



Relationship between water and cultural
heritage: a case study - Orvieto
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START

- L'acqua è la materia della vita. E' matrice, madre e mezzo. Non esiste vita senza acqua.
- Water is the first essence of life. It is matrix, mother and means. There is no life without water

(Albert Szent-Györgyi)

VITRUVIUS AND PLINY

- Ancient Roman writers stress the importance of water for the development of settlements, both villas and cities, cataloging the different types of water and the way to reach, preserve and use this important element

SPRINGS AND RAIN WATER

- Rivers and streams are not the most efficient source of water for the human use, although essential for other means, like transportation and irrigation of agricultural land
- Springs were the best way to insure this element vital for human life, it means not only water to drink but also for hygiene management of the entire community
- Rain water is instead the best source since it is not punctually located but spread all over the territory

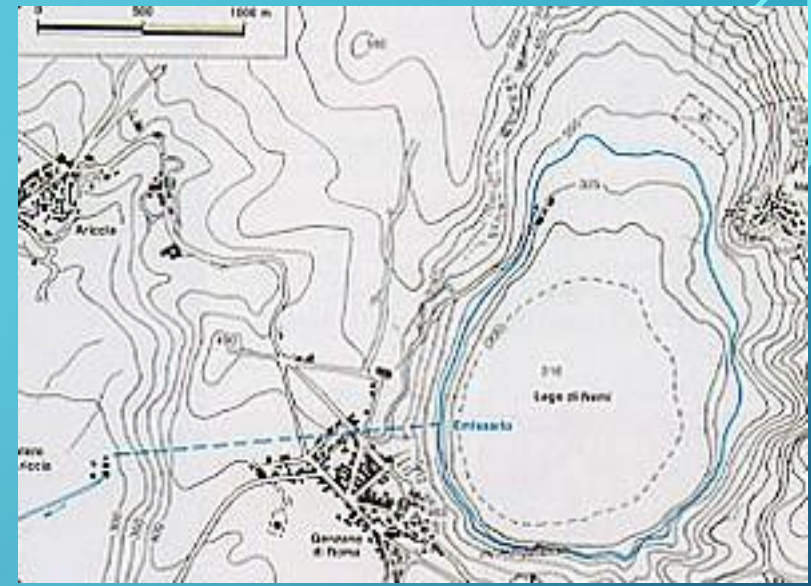
WATER MANAGEMENT IN ANCIENT CENTRAL ITALY

- There are many examples of water related structures connected to a phase prior to the monumental Roman aquaeducts
- An amazing example is what is called the “scolmatore”, a floodway, for many lakes in the ancient Latium area

SCOLMATORE OF THE NEMI LAKE

It is a tunnel dug for 1653 meters at a depth that reaches 100 meters. The tunnel insures to maintain the level of the lake at a constant level and was dug in the archaic period starting from two opposite points.

It gives a clear understanding of the technical level that was already reached in the VI c. B.C.E.



THE ETRUSCANS AS MASTERS OF HYDRAULICS

- During the Etruscan civilization (VII-III c. B.C.E.), also due to strong contacts with other populations of the *Mediterranean* area, amazing projects and resources will be developed in many areas of Etruria, today Tuscany, Umbria and northern Latium.

THE AQUAEDUCT IN MARZABOTTO, ANCIENT KAINUA

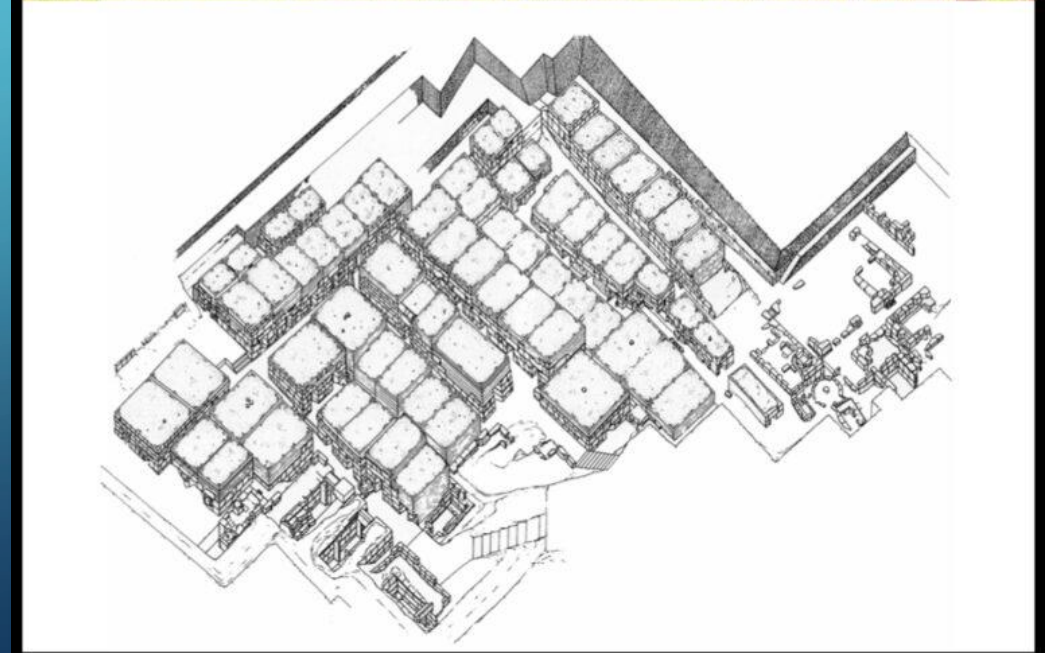
At the foot of the acropolis there are remains of a travertine aqueduct dating to the VI c. B.C.E.



