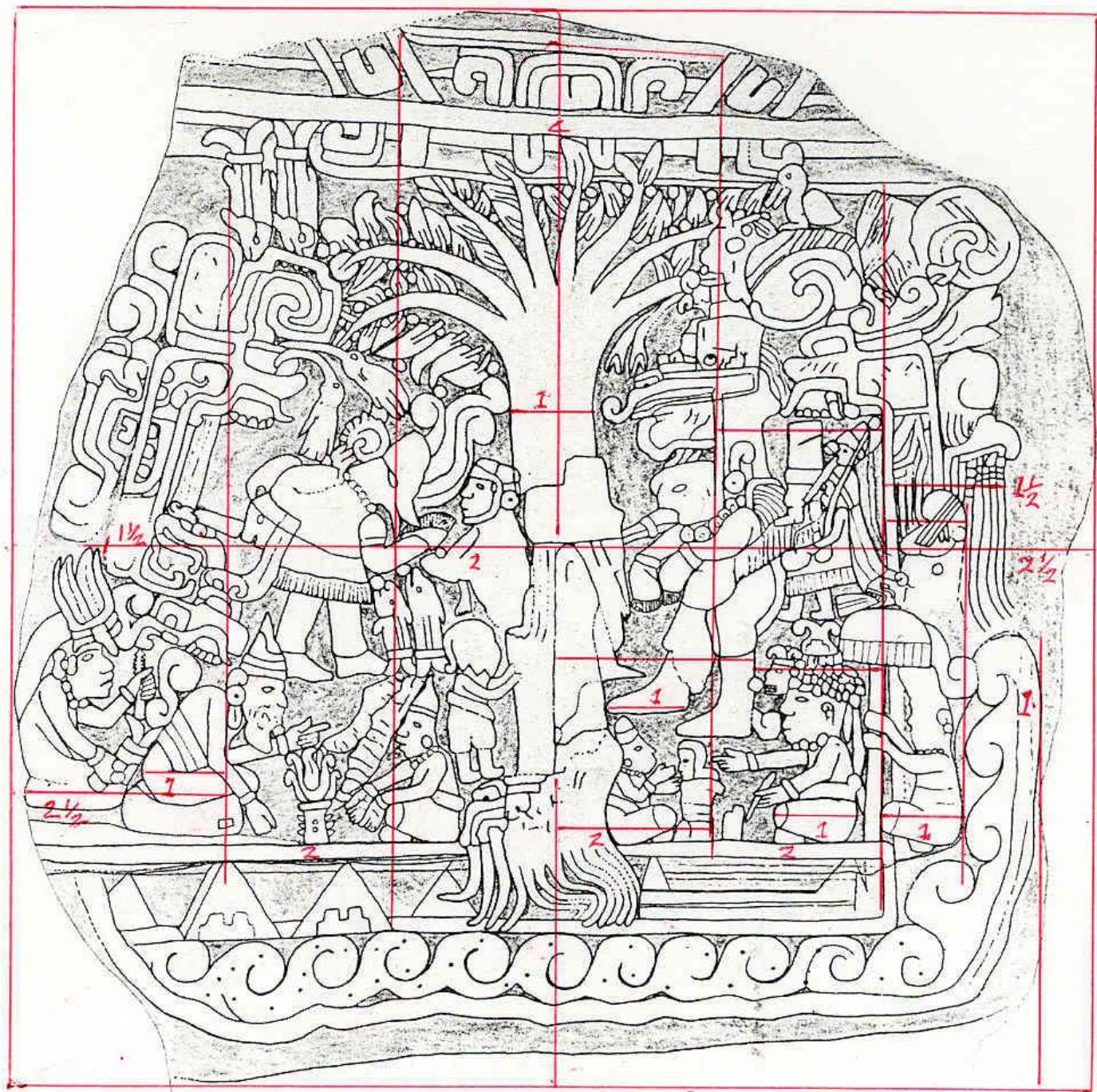


Figure 4.1. STELA 5 TRACING, IZAPA

# Izapa S5 Cubit Dimensions of Figures

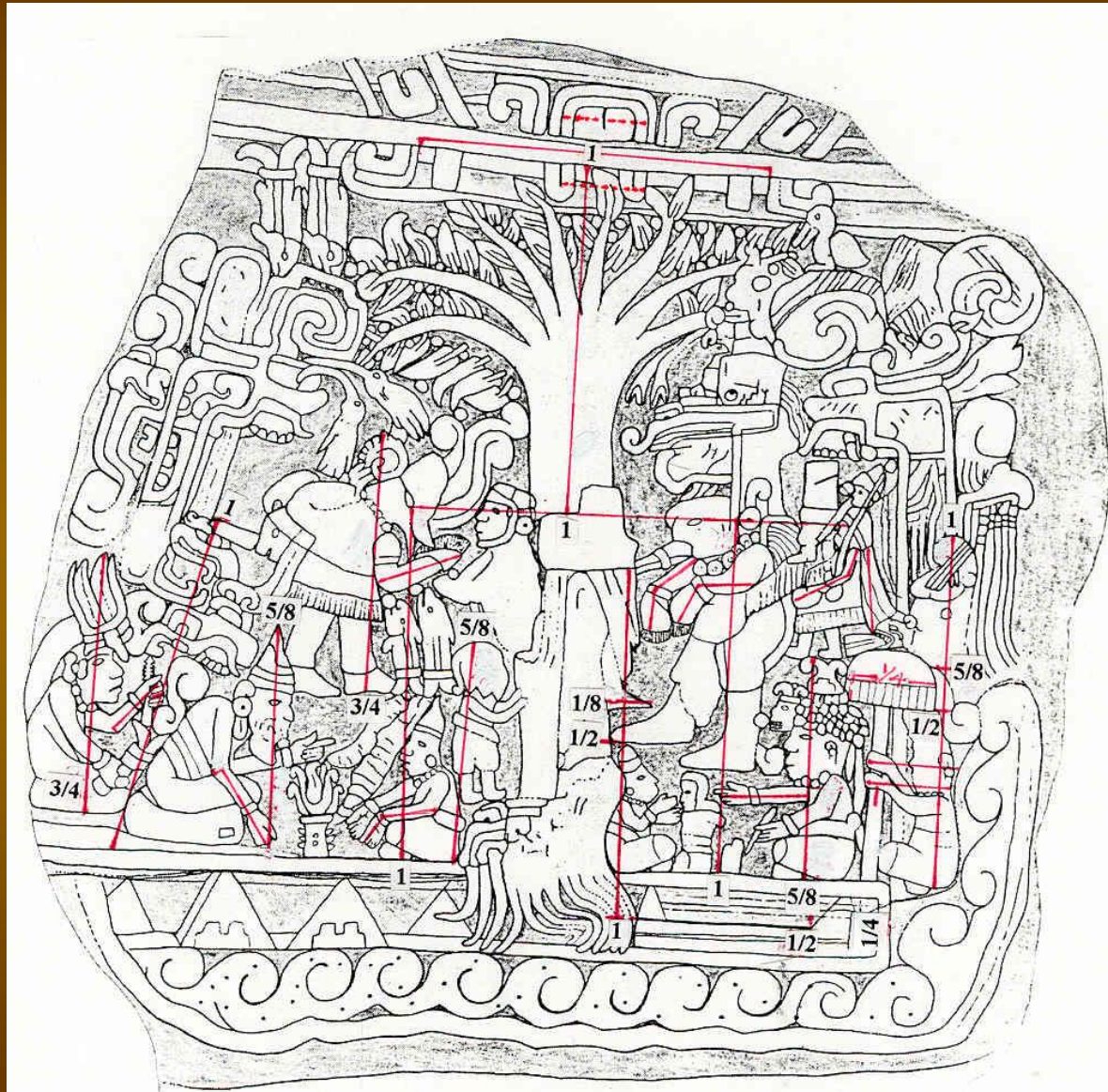
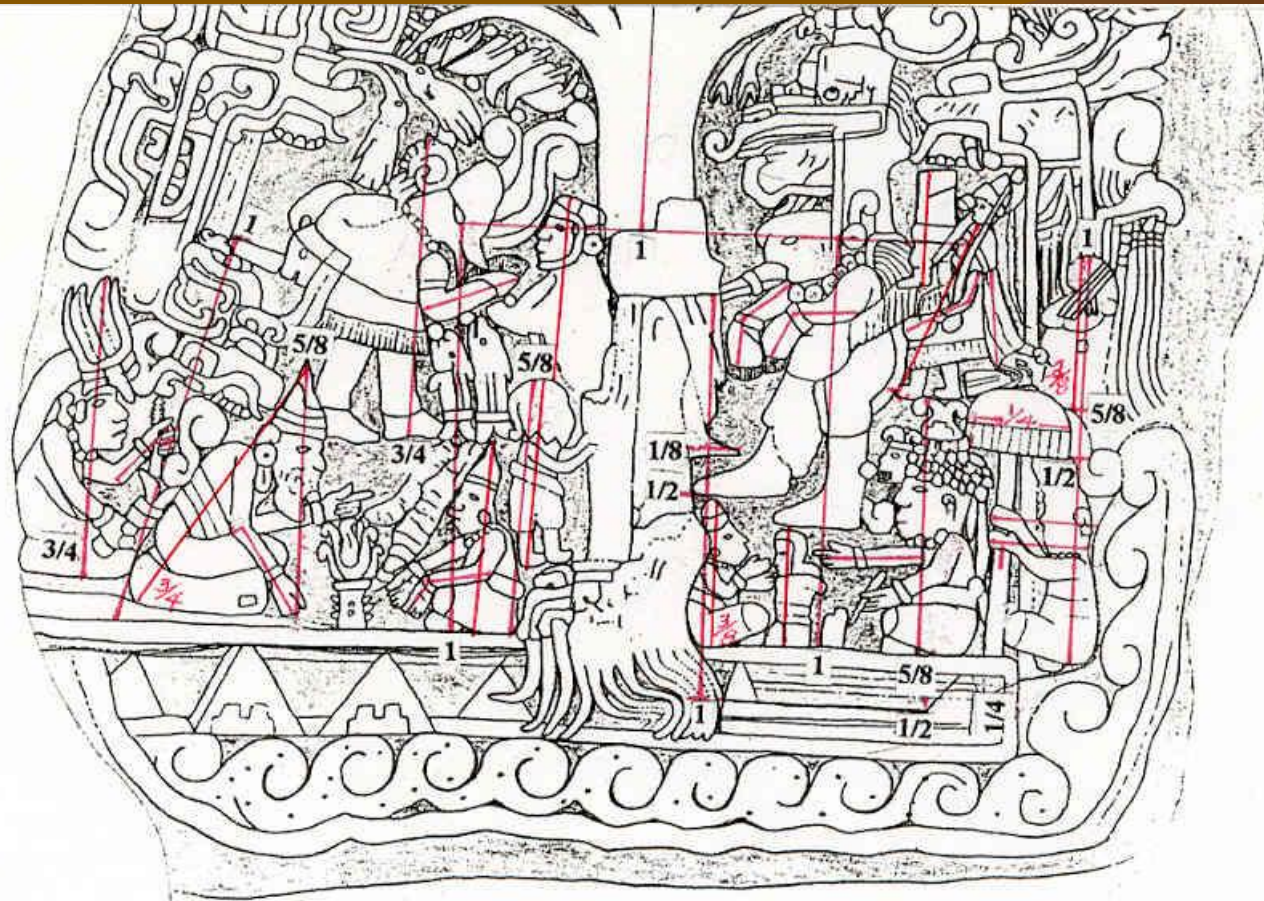


Figure 4.1. STELA 5 TRACING, IZAPA

# Izapa S-5 Figures based on 52.5 cm. Royal Egyptian cubit



# Mesoamerican Standard Measures

Left & Center:  
49.5 cm. Royal  
Babylonian cubit

Right: 52.5 cm  
Royal Egyptian cubit



Tres Zapotes,  
Veracruz,  
Mexico

(ca. 100 B.C.)

