

FIG  
2018  
ISTANBUL



Presented at the FIG Congress 2018,  
May 6-11, 2018 in Istanbul, Turkey

6-11 May 2018

ISTANBUL

# XVI FIG Congress 2018



EMBRACING OUR SMART WORLD WHERE THE CONTINENTS CONNECT:  
ENHANCING THE GEOSPATIAL MATURITY OF SOCIETIES

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## Ancient Smart Cadastrate: Akarçaytepe Cadastral Map

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FIG 9527

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## DETERMINATION- STATEMENT

April 2017 ...Şanlıurfa Museum

### Akarçaytepe Line-Decorated Stone Plates (Akarçaytepe Plates)

(Arimura et al. (2000); Özbaşaran et al., (2007:183), Özbaşaran (2008))

As they have lined design and sloppy structure, plates are thought to have a **spatial dimension** and are a **3-D presentation of a land order** with farming purpose.

**May 2017** .. The research begins  
The permission to analyse and publicise is granted for **3 plates**

Over 300, pieces at least 9000 years old (Özbaşaran, 2008)





## METHOD OF STUDY

*Multidiscipliner approach and interdiscipliner method*

### **Dynamic Systems Theory**

The relation of archeological findings to the city planning discipline has been evaluated together with space and time dimensions

Where the plates locate and their spatial technical characteristics are determined with

**The acceptance....**

No major topographical change and settlement pattern bears the traces of previous ages

Scale analysis.. 2 ways



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None of the stone Plates analyzed refers to the cadatral pattern visible in Akarçay

*Housing area -Agricultural area Differentiation*

Later analysis showed ...different land uses with motifs (housing, agricultural lands, roads, springs, geographical thresholds, etc.)

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Euphrates River  
Narrow valleys and plains  
An area of almost 13.646 km<sup>2</sup> is searched.



*Cadastral design scanned and searched*

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Line of longitude ????



Calculations were made according to human walking distance for 2-3 days in relation to Akarçaytepe.

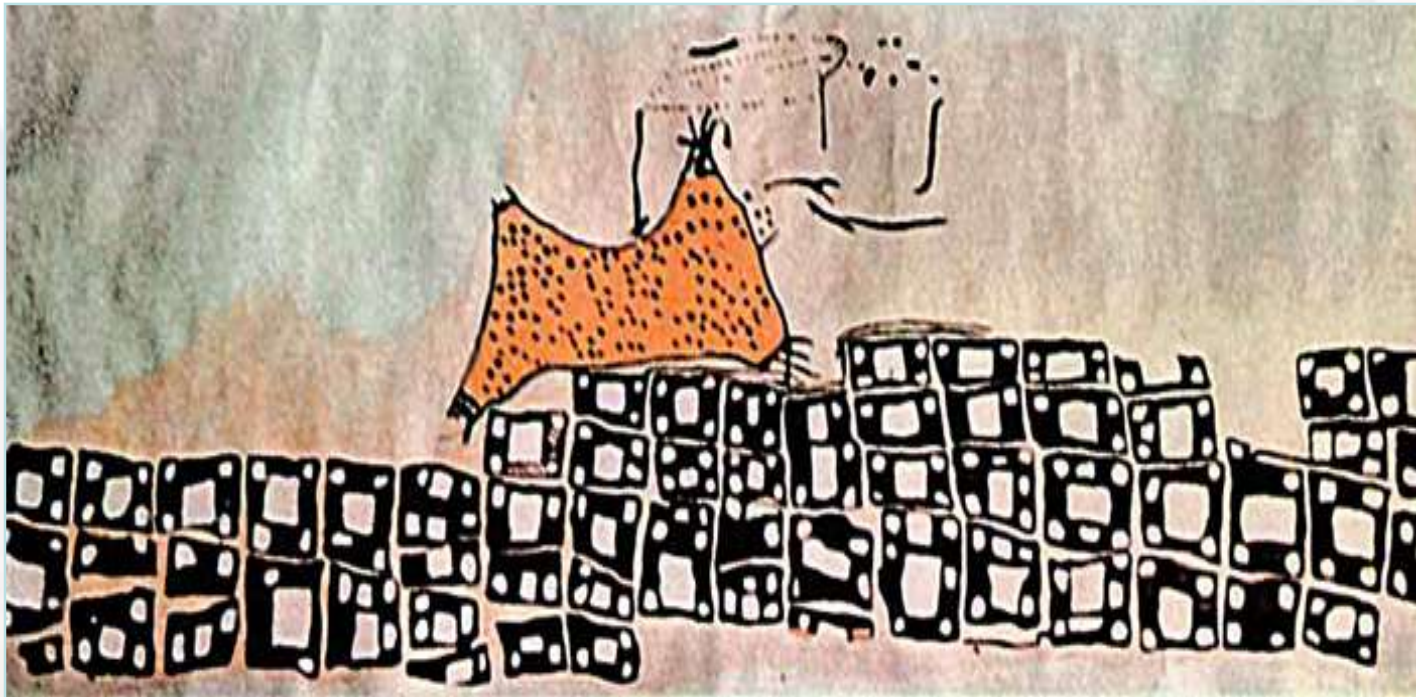
## Topography control

Agricultural production methods and architectural characteristics of that period and settlement location selection criteria

Plate shapes,  
slope direction,  
number of cadastral divisions,  
direction of parcel divisions,  
and  
hill-top location of settlements  
were compared with the land order and geographical references.