MARZABOTTO, A NEW CITY WITH A PERFECT GRID PLANNING



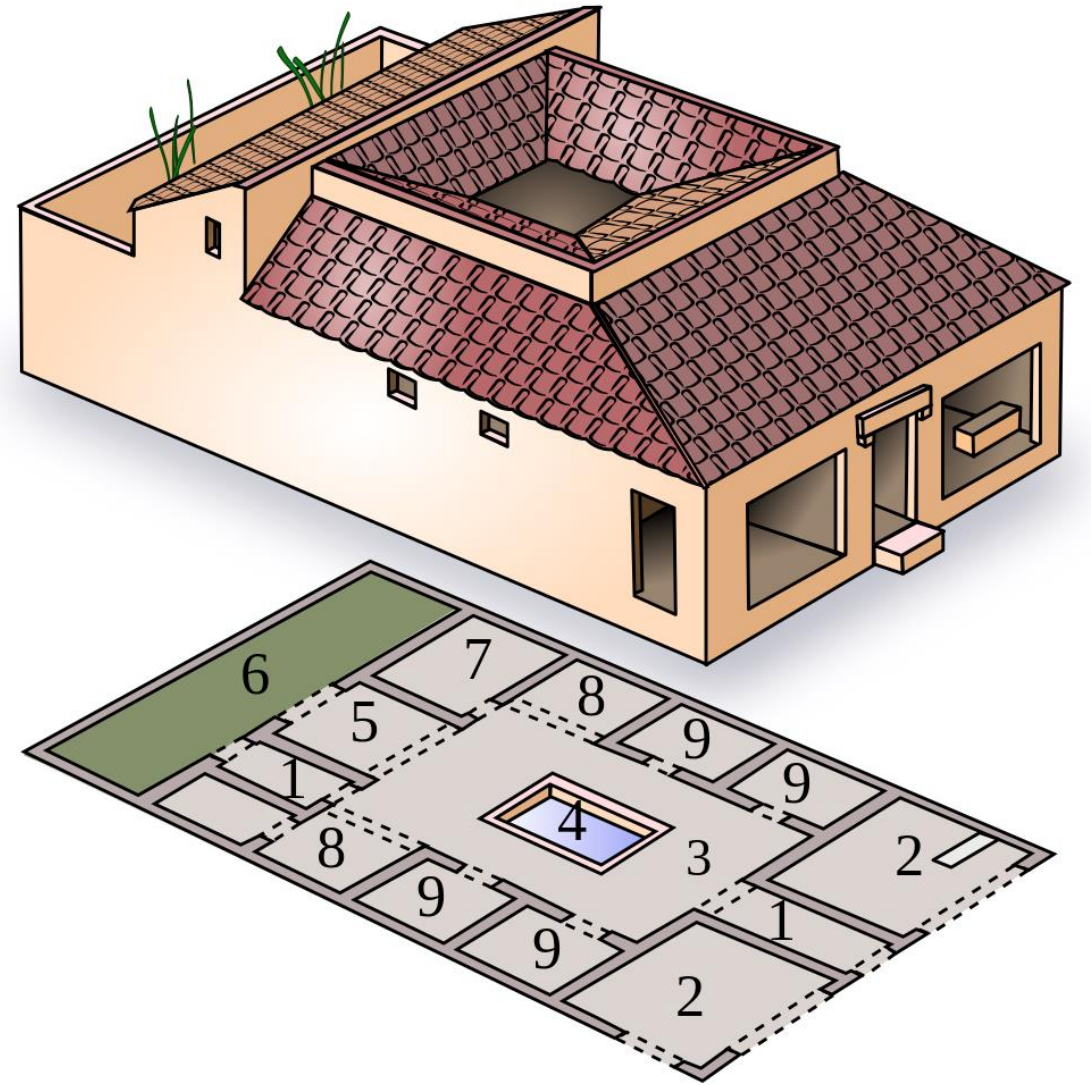
WHERE DID THE INHABITANTS OF KAINUA
GOT THE EXACT ORGANIZATION OF THE
CITY PLAN?
PROBABLY FROM ORVIETO (VELZNA AT THE
TIME)



The background is a solid teal color with a subtle gradient. In the four corners, there are decorative white line-art elements that resemble circuit traces or a grid pattern, with small circles at the end of the lines.

A PERFECT GRID FOR THE NECROPOLIS THAT
REFLECTS THE CITY OF THE LIVING PEOPLE, WITH
HOUSES FLANKING ROADS AND PUBLIC SPACES