Mon. C

Person's Staff

= 1 RB long

Water Scrolls

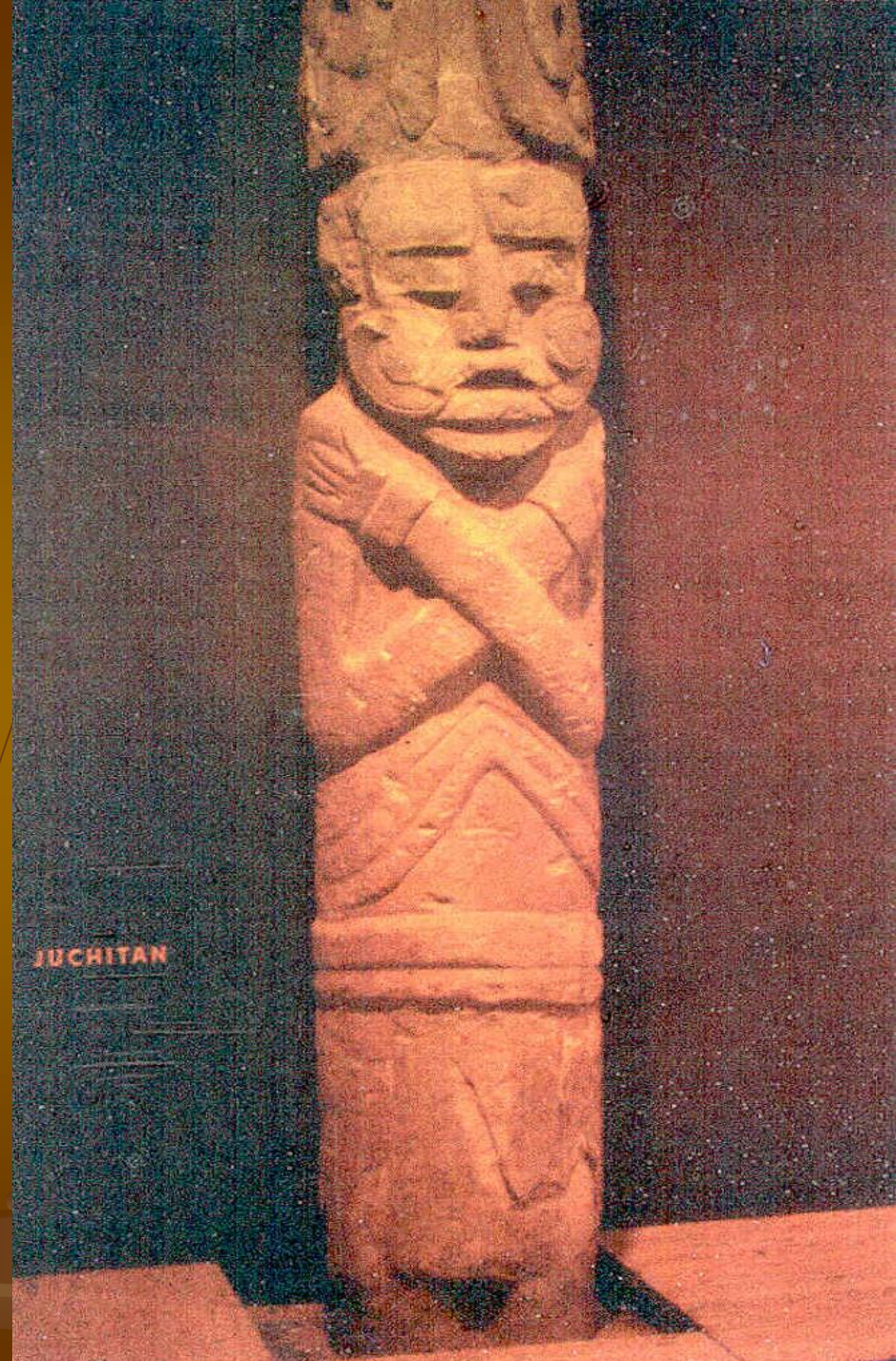
Diameter =  $\frac{1}{2}$  RB

Box width = 2 RB



Life size statue at  
Juchitan,  
Oaxaca, Mexico  
National Museum

Forearms =  
49.5 cm.  
Royal Babylonian  
Cubit



# Palenque life size stucco figure

Forearm = 49.5 cm. Babylonian Cubit



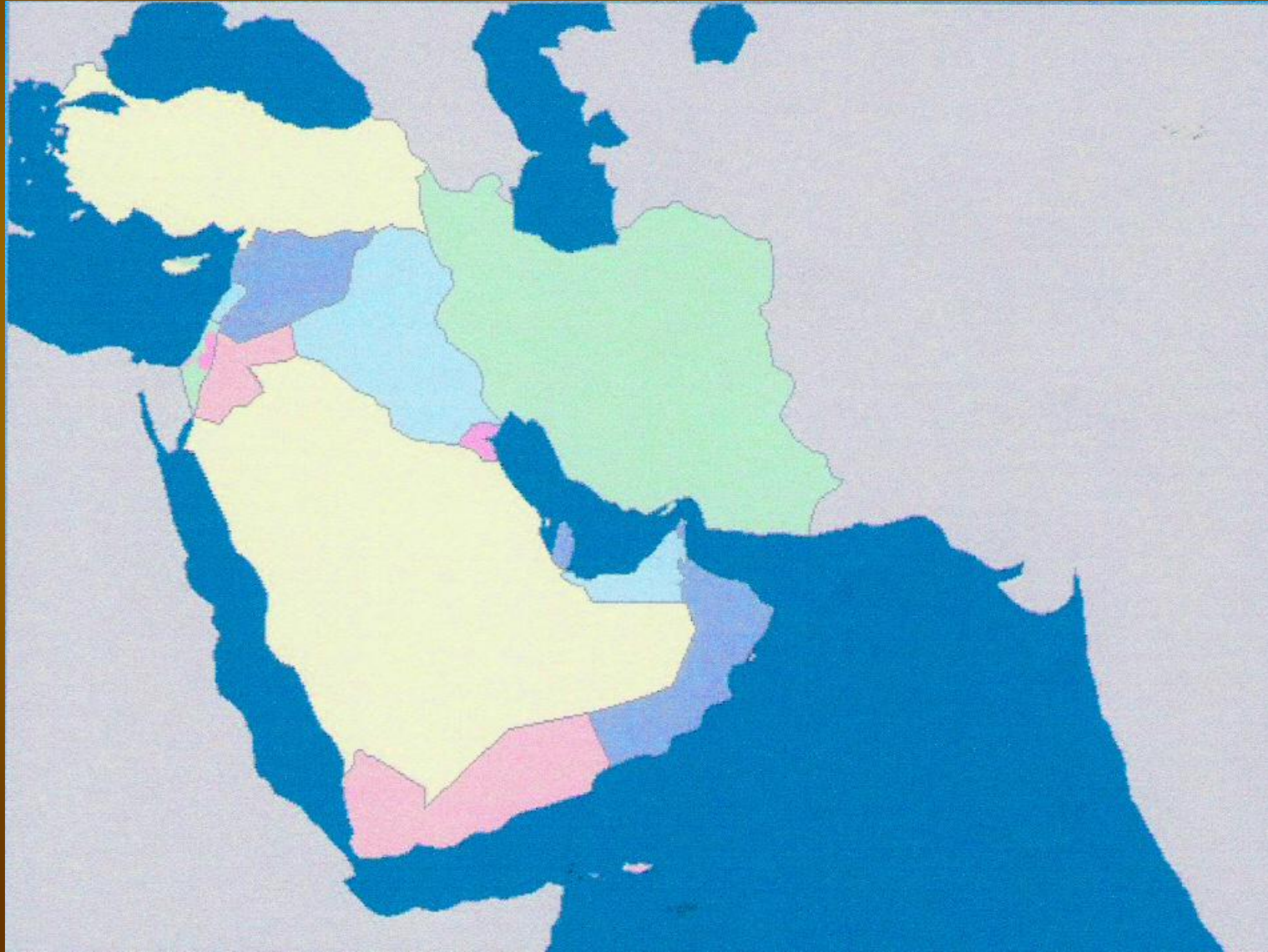
Same figure's foot =  $\frac{1}{2}$  cubit



Garth Norman  
measuring  
49.5 cm. Royal  
Babylonian  
Cubit on “T”  
window at  
Palenque



# Geometry & Measure in the Middle East

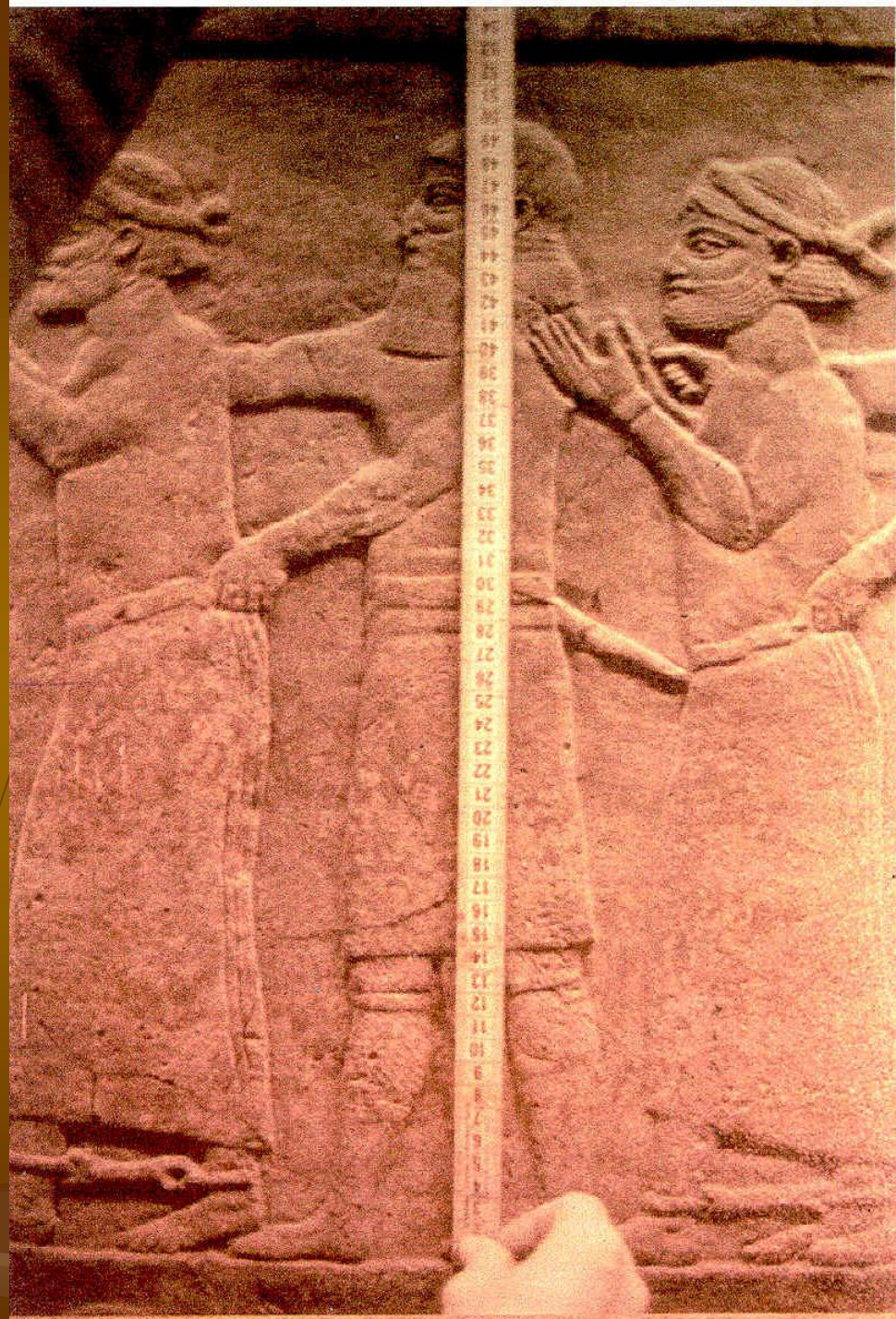


Babylonian  
King Gudea  
2050 B.C.

