

Astronomy in Past and Present Cultures

Rome, 9-13 November 2015

ABSTRACTS BOOK







Società Italiana di Archeoastronomia (SIA, Italian Archaeoastronomy Society)



Società Astronomica Italiana (Italian Astronomical Society)



Istituto Nazionale di Astrofisica (Italian National Institute of Astrophysics)



Dipartimento di Scienze dell'Antichità (Dept. of Classics), Rome University "Sapienza"



Università degli Studi di Ferrara Ferrara University



Laboratorio di Formazione Matematica e Fisica del Politecnico di Milano

(Milan Polytechnic Laboratory of Mathematics and Physics Education)



Astronomy and Cultural Heritage Centre Ferrara University

Seac 2015 Astronomy in Past and Present Cultures

Rome, 9-13 November 2015

ABSTRACTS BOOK



EDIZIONI «LA CITTÀ DEL SOLE s.r.l.» info@lacittadelsole.net – www.lacittadelsole.net Napoli

ISBN 978-88-8292-472-0

Le Edizioni *La Città del Sole* sono contro la riduzione a merce dell'individuo e del prodotto del suo ingegno.

La riproduzione, anche integrale, di questo volume è, pertanto, possibile e gratuita, ed è subordinata ad autorizzazione dell'editore soltanto a garanzia di un uso proprio e legittimo dei contenuti dell'opera.

FOREWORD

The European Society for Astronomy in Culture (SEAC; web site http://www.archeoastronomy.org/) is a professional association of scientists working in the field of Cultural Astronomy, including the interdisciplinary fields of Archaeoastronomy and Ethnoastronomy. In principle, past cultures should have been interested in all astronomical phenomena visible to the naked eye. However, it is obvious that some of these phenomena are so evident and linked to vital factors that it is difficult to believe they were ignored in any cultural context (see, e.g., Polcaro & Polcaro, 2009). The term "Archaeoastronomy" is currently used to define the studies concerning "what peoples throughout history and prehistory have made of the phenomena in the sky, how they used these phenomena and what role they played in their cultures" (Sinclair 2006), while Ethnoastronomy concerns the study of the influence of celestial phenomena on present day population folklore. To date. Archaeoastronomy. Ethnoastronomy and Historical Astronomy (the studies dedicated to recovering data of astrophysical interest from historical documents of pre-telescopic epoch, i.e. before the 17th century AD) are grouped as "Cultural Astronomy". However, researchers in nearby fields of science like History of Astronomy and Mythology are also welcomed in SEAC conferences. Furthermore, the present day cultures are also strongly influenced by astronomy: these relationships are of course important topics of Cultural Astronomy and are usually discussed in SEAC conferences.

The filter for the acceptance of the memories to the SEAC Conferences is very tight: every communication submitted for presentation at the SEAC 2015 Conference in Rome was assessed, on the base of an extended abstract, by at least two professional international referees, an astronomer and a human scientist, expert in the specific field, being interdisciplinary

consensus a necessary condition of scientific proof in Cultural Astronomy (Murray, 1998). Certainly, before being accepted for publication in the proceedings, these works will be further evaluated, taking into account the discussions that they have raised at the conference and the opinion of the *Mediterranean Archaeology and Archaeometry* referees. In any case, however, these abstracts present reasonable assumptions and they deserve to be taken into account by scholars who will deal in the future with these topics. For this reason, I believe that the accepted abstract merit publication on a real book.

Vito Francesco Polcaro Chair of SEAC 2015 Scientific Committee

References

- Murray W. B., 1998, Models of Temporality in Archaeoastronomy and Rock Art Studies, Archaeoastronomy, no. 23 (JHA, xxix (1998)), pp. S1-S6.
- Polcaro A., Polcaro V.F., 2009, Man and Sky: Problems and Methods of Archaeoastronomy, Archeologia e Calcolatori, 20, pp. 223-245.
- Sinclair R.M., 2006, The nature of Archaeoastronomy, in Todd W., Bostwick W., Bates B. (eds.), Viewing the Sky through Past and Present Cultures. Oxford VII International Conferences on Archaeoastronomy, Pueblo Grande Museum Anthropological Papers 15, Phoenix (AZ), pp. 13-26.

A STONE OBSERVATORY AT BRIC PINARELLA (ITALY)

Mario Codebò, Henry de Santis, Gian Luca Pesce Archeoastronomia Ligustica

Some years ago at "Bric Pinarella" (i.e. Mount or Hill Pinarella, where Pinarella means pine tree), Finale Ligure, Savona, Italy, by the staff of the Archaeological Museum of Finale Ligure, a stone building was found in the thick of the wood little beneath the top of the hill. The building consists of:

- a stone, rectangular hut without roof (that probably crashed), partially collapsed;
- a couple of short standing stones, not aligned with the main axis of the hut and on its south side;
- a little, natural and pierced pillar, deliberately embedded into a natural rift of a slab-rock about m 30 far off the hut.