WHAT DID THE HOUSES OF
THE ETRUSCANS LOOKED
LIKE?
JUST LIKE THE HOUSE WE
ALL REFERR TO AS THE
ROMAN IMPLUVIUM
DWELLING

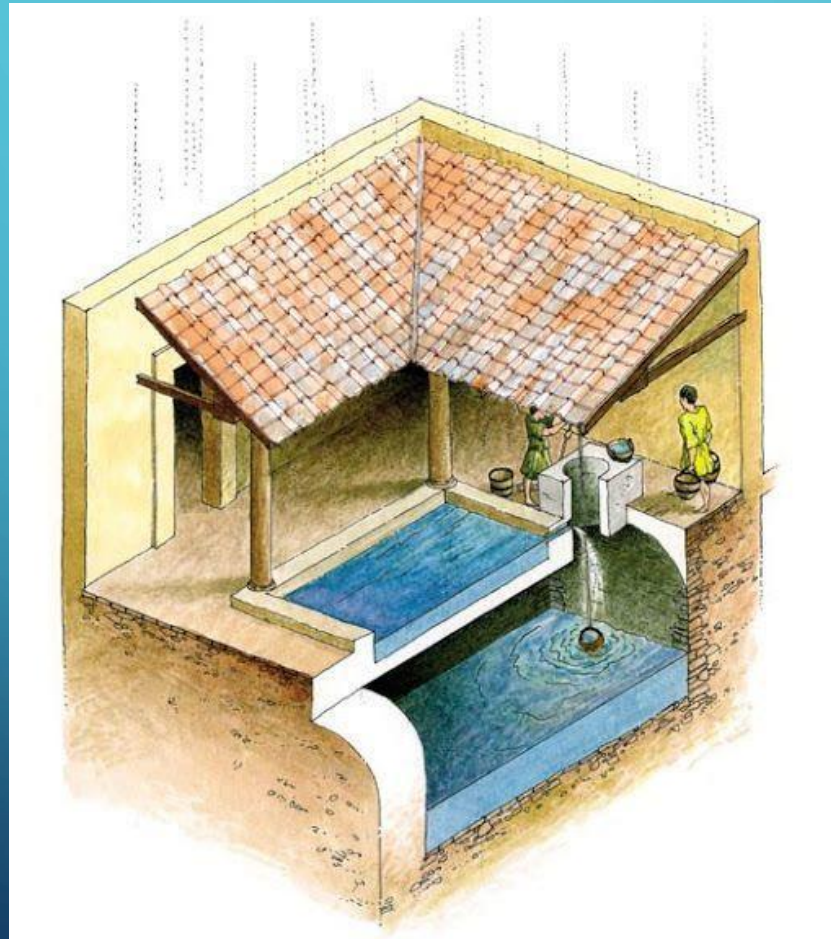


- | | | |
|-------------------|---------------------|----------------------|
| 1. <i>fauces</i> | 4. <i>impluvium</i> | 7. <i>triclinium</i> |
| 2. <i>tabernæ</i> | 5. <i>tablinum</i> | 8. <i>alæ</i> |
| 3. <i>atrium</i> | 6. <i>hortus</i> | 9. <i>cubiculum</i> |

IT IS THE TYPE OF BUILDING THAT VITRUVIUS CALLS THE HOUSE WITH THE “TUSCAN ATRIUM”, THE CENTRAL OPEN SPACE THAT THE ETRUSCANS INVENTED

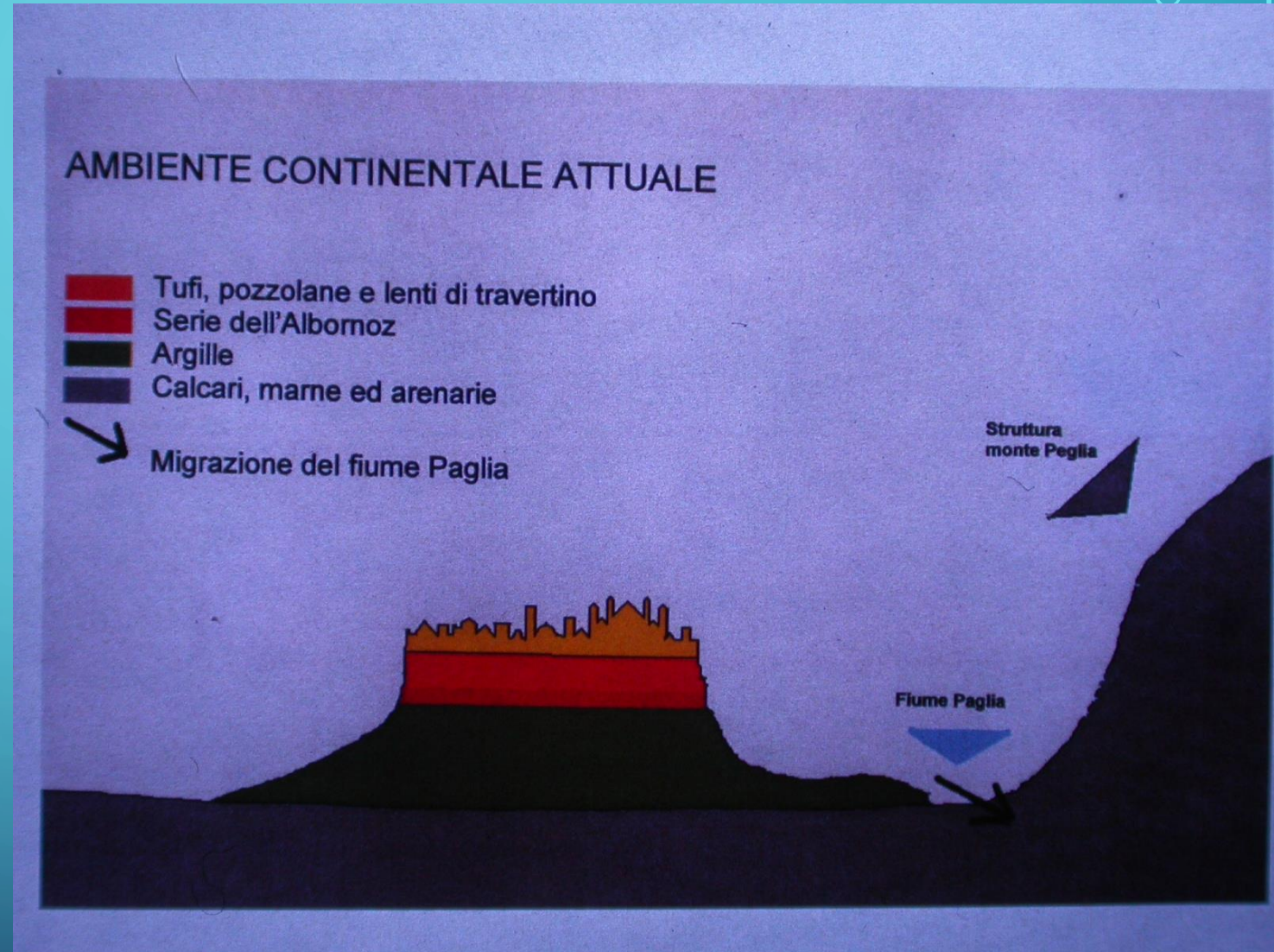


THE *IMPLUVIUM* REFERS TO THE SUNKEN PART OF THE ATRIUM IN A GREEK OR ROMAN HOUSE (*DOMUS*), DESIGNED TO CATCH THE RAINWATER FALLING FROM THE *COMPLUVIUM* OF THE ROOF