Right arm  
= Middle East  
Standard Measure  
49.5 cm.  
Royal Babylonian  
Cubit



Assyrian Noble  
(Holds a Captive)  
Height = 49.5 cm.  
Royal Babylonian  
Cubit

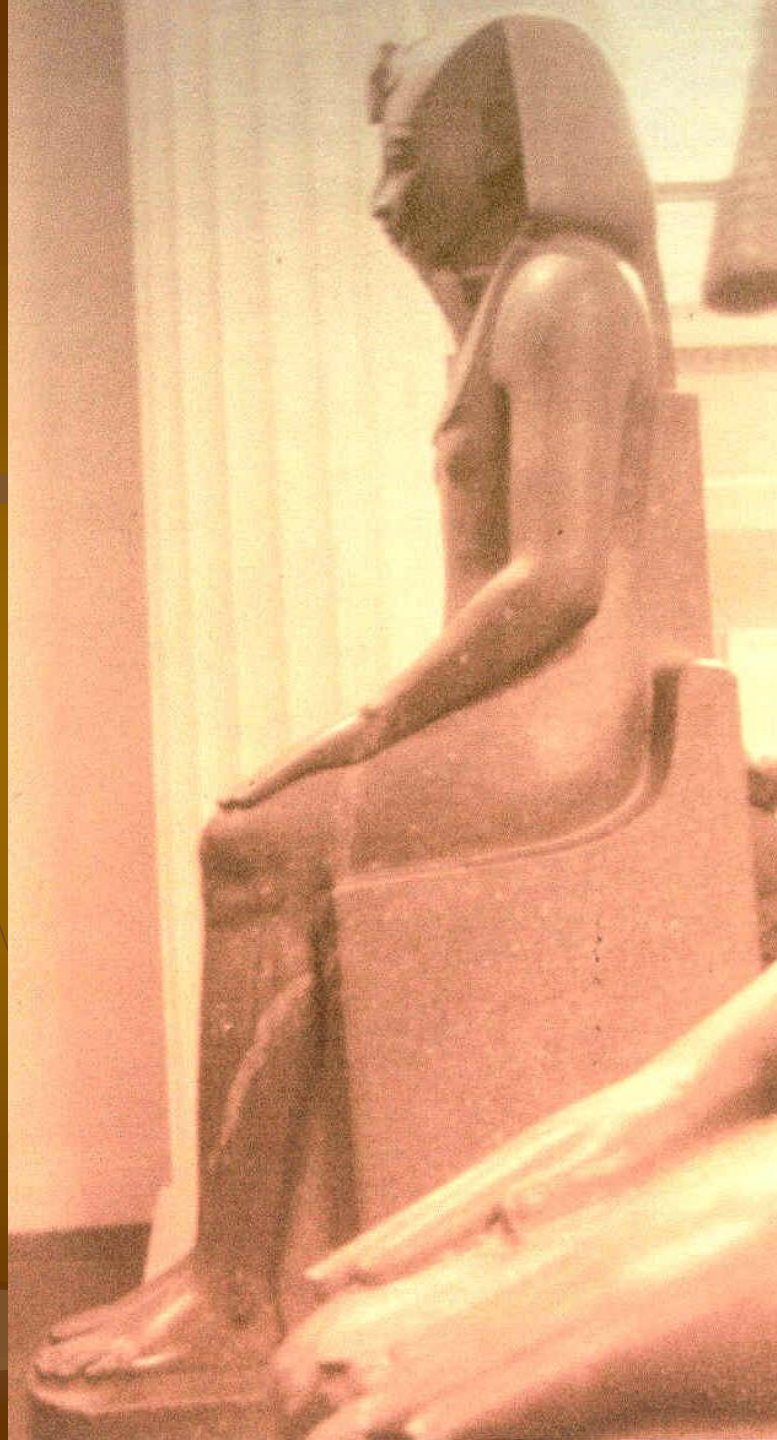


Captive's Foot =  $\frac{1}{8}$  52.5 cm. Egyptian Cubit

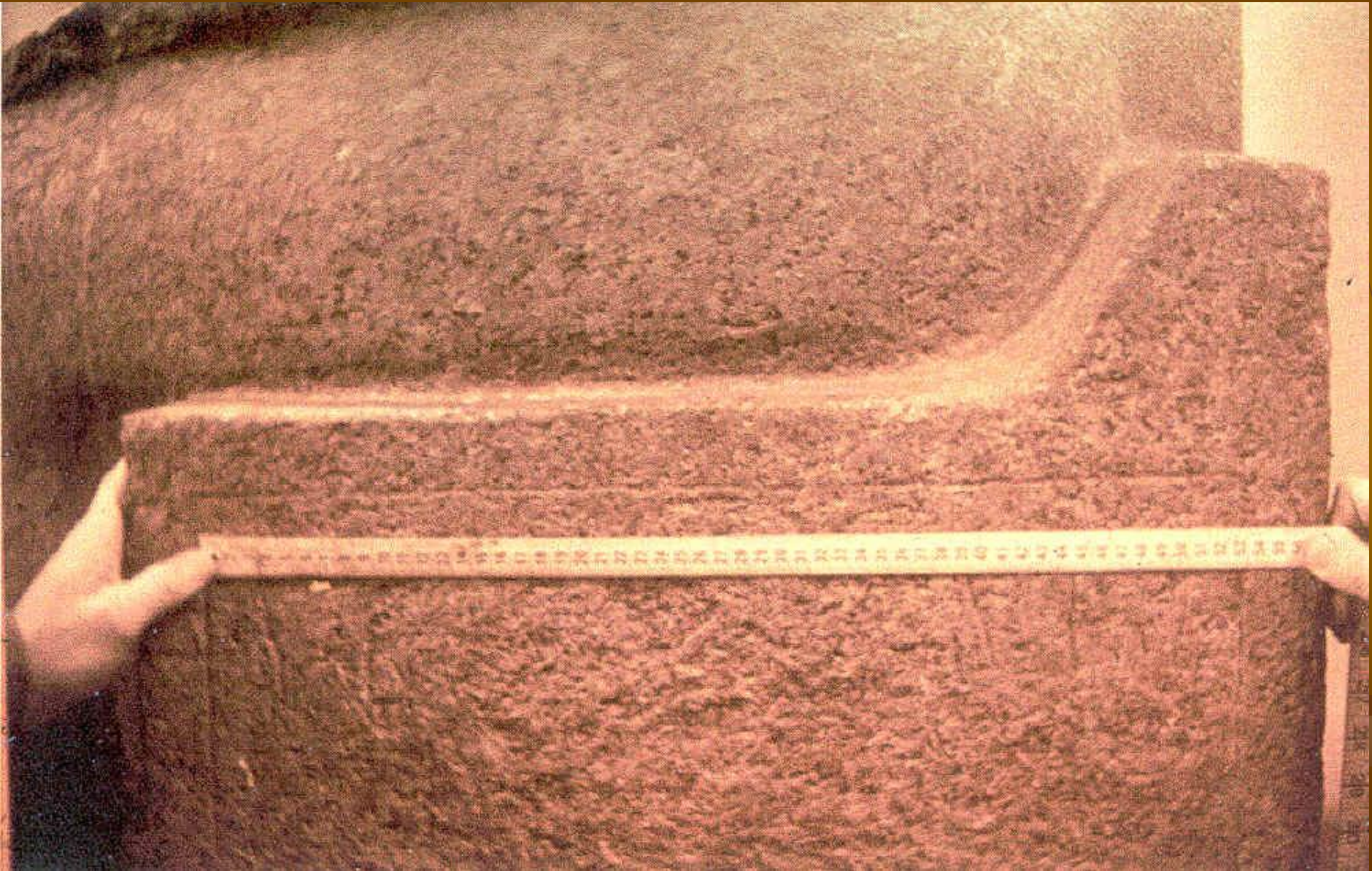




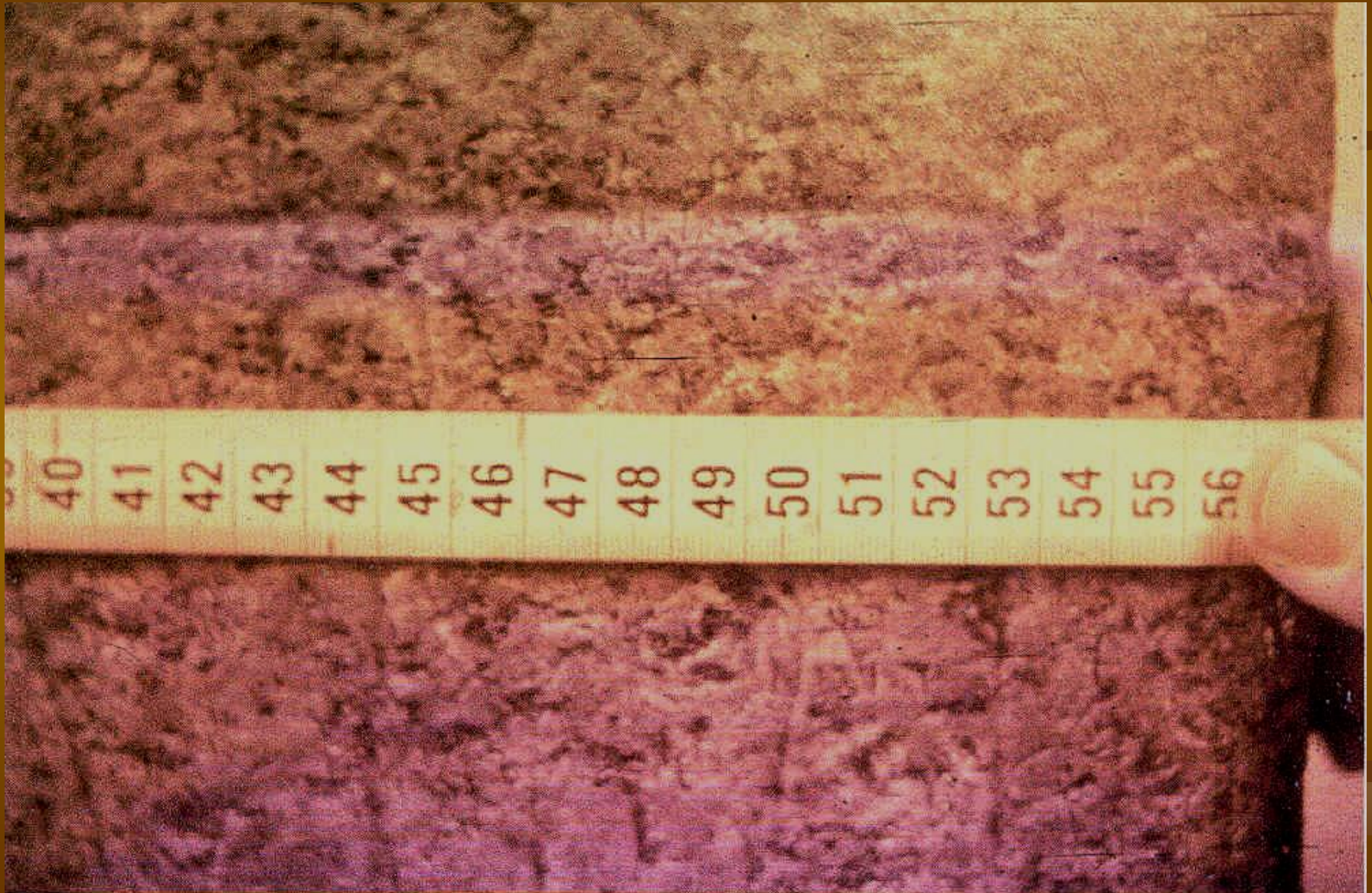
Egyptian  
Sculpture created  
with  
52.5 cm.  
Royal Egyptian  
Cubit