## RELATION OF AKARÇAY TEPE LINE-DECORATED STONE PLATES WITH ANCIENT MAPS

Catalhoyuk (Wall) Map ( 6200±97 B.C. (Gökgöz, 2009) , 6150 B.C. (Soja,2000:40))







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**Kingdom of Babylonian Period Map (Mappa Mundi (1300 B.C.)),  
Clay Tablet, British Museum, Plate 48**



**Roman Empire City Plan, 203-211 A.D. Marble Plate.**



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## Birecik

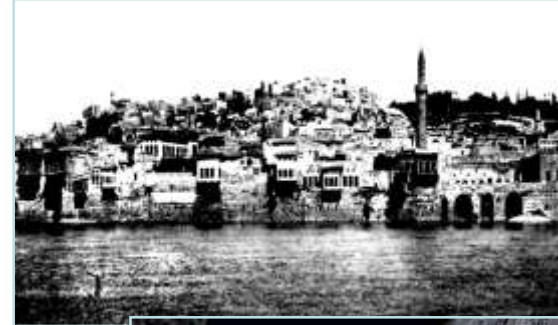


Plate scale 1/1000



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## Yeşilözen



Plate scale 1/1000



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## Nizip

Plate scale 1/1000



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## TECHNICAL SPECIFICATIONS



Line drawings are almost equal and measurements are formed by integers and decimals

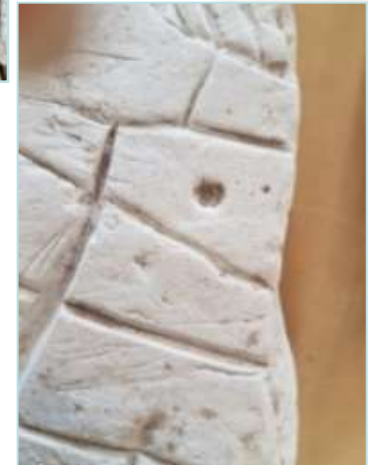
There is linear processing. Rulers were used and plates were ornamented from left to right in the direction of changing contours

Neatly carved holes and short lines were determined on the plates. Short lines are located where the plate lines are curving.

Holes must be the presentation of clean water and irrigation system wells /qanats.

A part of a support system for the agricultural society to sustain.

Constant ecological and social conditions for certain crop sets  
same design language for different systems





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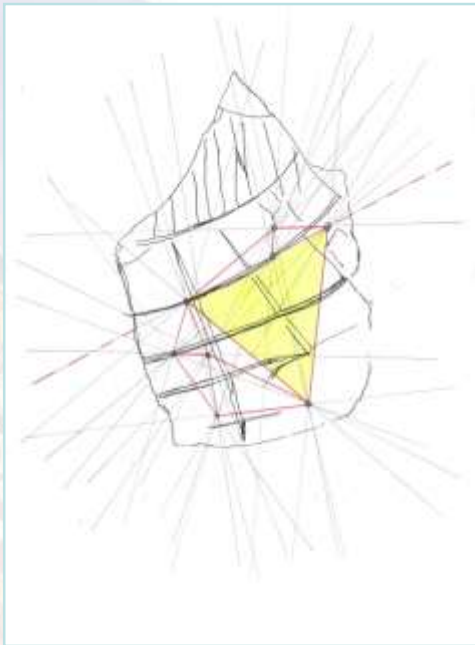
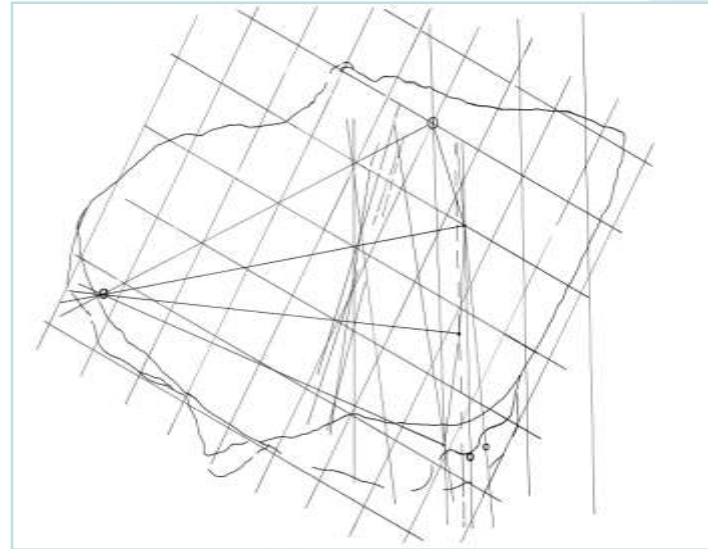
Common parallelism