EVIDENCE IN ORVIETO

- There are more than 130 etruscan cisterns that have been identified so far and it was the easiest way of collecting water on top of the cliff, due to the lack of springs on top of the mesa



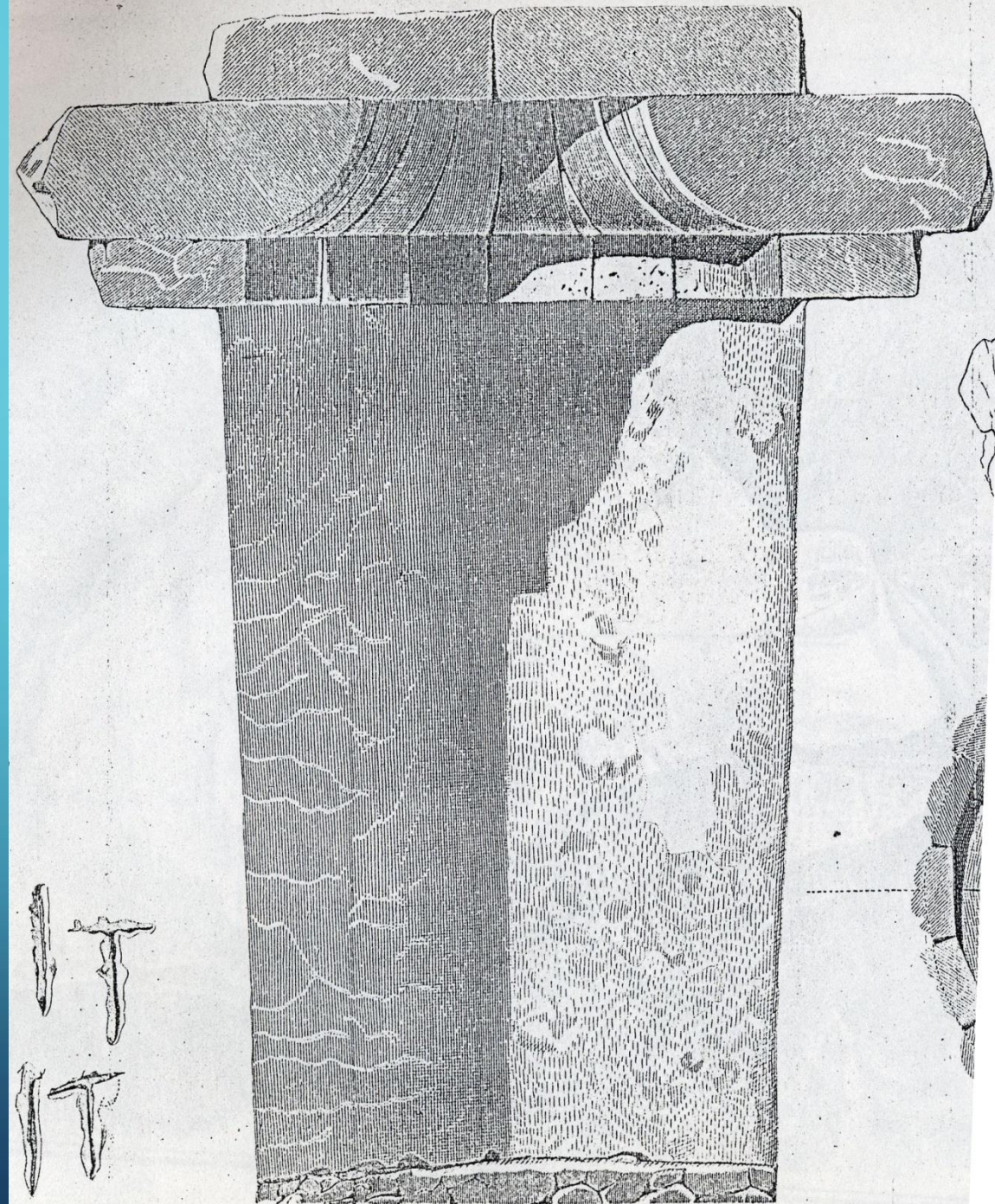
THE ROLE OF THE REGION OF UMBRIA AND THE SPELEO CLUB ORVIETO

- A thorough mapping of the man-made caves has been carried out first by the local speleological group since the second half of the past century and then for the consolidation of the “rupe” di Orvieto



DIFFENT TYPES OF CISTERN ACCORDING TO THE CHRONOLOGY

- The most ancient ones dates to the VI c. B.C.E. and were lined with a meter thick layer of pure clay, so to make them waterproof