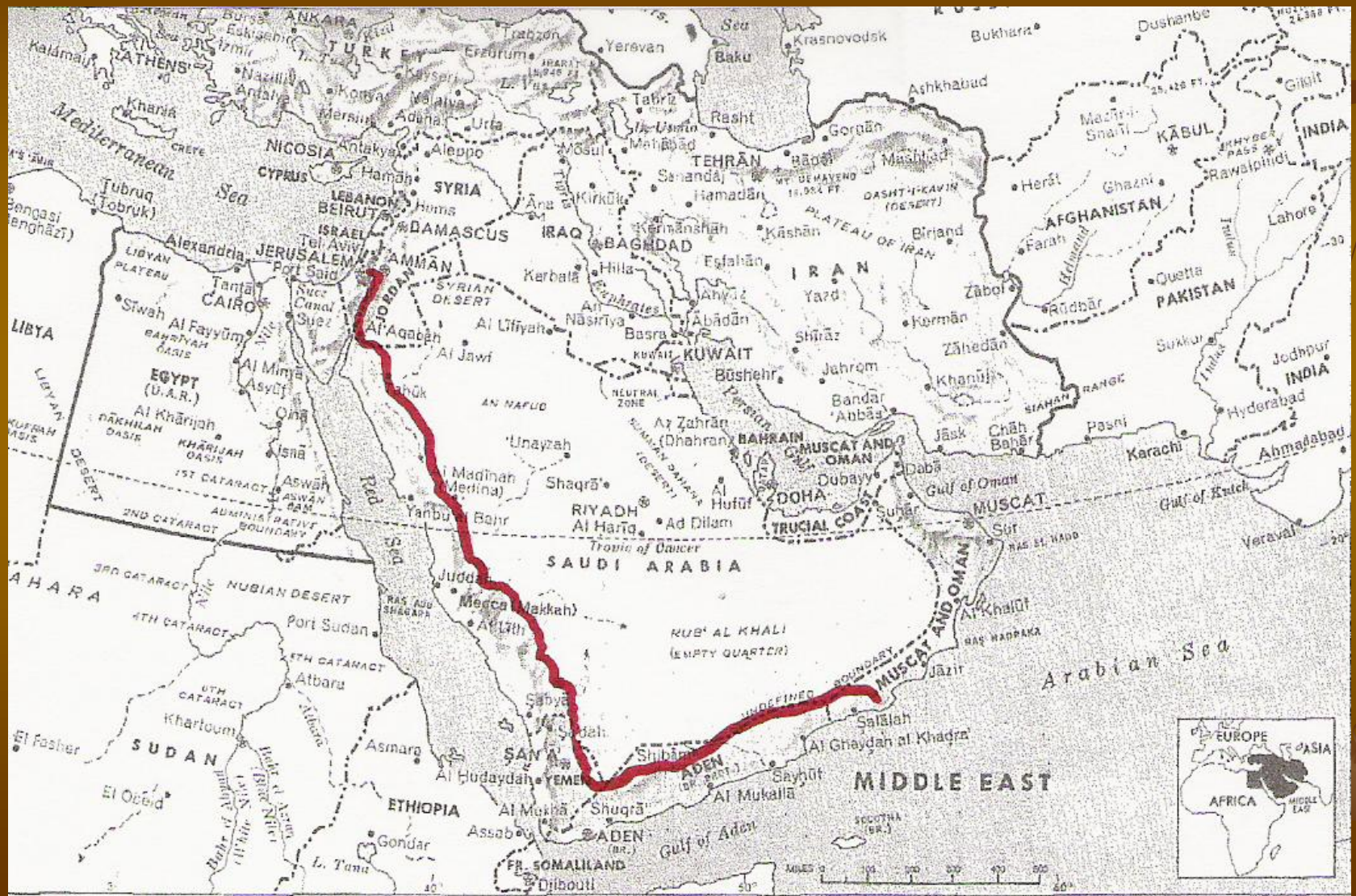
# 52.5 cm. Cubit Panel



# Close up 52.5 cm. Cubit



# Jerusalem southeast to Oman



# Ancient Fortress at Ship building inlet--Oman





# Oman Fortress: 1 $\frac{1}{4}$ Babylonian cubit



# 1.5 Royal Egyptian Cubit inside Oman Fortress

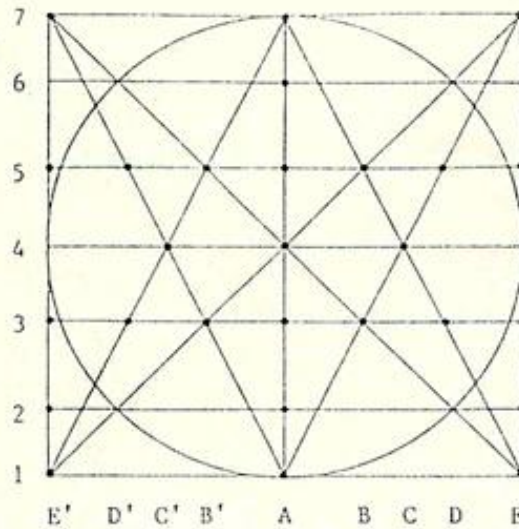


# Shrine Stone

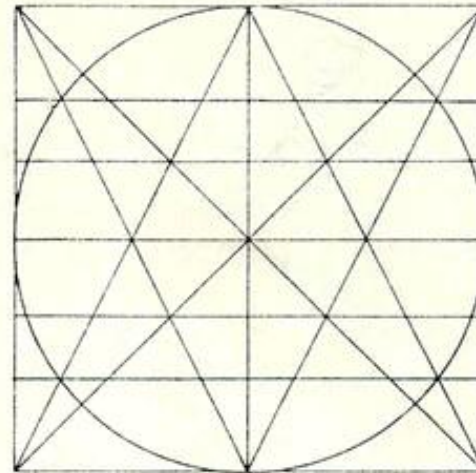
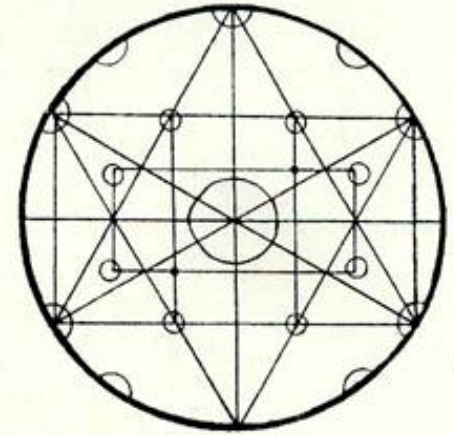
49.5 Babylonian cubit



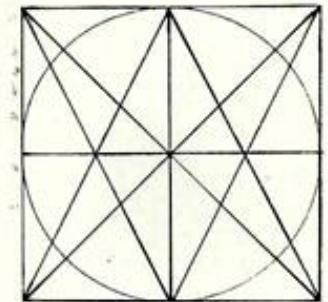
# Golden Mandala Temple Geometry in Meso- america & Near East



IZAPA, MEXICO, TEMPLE GEOMETRY

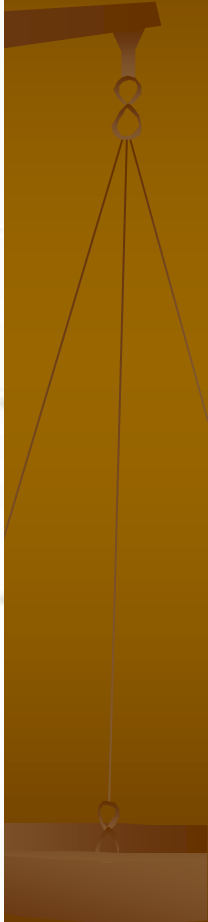
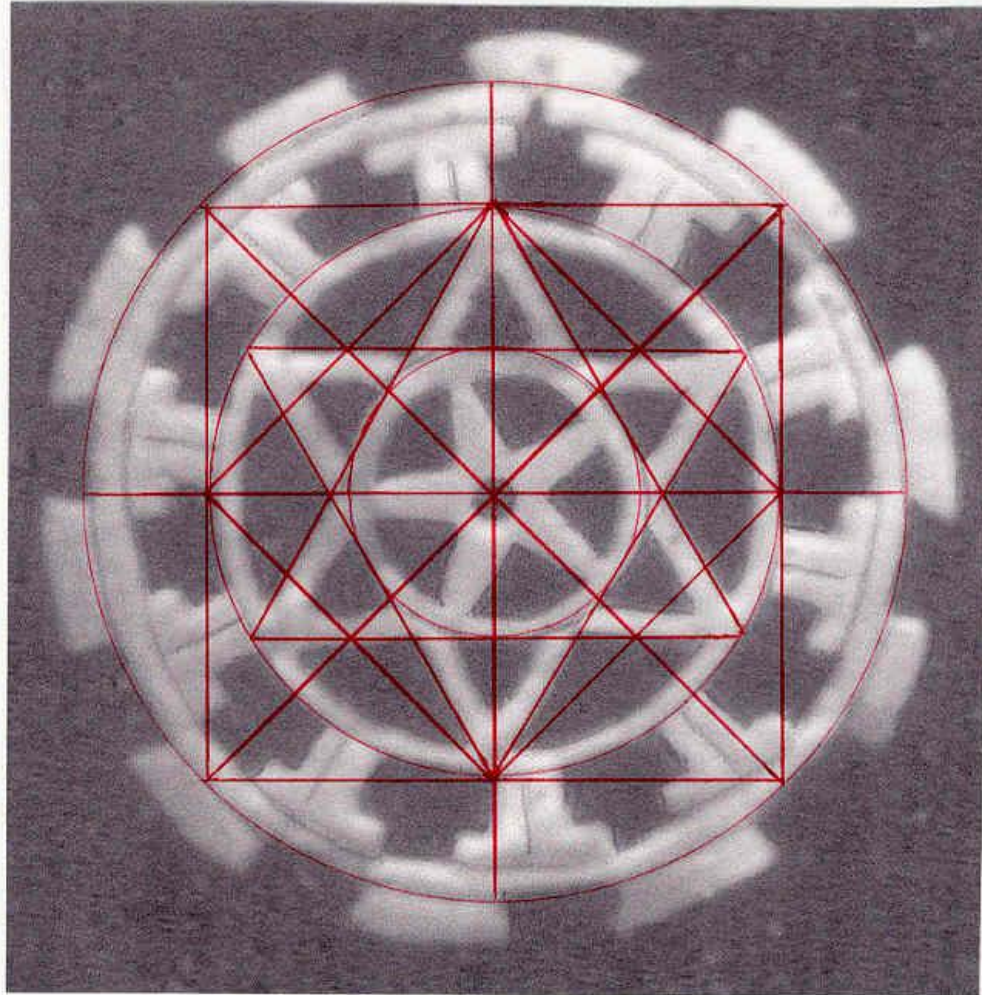


NEAR EAST, GOLDEN MANDALA, TEMPLE GEOMETRY



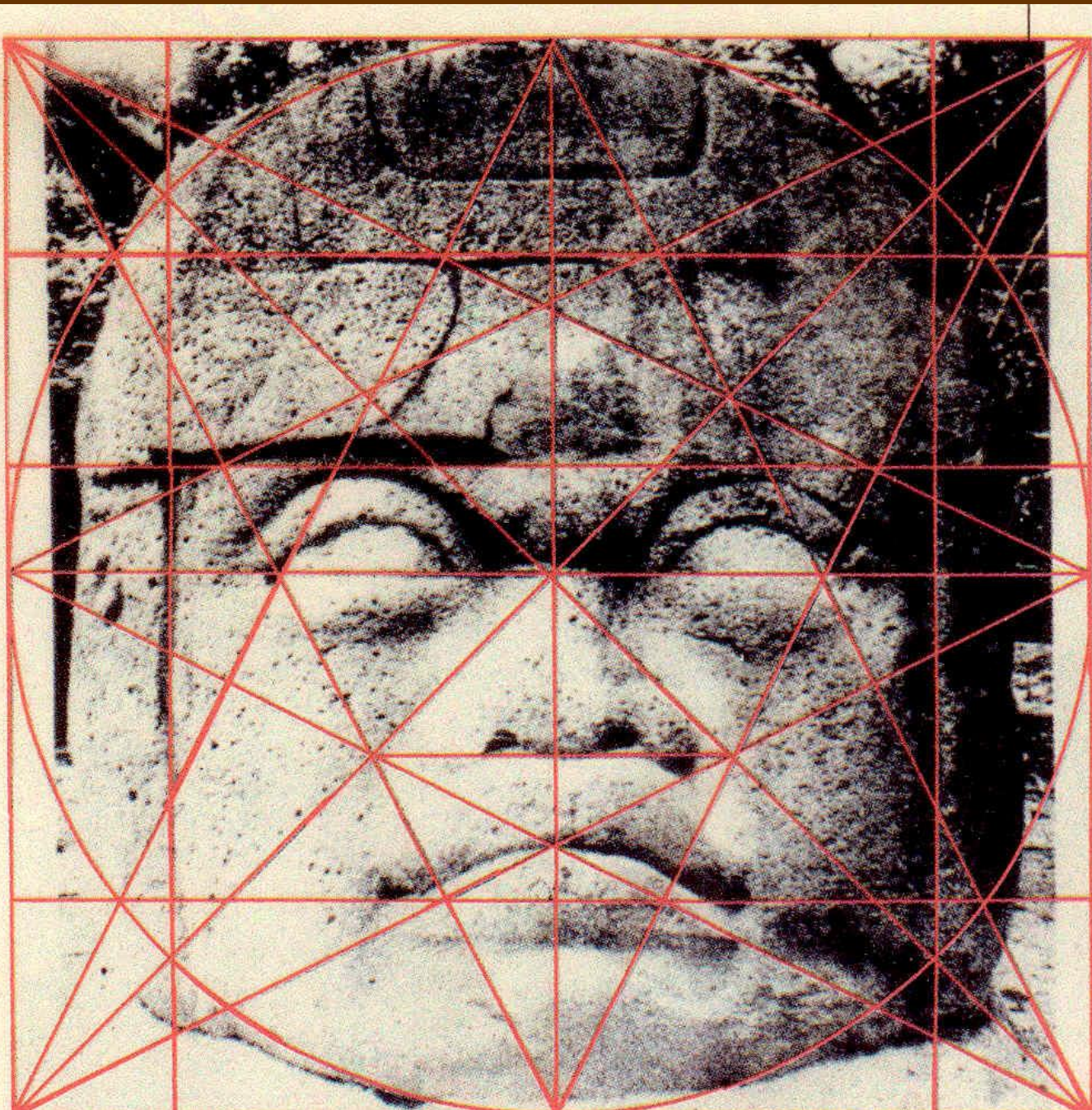
# Guatemala Golden Mandala Geometry

“STAR OF DAVID” GEOMETRIC CARVED SHELL PENDENT  
Archaeological Site, Guatemala.  
National Museum of Guatemala. (Diameter 5 cm.)