Major lot lines are extended  
3,2 cm x 4,2 cm. (13.44 cm<sup>2</sup>)

## GRID SYSTEM

Formed by rectangles

**inclined**

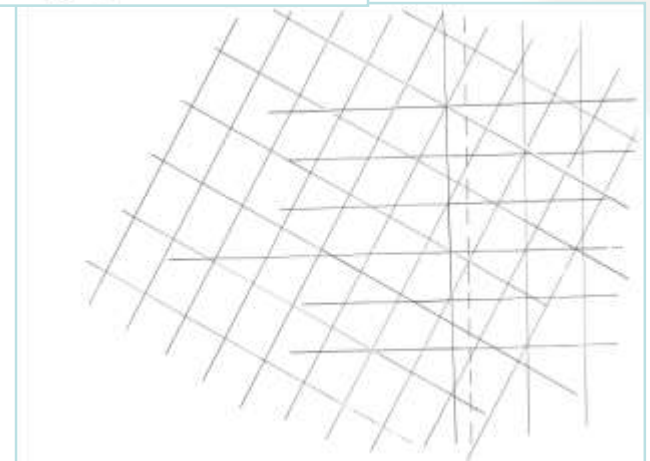


Short lines are extended

A grid rotation systematic

## Triangulation Measurement Method

for the calculation of slopes and areas





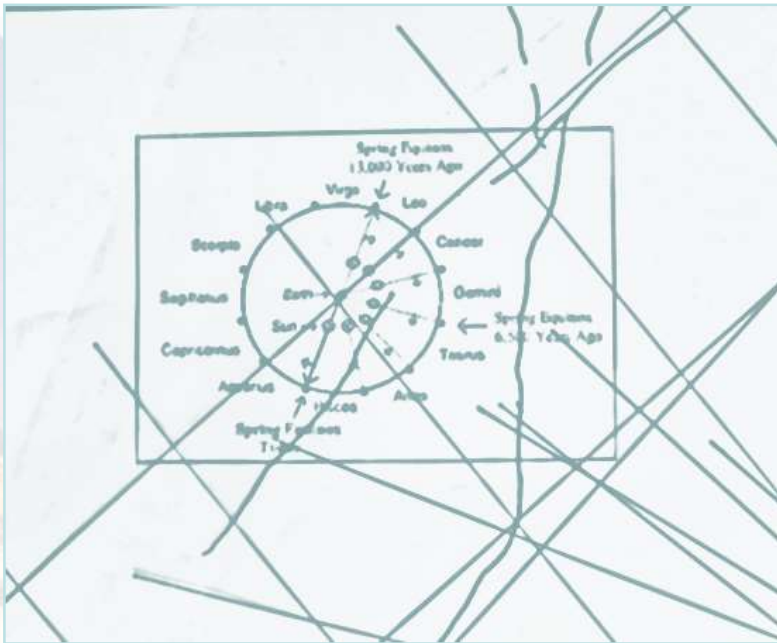


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Placing the Spring Equinox and North axis to the grid, plates are dated to the end of the Age of the Leo (8.640 BC).

Produced at the Pre-Pottery Neolithic Age, they are at least 10.658 years old.

Older than the Çatalhöyük Map

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## CONCLUSIVE REMARKS

Land order as a system construct in terms of spatial planning has been continuing since thousands of years.

Maps, urban plans, and models are a way to explain or to redefine space and land order in the second or third dimension.

Land order in all Plates were drawn with the same technic.

Their design refers to different land uses and zoning principles and their technical specifications provides us their production method and date of production.

**spatial structure and relations, spatial networks, land order design, social relations, and the level of technic and technology**

3-D scaled cadastral map and a spatial plan ...in characteristic

**a proof of a dynamic system..... primitive technology with high technic stagnancy and change of form and function are exercised at the same time.**

## **SMART CADASTRATE**

**A product of craftsmanship ....artisans ... the first mappers and planners**

**a proof of social consensus of future rights on land**

**Every plate** belongs to a different early settlement of the Pre-Pottery Neolithic Age in the Southeastern Anatolia and **presents the initial phases of urbanization and farming**

Multidisciplinary perspectives are meaningful for presenting the relation of archaeological findings to the city, urban life, and **Urban Theory**.

This approach can be implemented during all archaeological excavations, which means **a new development with a different perspective and a method.**