The building is in a resort very rich in archaeological finds, especially of Prehistoric Age (Codebò 1996; 1997; 1999; Del Lucchese 1987; Frondoni 1990; Maggi e Pastorino 1984; Odetti 1987a; 1987b; Priuli and Pucci 1994).

A scout hole by the Bureau of the Ligurian Archaeological Heritage did not allowed to date the monument by means finds, but according to the archaeological analysis of the walls and of their building technique, carried out by the archaeologist Dr. Gianluca Pesce, it seems "ancient", although it is impossible to ascertain its age.

Thanks to information by Mr. Pino Piccardo, a member of the Association of the Friends of the Finale Museum, we studied the astronomical data of the building and we published our conclusions in the Proceedings of the 6th S.I.A. Meeting (Codebò, de Santis, Pesce 2011). In short:

the couple of the short standing stones fix the course of the local meridian and therefore allows to determine the true (or astronomical, or local) noon;

the natural hole of the little pillar shows the aequinoctial sunrising on the east skyline in front of the slab-rock.

Therefore, the building could accomplish the task of "observatory" of the two main times: the midday and the beginning of the spring (or of the year).

This poster is the English report and the updating of our studies about it.

REFERENCES

- Codebò M., 1996, Segnalazioni inedite sul M. Cucco nel Finalese, B.C.S.P. 29, Capo di Ponte, Brescia
- Codebò M., 1997, Prime indagini archeoastronomiche in Liguria, Memorie S.A.It. 68, 3, 735-751
- Codebò M., 1999, Archaeoastronomical hypotheses on some Ligurian engravings, Proceedings of "News95" the World Wide Congress of Rock Art, Pinerolo, Torino.
- Codebò M., de Santis H., Pesce G.L., 2011, L'osservatorio in pietra di Bric Pinarella (Savona), in A. Antonello (ed.), Astronomia Culturale in Italia, atti del convegno S.I.A., Milano (SIA), pp.177-185
- Del Lucchese A., 1987, *Bric Reseghe, Archeologia in Liguria III.1: Scavi e Scoperte 1982–1986*, Genova (Soprintendenza Archeologica della Liguria,)
- Frondoni A., 1990, S. Cipriano. Campagna di scavo 1986, Archeologia in Liguria III.2: Scavi e Scoperte 1982–1986, Genova, (Soprintendenza Archeologica della Liguria)
- Maggi R., Pastorino M.V., 1984, Riparo Fascette I, Archeologia in Liguria II: Scavi e Scoperte 1976–1981, Genova (Soprintendenza Archeologica della Liguria)
- Odetti G., 1987a, Grotta I del Vacché, Archeologia in Liguria III.1: Scavi e Scoperte 1982–1986, Genova ((Soprintendenza Archeologica della Liguria)
- Odetti G., 1987b, *Riparo del Bric Reseghe, Archeologia in Liguria III.1: Scavi e Scoperte 1982–1986,* Genova (Soprintendenza Archeologica della Liguria)
- Priuli A., Pucci I., 1994, *Incisioni rupestri e megalitismo in Liguria*, Ivrea (Priuli & Verlucca)

S.E.A.C. Meeting Rome (Italy) 9 – 15 November 2015

A STONE OBSERVATORY AT BRIC PINARELLA (ITALY) MARIO CODEBO', HENRY DE SANTIS, GIANLUCA PESCE

(info@archaeoastronomy.it) (info@archaeoastronomy.it) (gianluca.pesce@gmail.com)

An intricate stone building (likely a hut) of unknown age but with a distinct astronomical function is located at Bric Pinarella (Savona, IT), in the Ligurian Apennines (φ 44°11'58"N; λ 8°19'56"E; alt. 359m a.s.l.).