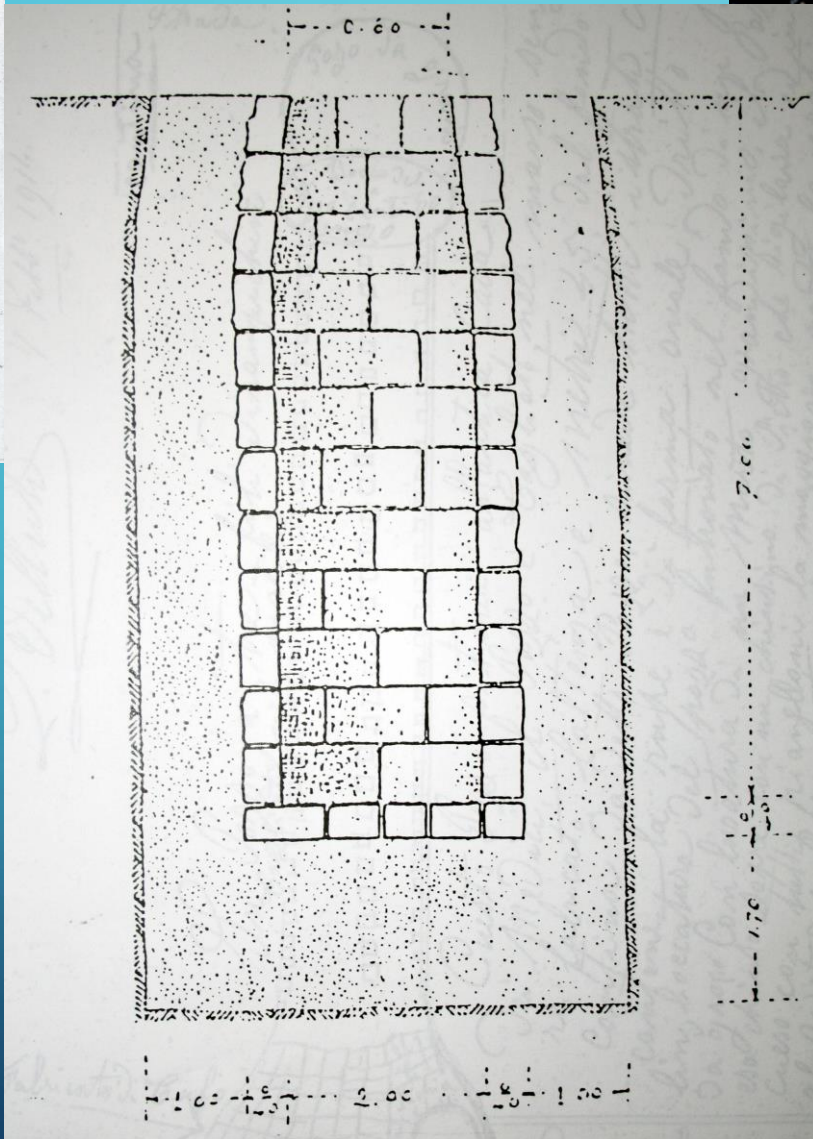
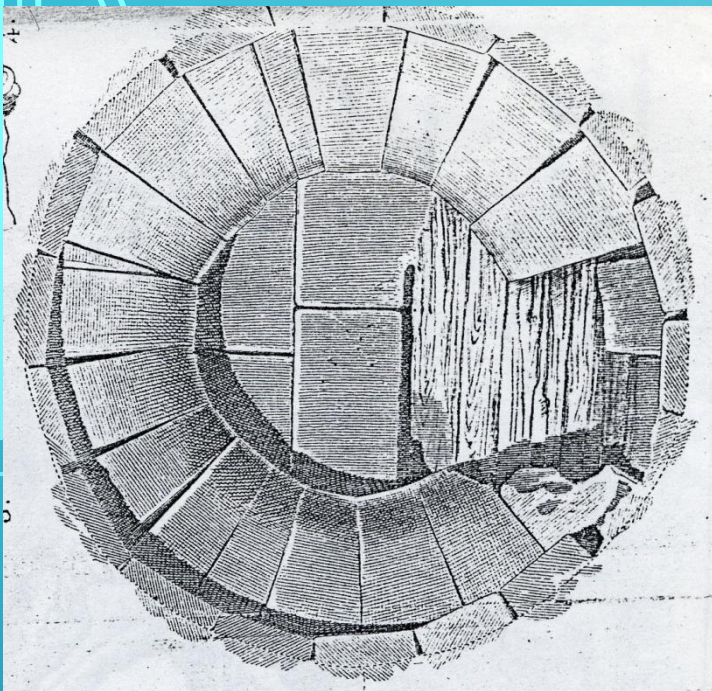


Fig. 30. Cisterna di tipo 1.A con intonacatura aggiunta (da Minto 1935)

- The more recent ones, from the V-IV c.B.C.E., have a layer of **cocciopesto**, an hydraulic mortar of very high quality