# Mexican Aztec Calendar Stone Golden Mandala





LaVenta,  
Tabasco,  
Mexico  
5 foot tall  
Giant  
Head  
Geometry  
includes  
49.5 cm.  
Royal  
Babylonian  
Cubit

# Izapa, Mexico Stela 5 *Tree of Life* monument (Drawing by Rachel N. Williams)

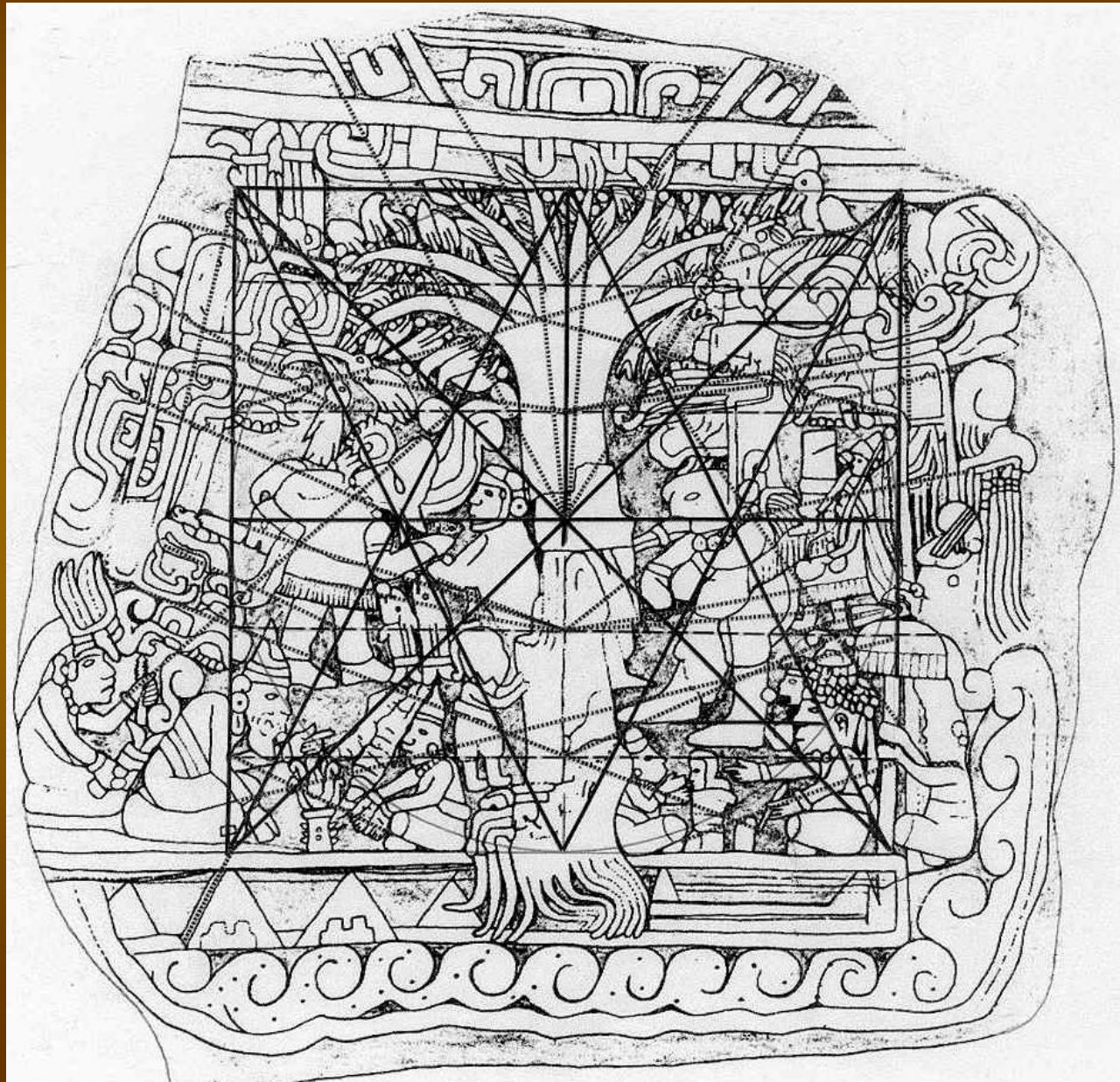


Figure 4.1. STELA 5 TRACING, IZAPA

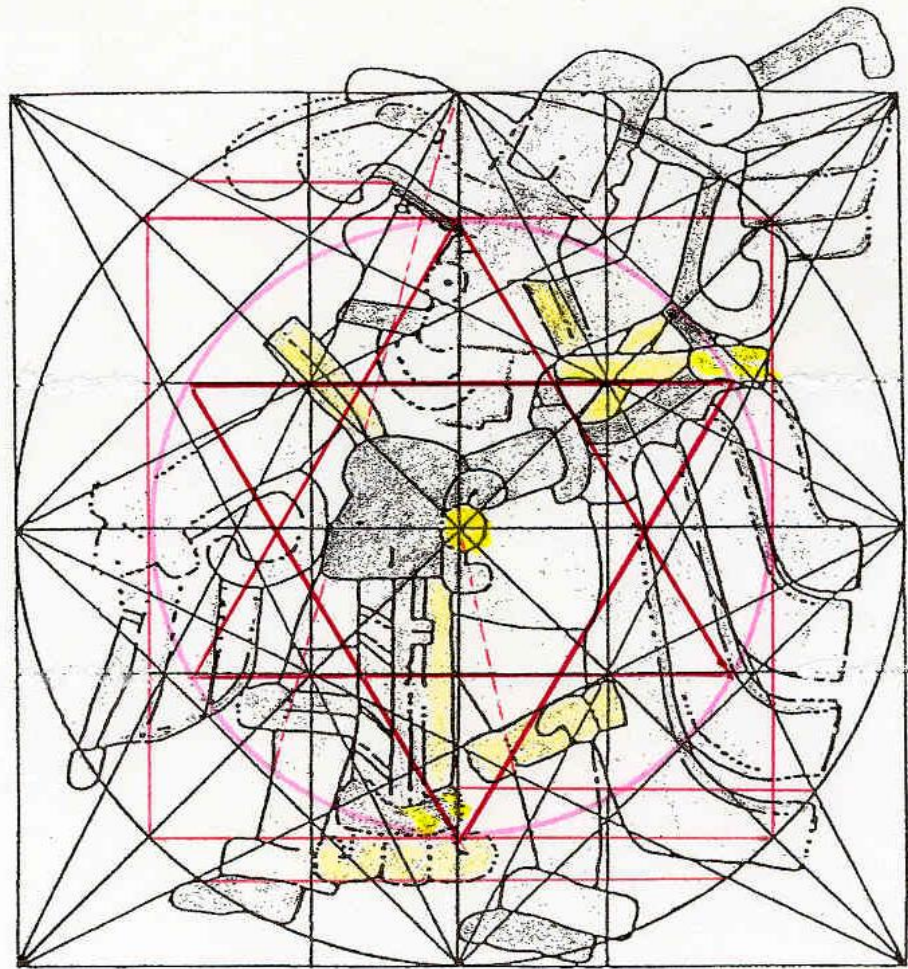
# Izapa, Mexico Stela 5 with Four Divisions



# Izapa S-5 Golden Mandala Chiastic Composition



Izapa  
Stela 4  
49.5 cm.  
Babylonian  
cubit  
in  
Geometric  
design

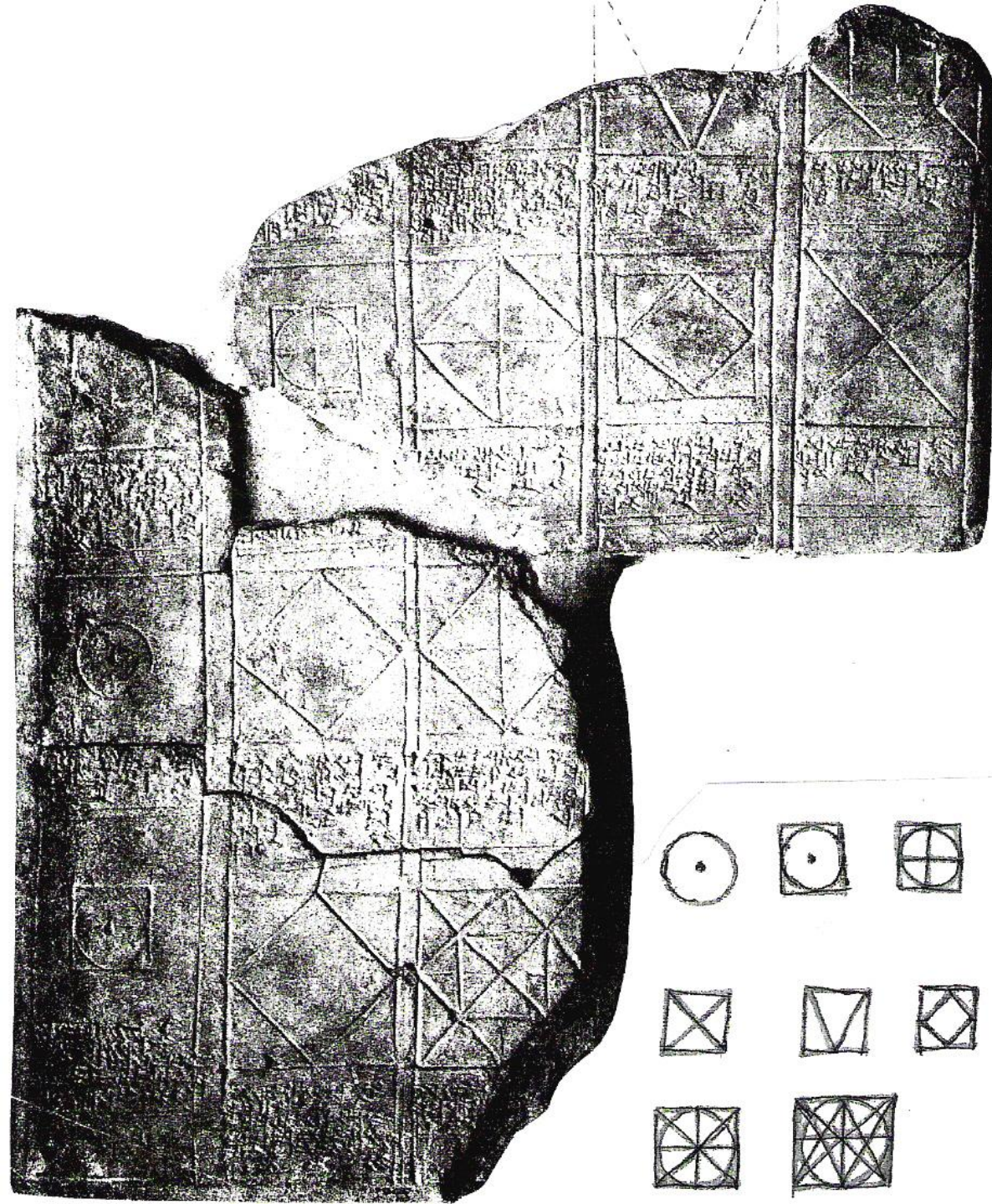


**IZAPA STELA 4. Geometric Structure**

Square height = 173.25 cm = 3.5 RB Codo.

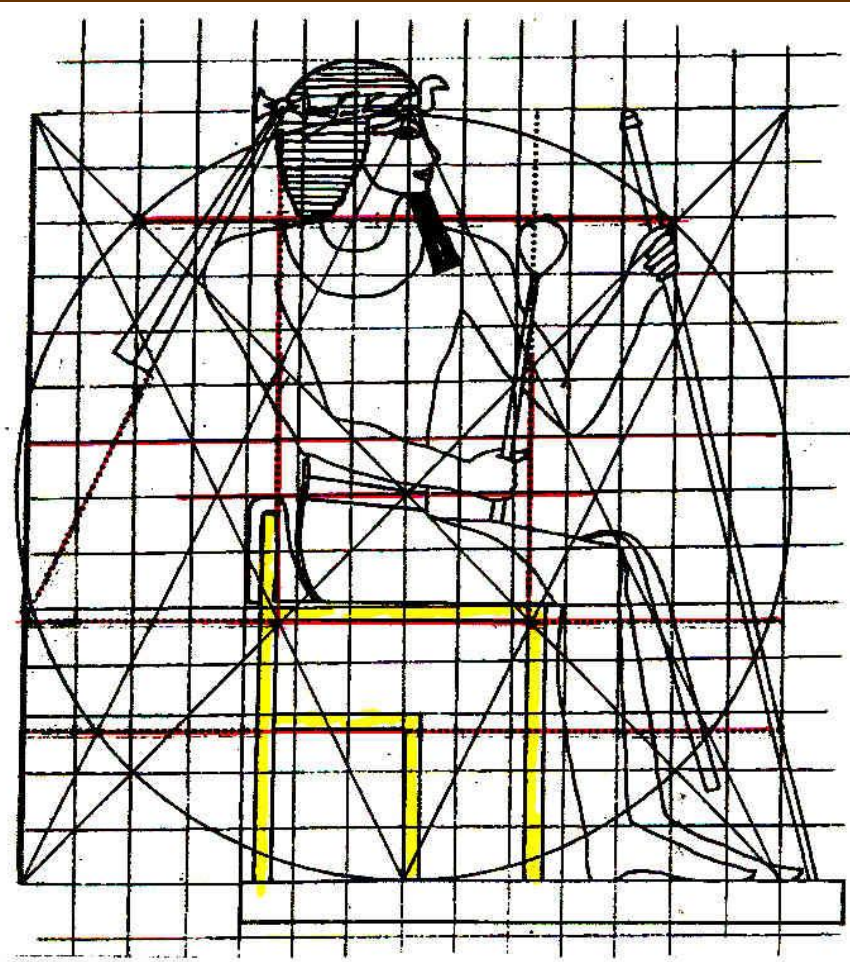
Composition rules: 1) ear spool radius center 1/2; 2) apron on vertical diameter; 3) apron terminus on circle diagonals; 4) hair line on circle diagonal; 5) belt line on 1/3 diagonal; 6) knee band on triangles nodes; 7) fore legs align to center and top center; 8) arm bands on diagonals; 9) cross glyph on triangles node.