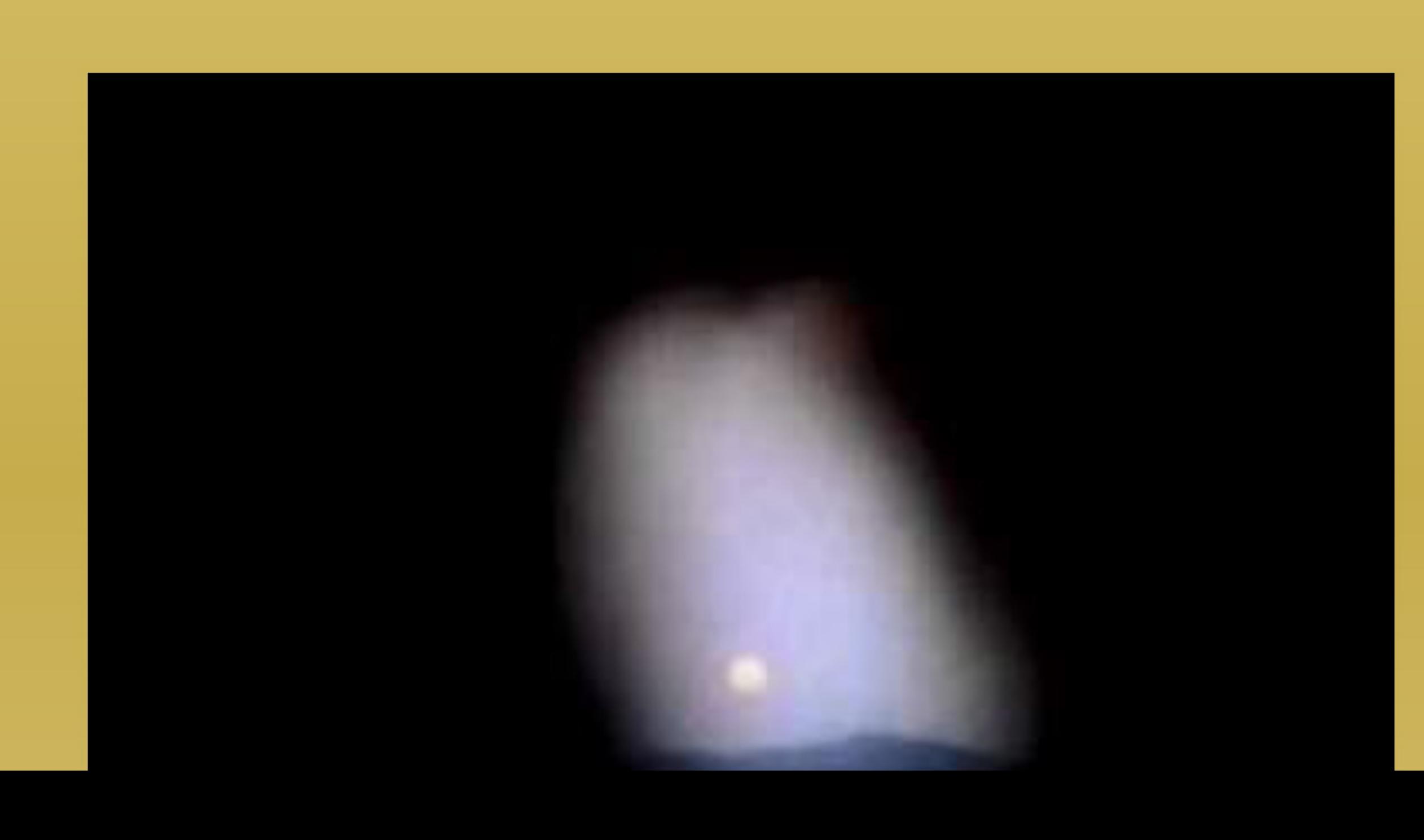
FIGURE 1 © Mario Codebò

The main space of the building has a rectangular plan of about 10 m length and 6 m width. Walls are preserved for up to 2 m above the ground and are built in stones without mortar. No openings such as doors or windows are currently visible in the remains. The roof collapsed long time ago and was probably made of perishable material such as wood



FIGURE 6 © Mario Codebò

About 30 meters away from the building, in an area without vegetation at the edge of the hill, is located a bare horizontal rock from which it is possible to enjoy a full free view of the eastern local horizon (the Mànie plateau), located some kilometres away.