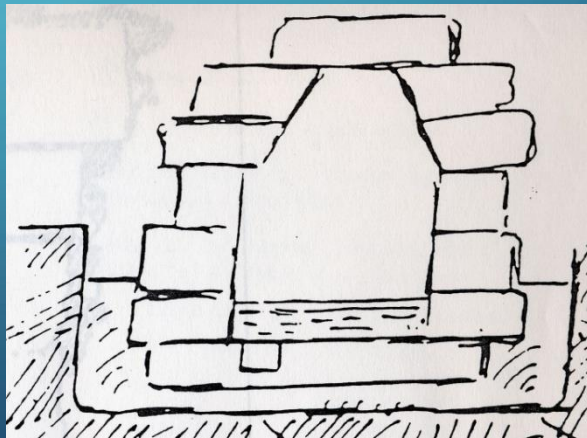
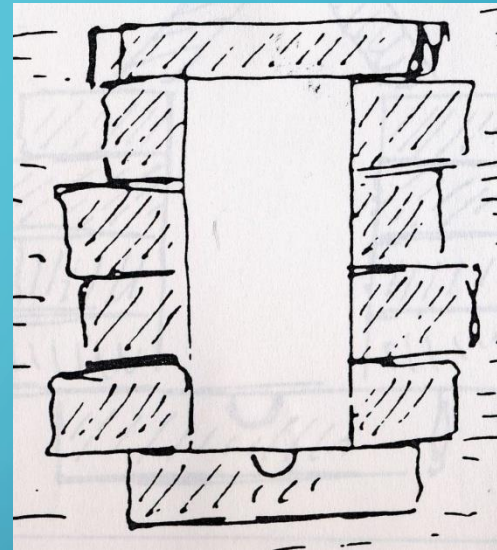
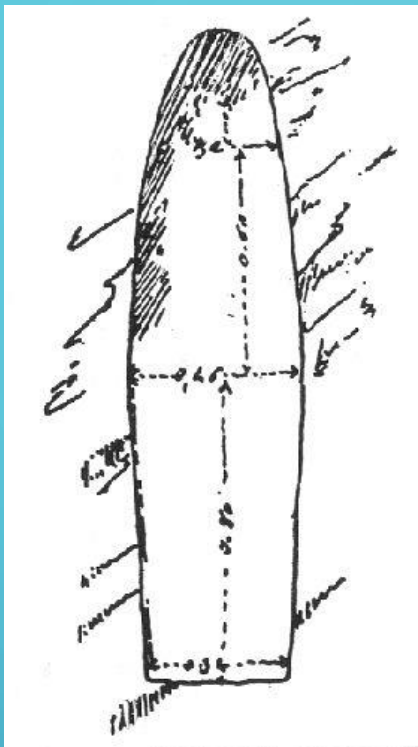
THE CISTERNS HAVE A PUTEAL, A
TERRACOTTA ELEMENT, WHERE
WATER COULD BE BROUGHT TO
THE SURFACE WITH A BUCKET



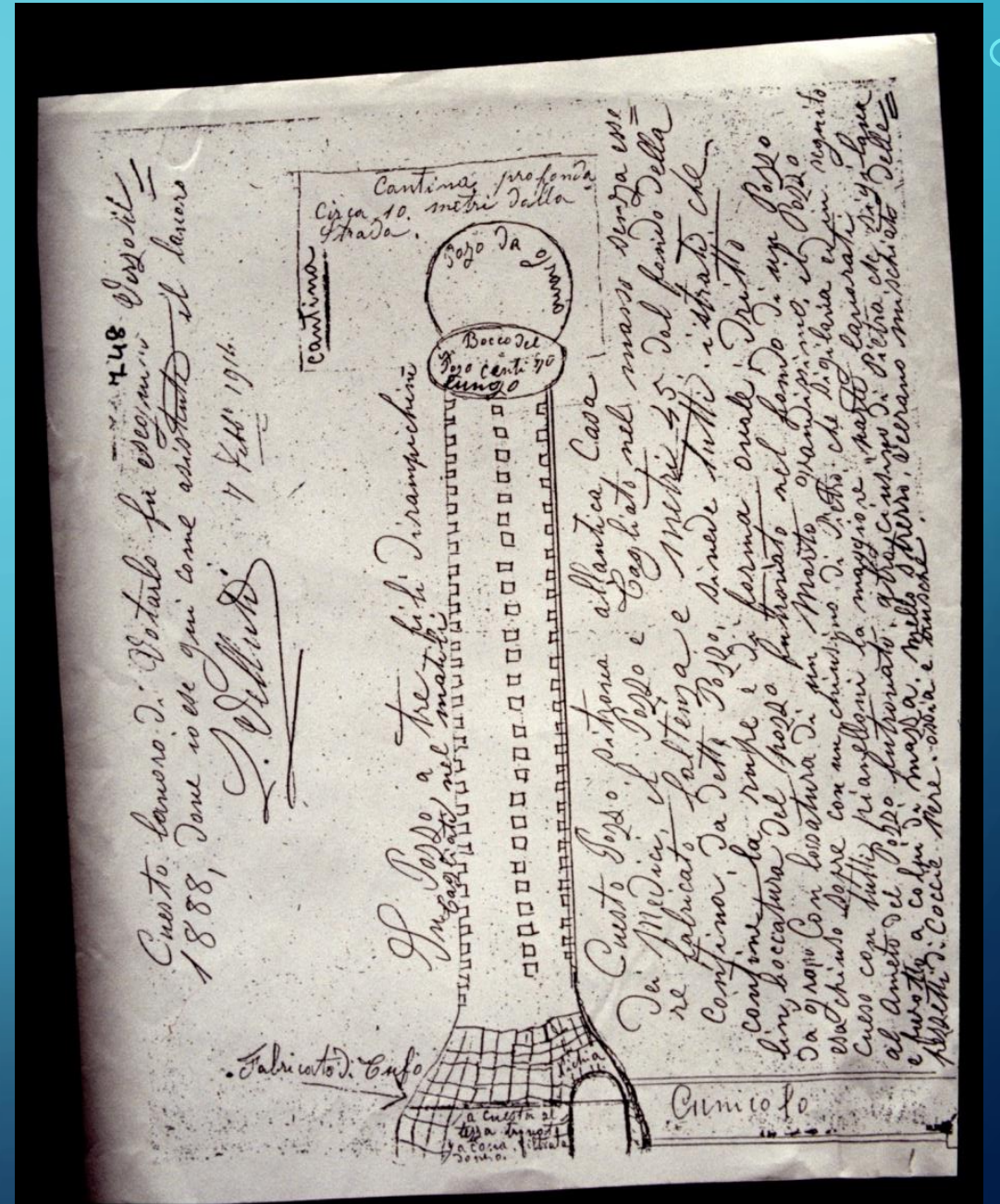
THE TUNNELS

- A net of cuniculi have been detected and they served to funnel water into cisterns or to take care of the water in excess