Ancient  
Babylonian  
Clay Tablets  
show  
an exercise  
in drawing  
geometric  
Golden  
Mandalas



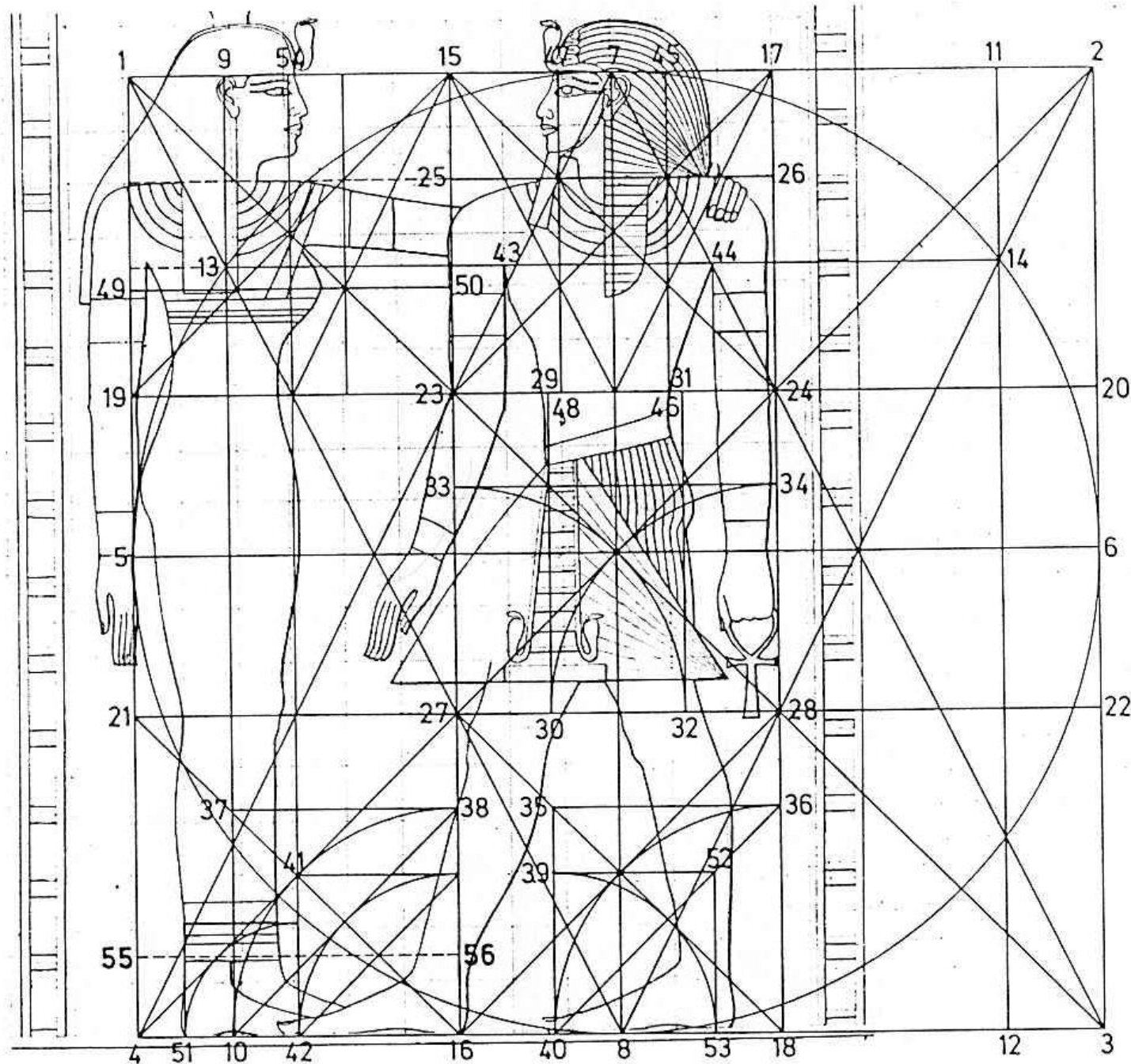


King  
&  
Throne  
1490-1436  
B.C.  
fit  
Golden  
Mandala  
Geometry

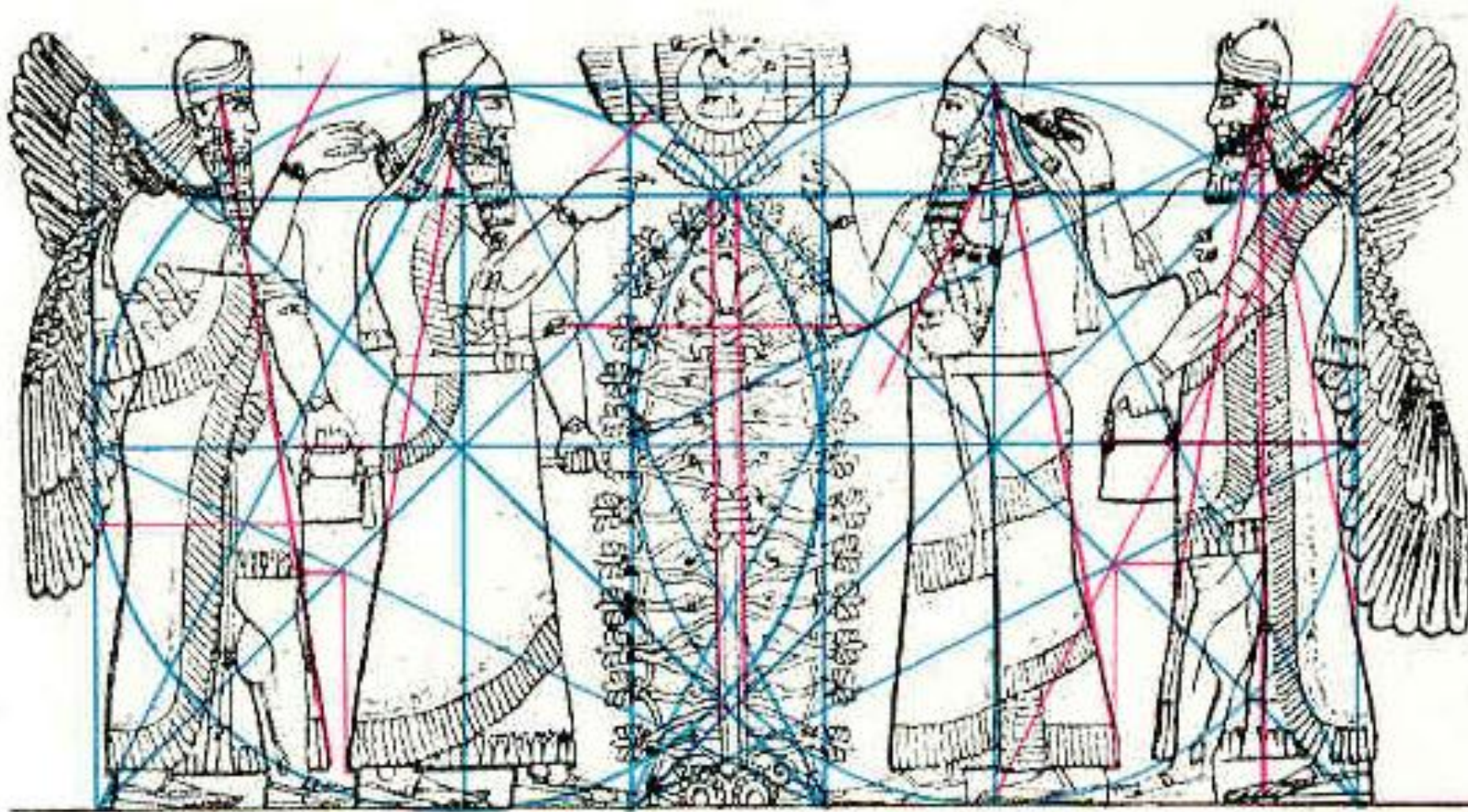


To test Bruner's discovery I constructed the golden mandala geometric format over this gridded manuscript of Thutmose III (1490-1436 b.c.). The geometric design of the throne is especially self-evident.

# Egyptian Golden Mandala Compo- sition



# Assyrian Golden Mandala Design



Yaxchilan,  
Mexico  
Assyrian Style  
Carving  
incorporates  
Geometry &  
Measure



# Izapa S-5 100 Chiastic Alignments outside Golden Mandala

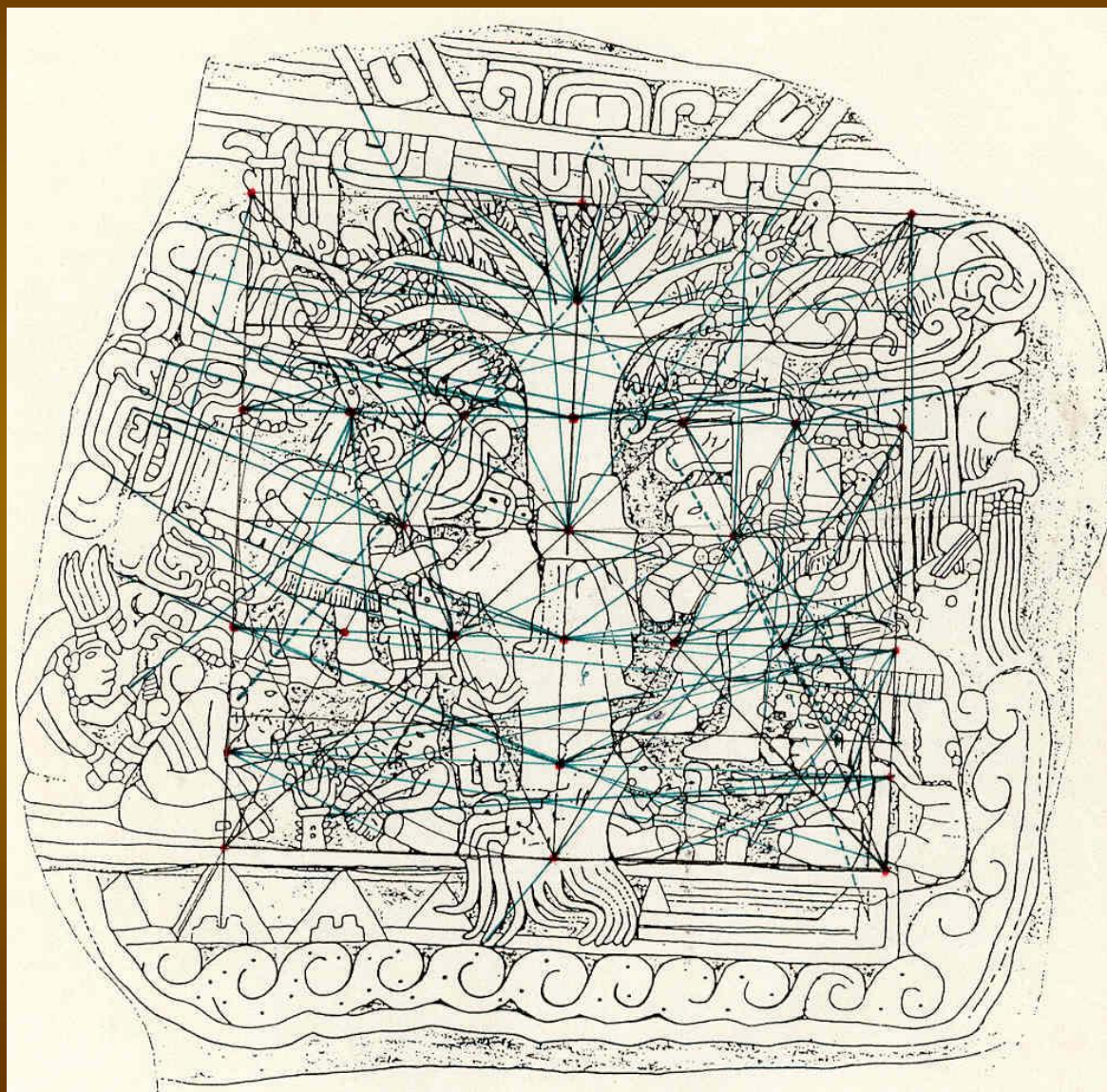
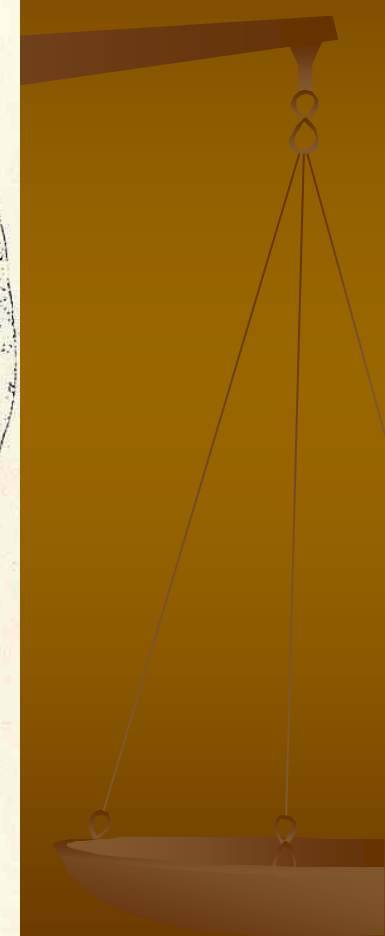