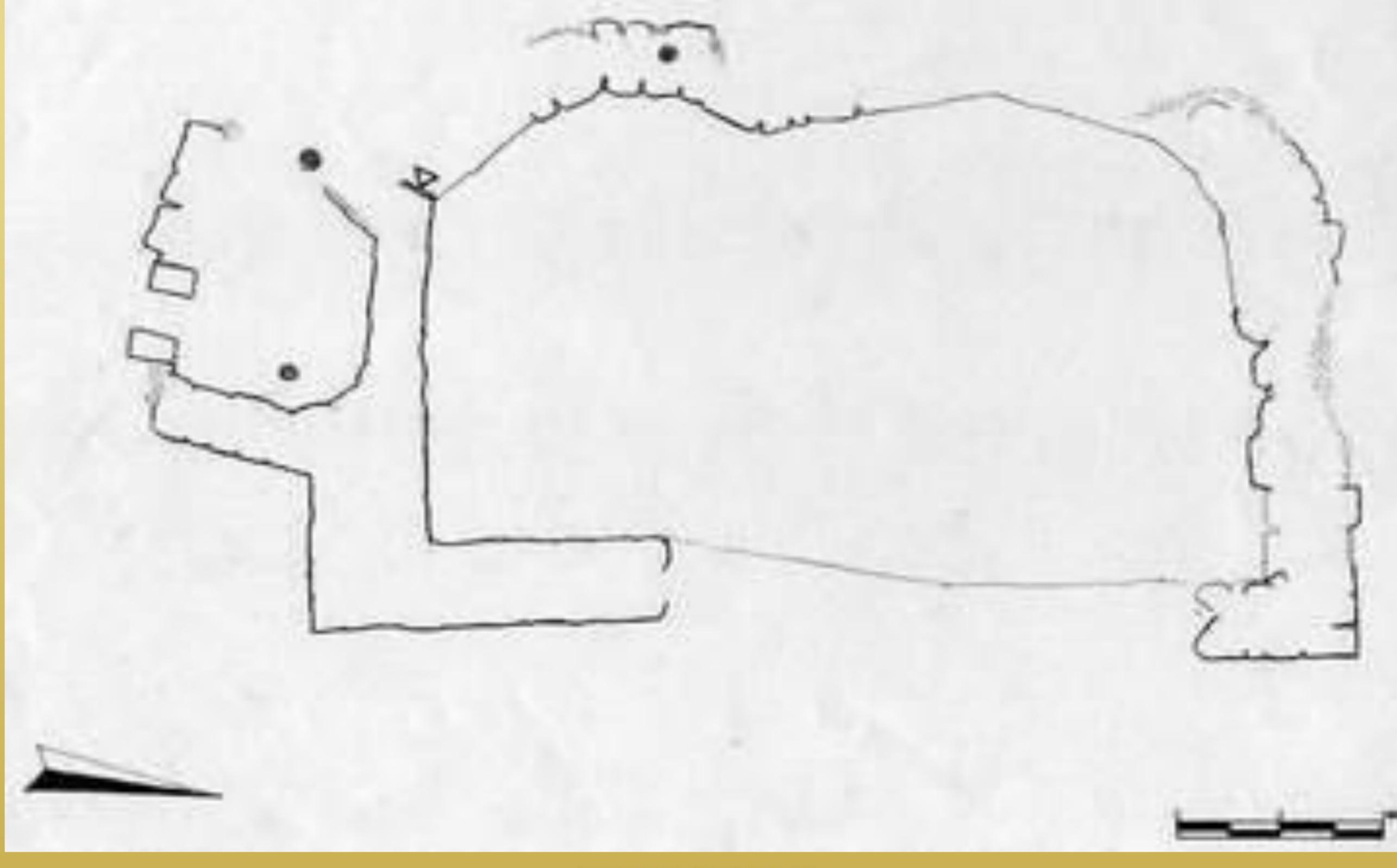


FIGURE 2

Plan of the building at Bric Pinarella. The small arrow pointing toward a short segment in the south wall shows the location of the only stratigraphic relationship observed in whole construction (figure 3). Black dots near the south and west walls provide the locations of the trees. The single line in the east wall is used to suggest the inner alignment of the wall which was covered by the ruins at the time of the survey (drawing by G. Pesce)



FIGURE 5 © Mario Codebò

This image was taken at 12h 33m UT+1 and shows that the shadow of the gnomon is parallel to the inner side of the two standing stones. The time at which this image was taken is the time of the local noon on 23rd March 2003 (local const.: 12h 26m 40s; equation of true time on 23rd March 2003: +06m 42s).

CONCLUSIONS

Thanks to our measurements it has been possible to demonstrate that the two standing-stones and the hollow stone at Bric Pinarella allowed the builders to determine:

- 1) The Sun transit over the local meridian (Sun meridian transit), that is the true (or local, or astronomical) noon.
- 2) The different daily height of the Sun meridian transit during the four seasons



Sketch of the inner front of the south wall at the location highlighted by the small arrow in figure 2. The three stones vertically aligned suggest existence of an interruption in the stonework that could be related to an opening (e.g. door) or to cornerstones (sketch by G. Pesce)



© Mario Codebò

Few meters south from the southern wall of the main space, are located two little standing stones, which are 0,5 m apart. Axis passing in between these two standing-stones is not aligned neither is a prolongation of the main axis of the stone building which is rotated compared to it. Because of this and because of the small size of the opening and of the lack of a doorstep, it is difficult to identify these stones as the threshold of the related space. Our measurements proved that the two stones are aligned with the local meridian, with an axis of 360°-180°, showing its course. Therefore, they operate like a rough "meridian circle".