SOME WELLS HAVE BEEN DETECTED AND ARE STRUCTURES THAT DRILL THE ENTIRE LEVEL OF VOLCANIC ROCK UNTILL THEY REACH THE WATER TABLE OF PLIOCENIC NATURE

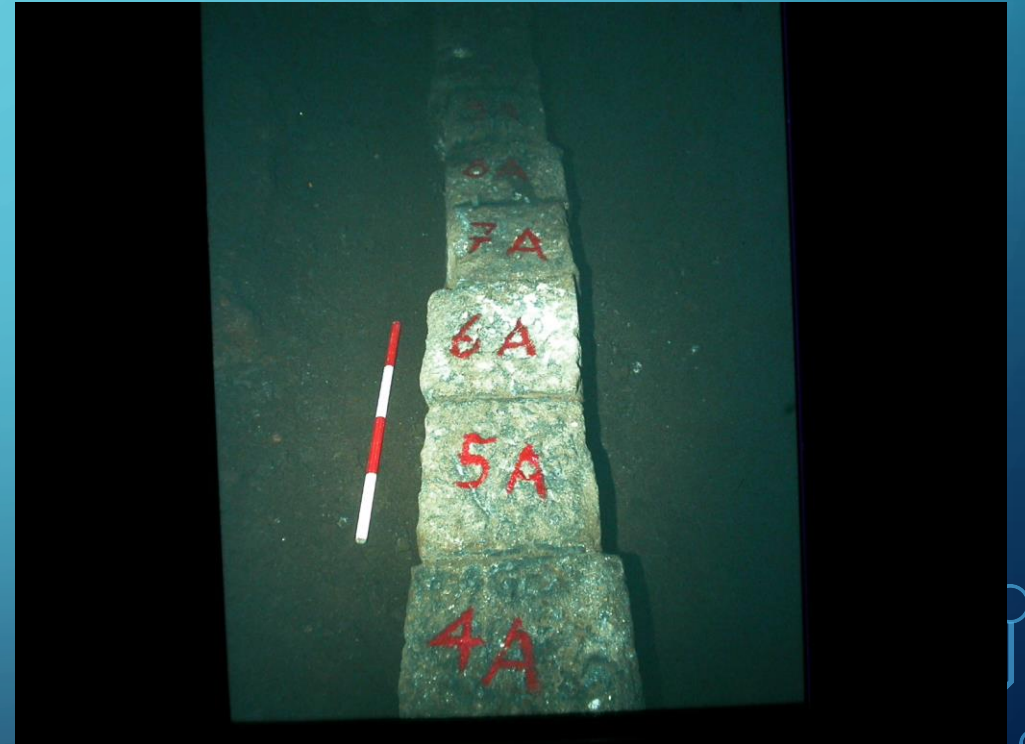


AFTER THE ROMAN SIEGE THE CITY WILL BE ABANDONED FOR ALMOST 700 YEARS. THE ROMANS CONTROL THE TERRITORY AND THEY DO NOT NEED A FORTRESS LIKE ORVIETO THAT IS WITHOUT A SOURCE OF DIRECT WATER ON TOP OF THE MESA



THE MEDIEVAL CITY OF URBS VETUS, THE “ANCIENT CITY”, WILL PROVIDE WATER ALSO THROUGH AN AMAZING AQUAEDUCT, BUILT AROUND THE FIRST HALF OF THE XIII C.

It takes the water from a spring that is located in the Bottaccio area, several miles away from the Orvieto and, once it reaches the edge of the opposite cliff of the valley, it runs in basalt elements fitted one after the other 'till it gets to the top of the mesa



A REMAINING SECTION OF THE AQUAEDUCT STILL PRESERVED UNDER THE PALAZZO DEL POPOLO. IT IS POSSIBLE TO SEE THE TERRACOTTA PIPES ON THE LOWER SECTION



THE REMAINS OF ONE OF THE LAST FOUNTAINS THAT PROVIDED WATER TO THE PEOPLE OF ORVIETO, IN PIAZZA RANIERI. IN THE SECOND HALF OF THE XVII C. THE AQUAEDUCT WILL NOT BE IN USE ANY MORE



ORVIETO WILL HAVE TO RELY ON WELLS
AND CISTERNS AGAIN.
BEFORE THE FAMOUS WELL OF S. PATRICK:
POZZO DELLA CAVA
(FIRST HALF OF THE XVI C.)



DELEGAZIONE APOSTOLICA
DI VITERBO
OFFICIO DI POLIZIA

21 mo. Vigne

Num. d' Arrivo

Num. di Partenza 413

Si citi nella risposta quante
sopra è notato, l' Oggetto,
e la Comune.