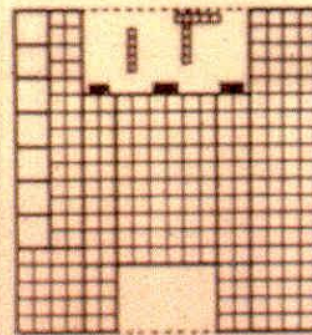
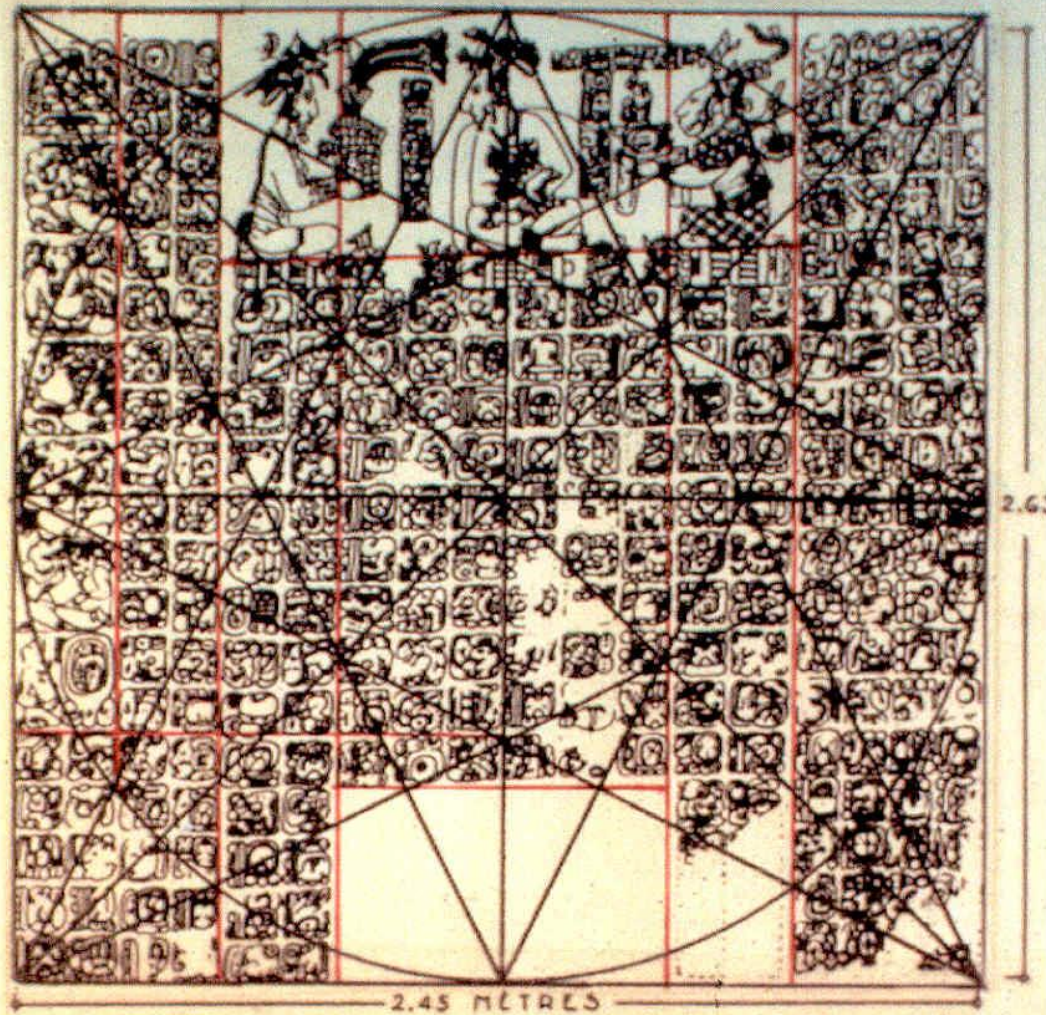
Figure 4.1. STELA 5 TRACING, IZAPA



# Ancient Temple-Palenque, Mexico

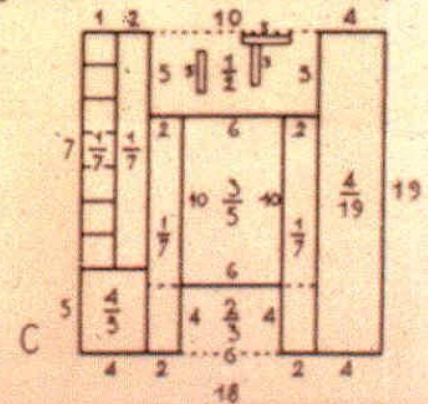


Palenque  
 Palace Tablet  
 Geometry  
 demonstrates  
 Stela 5  
 tradition



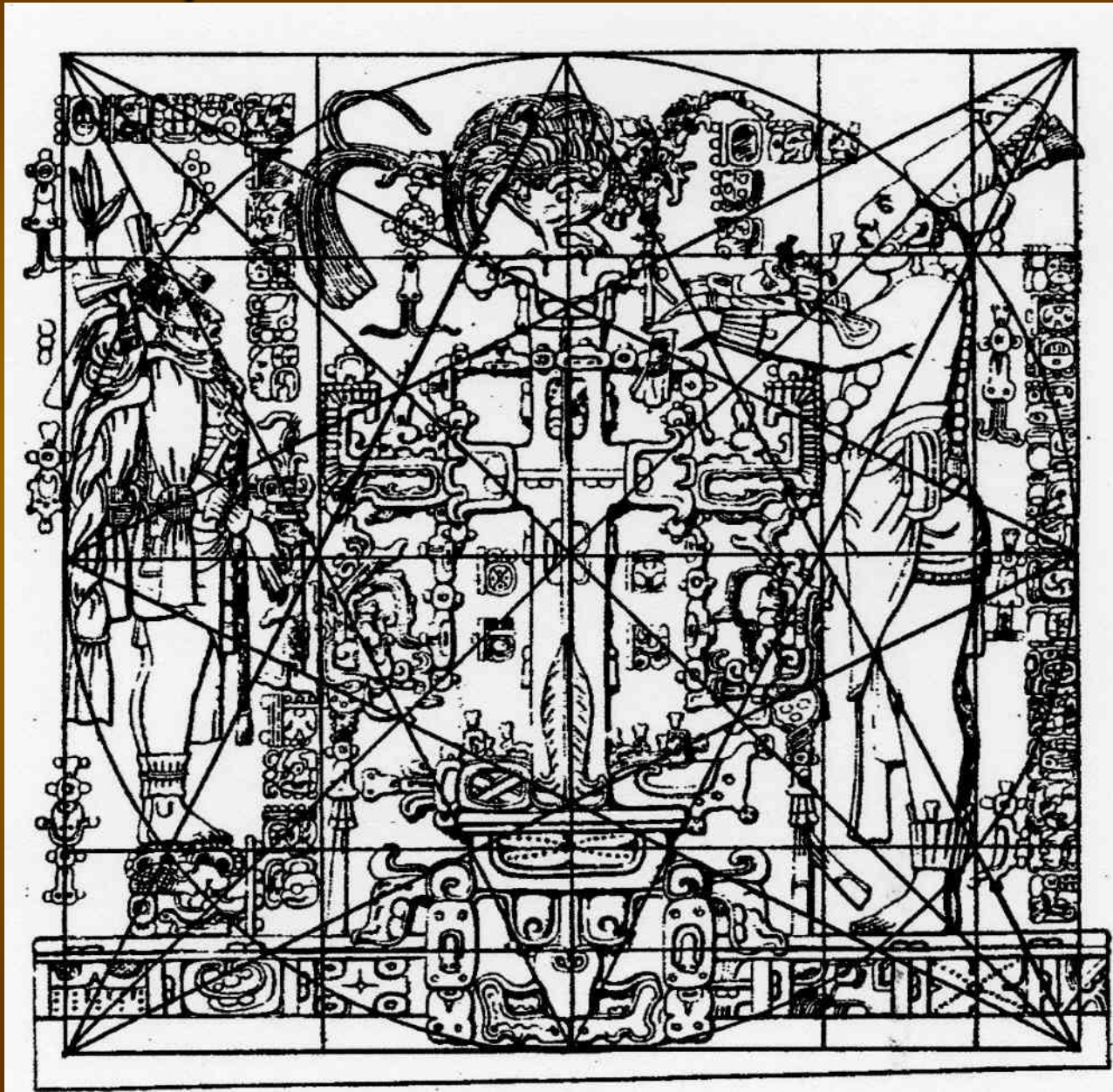
A

B

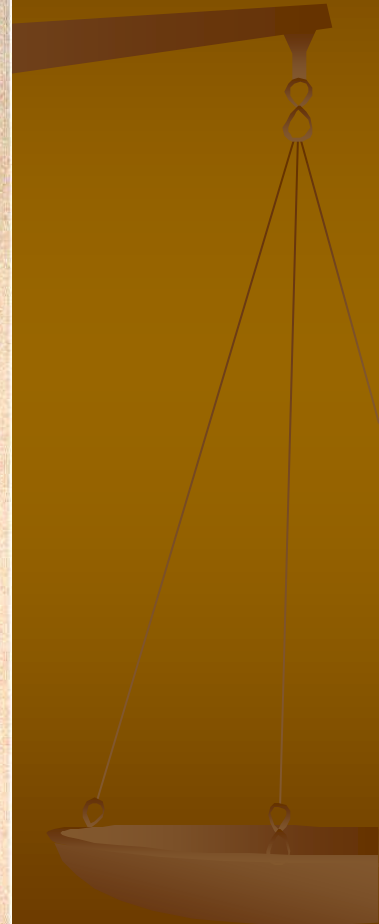
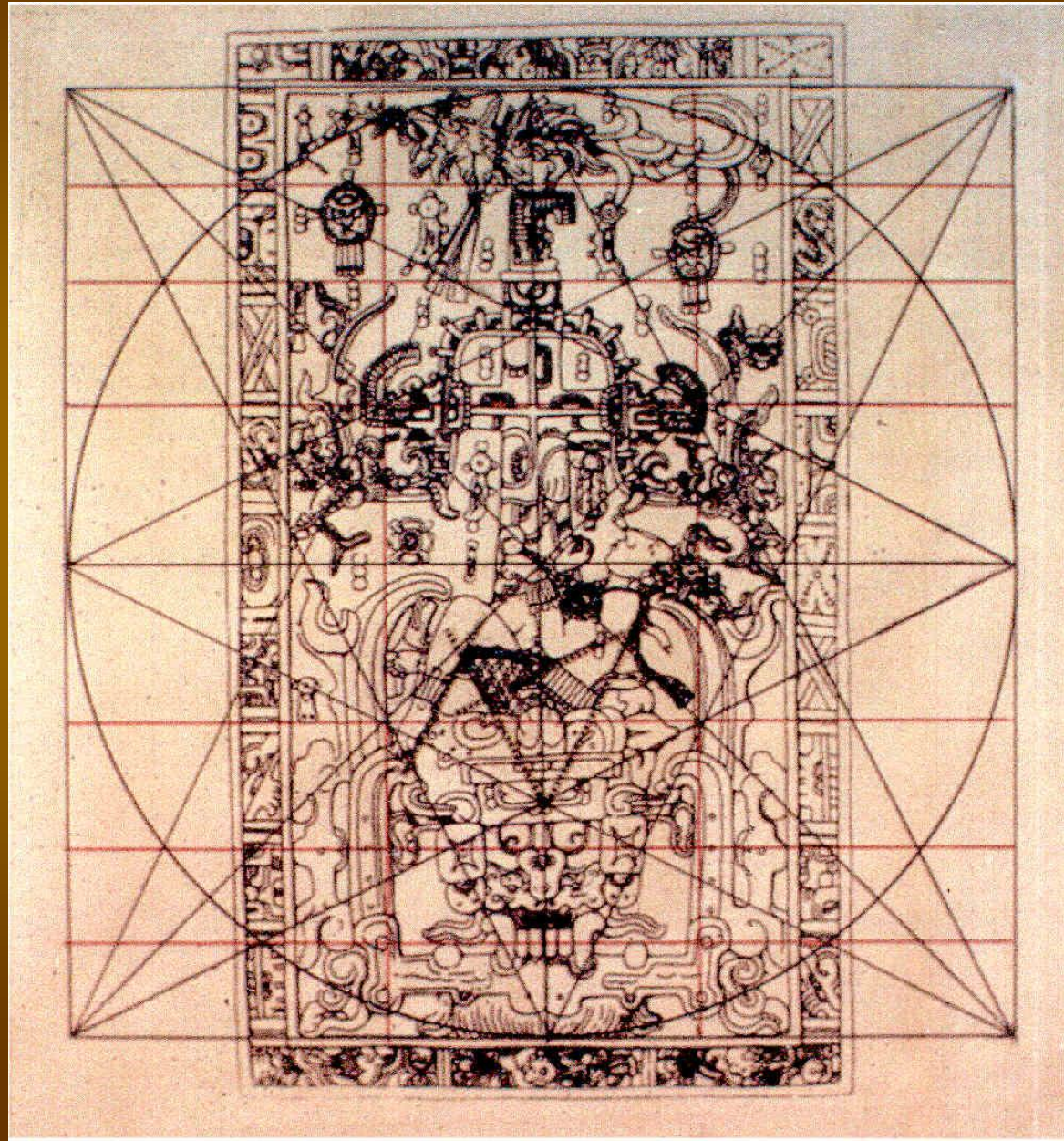