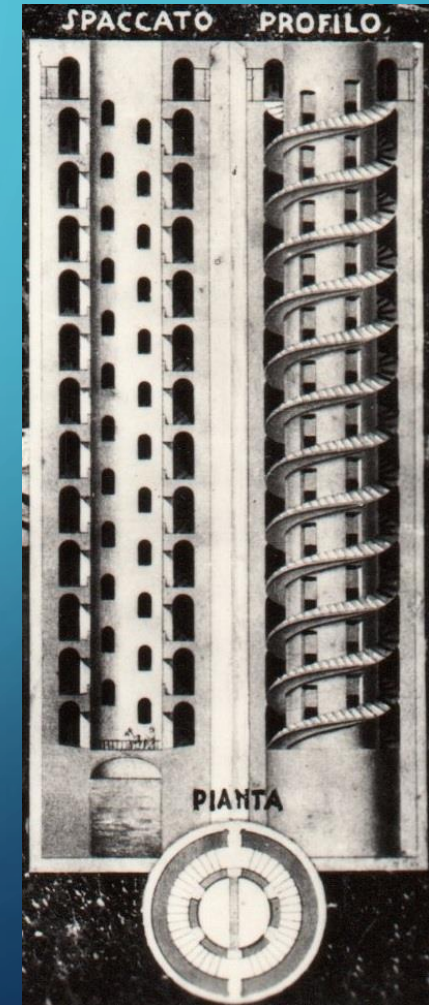
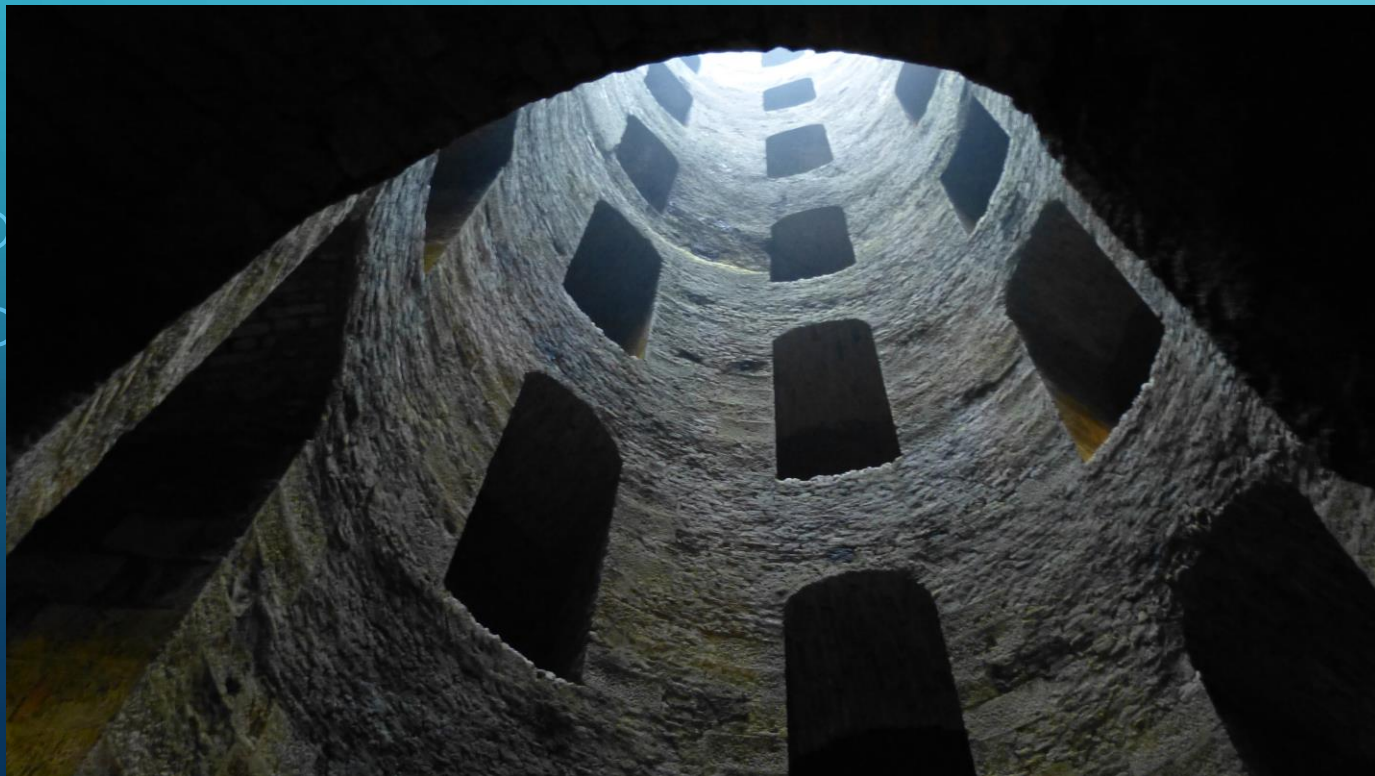
Mi viene riferito, che per cotesta Città
vi sono dei Pozzi aperti, alcuni senz'acqua, ed altri con acqua, ma
inferibili, che sono pericolosissimi, e luoghi opportuni per coprire
delitti, specialmente quello della Cava profondissimo, che può dirsi
prattozzo Caverna. Si compiacca V. S. di ripartire un fatto incon-
veniente col chiudere i sud. Pozzi, o col farvi fare sopra almeno
una grata con respettiva, ed adattata Chiav. E mi darà in segui-
to conto della esecuzione, e con sincera stima mi confermo

Di V. S.
Li 27. Aprile 1870

app. bene
Deleg. Aplico.
D. C. Felice

iq. post. di Orvieto.

THE SO CALLED WELL OF S.PATRICK (1527 C.E.)






Quod natura munimento inviderat industria adiecit



THROUGH THE ANALYSIS OF THE WATER RELATED STRUCTURES ON A HILL-TOP SETTLEMENT LIKE ORVIETO WE HAD A CHANCE TO UNDERSTAND THE IMPORTANCE OF WATER FOR ITS DEVELOPMENT.

IT IS CLEAR HOW IT DEEPLY SHAPED NOT ONLY THE ACTUAL URBAN LAYOUT, BUT ALSO THE LIVES OF THE INHABITANTS THROUGH OUT 3000 YEARS OF HISTORY. THIS IS A GOOD REASON TO PRESERVE AND PROTECT THEM TODAY FOR FUTURE GENERATIONS





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Thanks

Orvieto , Italy, 23 August 2023