C

# Palenque GM Geometric Design



# Palenque GM Geometric Design



# Royal Egyptian Cubits

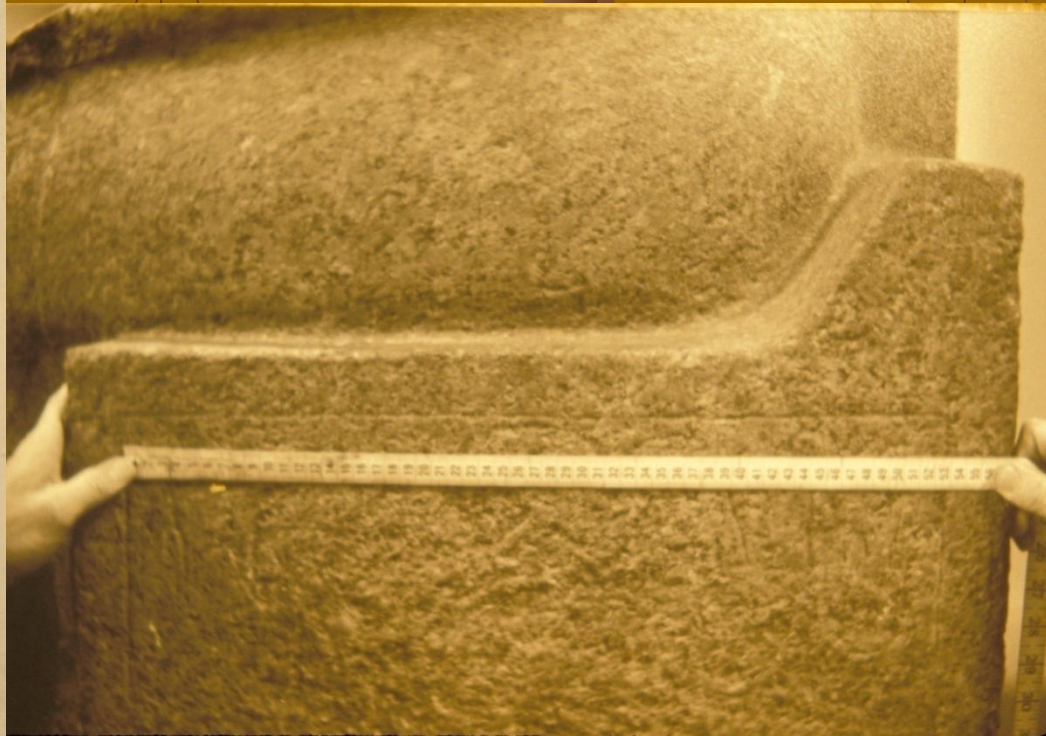
All circles measure  $\frac{1}{2}$  RE Cubit

Left-Mexico-Ancient Box from  
Laguna de Los Cerros

Right-Assyrian chariot wheel



Thrones - Royal Egyptian Cubits  
Left-Veracruz, Mexico (1150-900 B.C.)  
Mon. 2 Top = 5 RE, Heads =  $\frac{1}{2}$  RE  
Right-Egyptian Sculpture = 1 RE

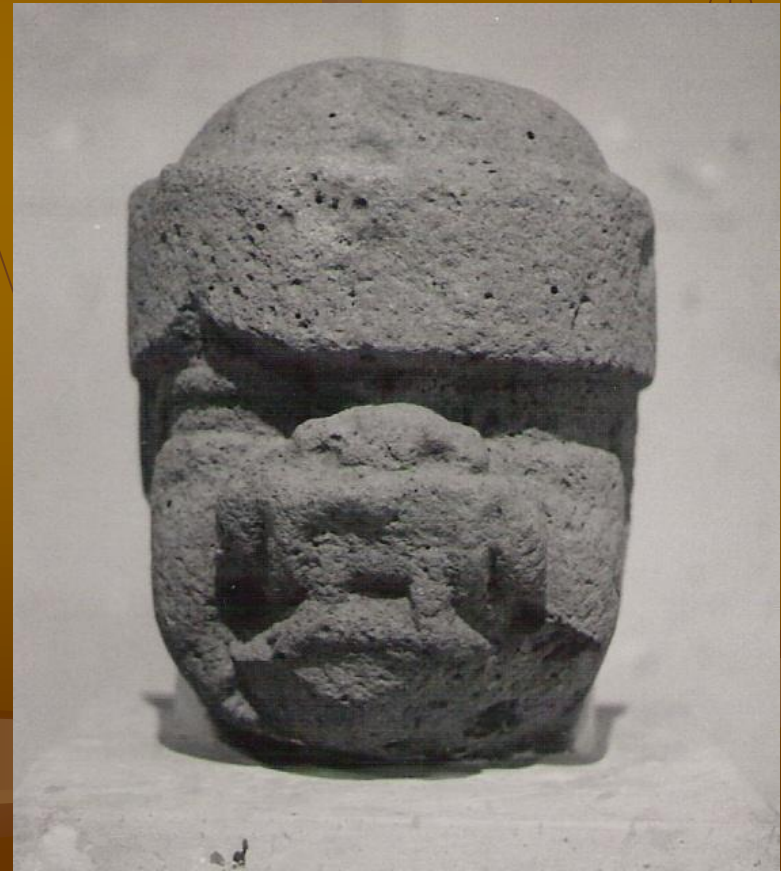


L-Mon.4-San Lorenzo, Veracruz (1150-900 B.C.)

Helmet Band =  $\frac{3}{4}$  RE High

R-Mon.5-Saejula de Aleman, Veracruz (900 B.C.)

Helmet Band =  $\frac{1}{4}$  RE High



Olmec  
Coatzacoalcos,  
Veracruz  
Mon. 2  
(After 900 B.C.)

Head and Neck  
Band width =  $\frac{1}{2}$  RE

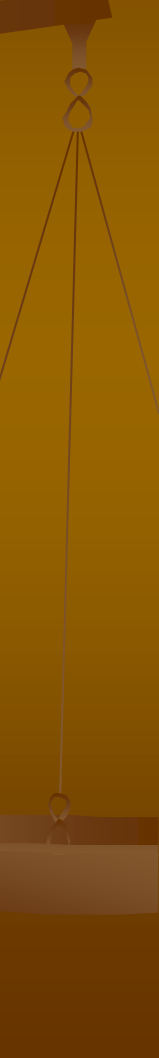
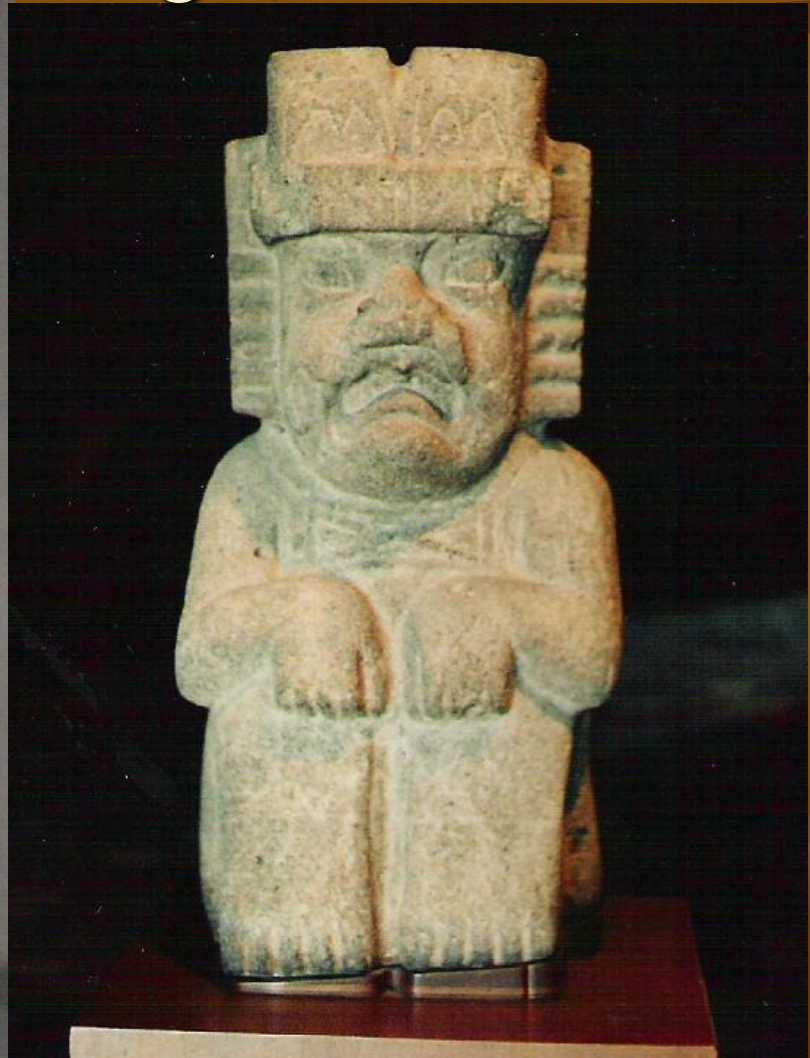
Belt Buckle  
width =  $\frac{1}{4}$  RE



# San Lorenzo, Veracruz (1150-900 B.C.)

L-Mon.10-HB=  $\frac{1}{4}$  RB High, Helmet=  $\frac{3}{4}$  wide

R-Mon.52-HB=  $\frac{1}{8}$  RB High,  $\frac{1}{2}$  RB Forearm



Olmec  
Acrobat  
(1150 B.C.)

Forearms  
=  $\frac{1}{2}$  RB

Feet on  
Head  
=  $\frac{1}{4}$  RB





# Cerro de las Mesas

(ca. 100 B.C.)

Belt length  
= 1 RB

Right Forearm  
=  $\frac{3}{4}$  RB

Fingers width  
=  $\frac{1}{4}$  RB

# Tepetlaxco, Veracruz

## Stela (ca. 100 A.D.)

Base and top panels  
inside height =  $\frac{1}{4}$  RB  
Left rear foot =  $\frac{1}{4}$  RB

### Foot Detail (below)

Heel chiseled off from  $\frac{1}{4}$  RE



Teotihuacan,  
Mexico  
Classic  
Serpent Tongue  
= 2 RB wide  
Recessed area  
height  
= 2 RB



Chinkultic,  
Chiapas  
Altar 591 A.D.

Dia.  $4 \frac{1}{2}$  RB  
Inner Dia. 3 RB  
King's extended  
arm length =  
 $\frac{1}{4}$  RB  
Knee across  
body =  $\frac{1}{4}$  RB





# Aztec Castillo de Teayo, Veracruz

(900-1200 A.D.)

Forearms =  $\frac{3}{4}$  RB

Hand width =  $\frac{1}{4}$  RB



Aztec  
Castillo de Teayo,  
Veracruz  
900-1200 A.D.

Left Forearm =  $\frac{1}{2}$  RB  
Headdress Top Post  
width =  $\frac{1}{8}$  RB





Aztec  
Castillo de  
Teayo,  
Veracruz  
900-1200 A.D.  
Drill holes  
diameter in  
neck and  
hands  
=  $1/8$  RB



Late Carving

Chichen Itza,  
Yucatan

4 Identical Bacabs  
1200-1521 A.D.

Top width = 1 RB  
Apron width =  $\frac{1}{2}$  RB  
Feet length =  $\frac{1}{2}$  RB

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includes Tables of 100's of  
Royal Babylonian Cubits and  
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