

THE DISPLACED ROMAN BUILDING OF EGNA (ADIGE VALLEY), NORTHERN ITALY

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RIASSUNTO - Un edificio di età romana dislocato ad Egna (Val d'Adige), Italia settentrionale - Il Quaternario Italian Journal of Quaternary Sciences, 10(2), 1997, 407-410 - Studi archeologici condotti nella valle del F. Adige (Egna, Bolzano) hanno evidenziato la presenza di una mansio romana del I secolo d.C., improvvisamente distrutta nella prima metà del III secolo. Le strutture murarie ed i pavimenti dell'edificio sono interessati da un sistema di piani di taglio N10°-20°E con spostamento sia verticale (60 cm) sia orizzontale destro (20-40 cm). Analisi paleosismologiche condotte in 7 trincee scavate ad hoc hanno confermato la presenza delle dislocazioni anche nei terreni di fondazione, permettendo di riconoscere almeno due eventi deformativi (circa 2570-2145 a.C. e III secolo A.D.). Nonostante il sito ricada in zona caratterizzata da bassa sismicità, le caratteristiche di simultaneità degli eventi e la geometria di deformazione dei depositi e delle strutture antropiche permetterebbero di ipotizzare l'occorrenza di fenomeni di fagliazione superficiale. La contestualizzazione storico-archeologica condotta a scala regionale conferma l'esistenza di un periodo di distruzione/abbandono nel III secolo d.C. in molti insediamenti della zona.

Key words: Archeoseismology, paleoseismology, Adige Valley, Italy

Parole chiave: Archeosismologia, paleosismologia, Val d'Adige

1. INTRODUCTION

Most of the Central and NW Alps are characterised by low seismicity (Fig. 1). This fact clashes with the evidence of active tectonics during the Holocene that have been highlighted by many Authors.

During archaeological excavations in the Adige River valley (Egna village, northeastern Italy) the walls of a Roman *mansio* built in the 1st century A.D. were discovered. The walls are affected by displacements with both vertical (60 cm) and horizontal (20-40 cm) components of movement. Displacements occurred along two ~N10°E trending main planes, describing a small graben across an E-W section (Figs. 2-3).

Through archaeological analyses it was possible to reconstruct the history of the site and conclude that the displacement of the walls occurred during a living period of the building (in the first half of the 3rd Century A.D.) and was responsible for its destruction.

2. PALEOSEISMOLOGICAL ANALYSES

To better understand the characteristics of the deformations occurred at this site, seven paleoseismolo-

gical trenches were excavated; one of these reached the maximum depth of 6 m. The exposed sedimentary succession is composed by sand and gravel (distal facies of an alluvial fan) and is interested by the two subparallel

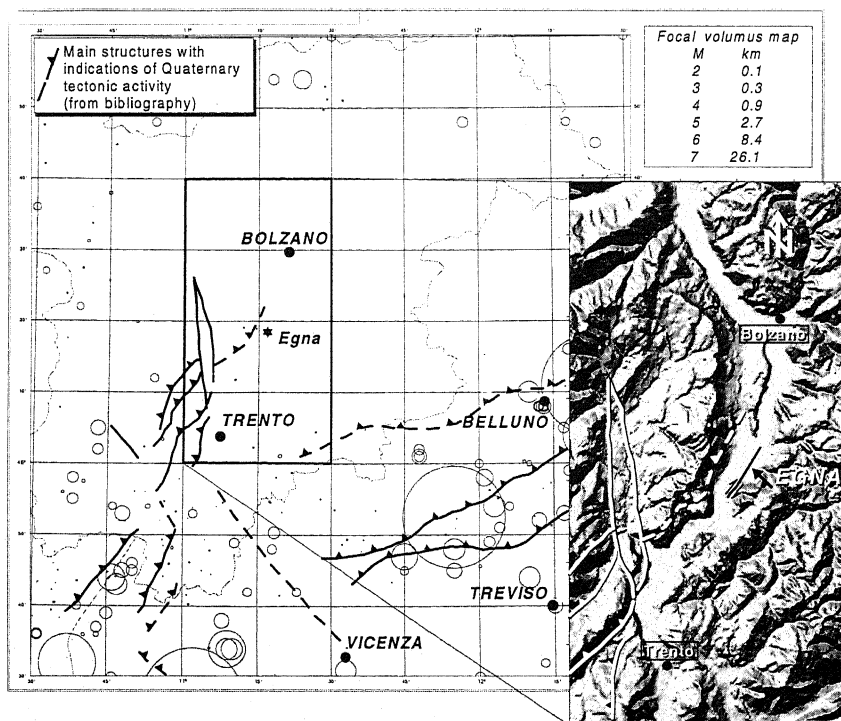


Fig. 1 - Location map of the Egna site and map of the historical and instrumental seismicity of the region (from Camassi & Stucchi, 1996, and ING Seismic Bulletin, respectively).

Ubicazione del sito di Egna nel contesto della sismicità storica (Camassi & Stucchi, 1996) e strumentale (catalogo ING). Nella figura sono evidenziate le principali strutture per le quali sono riportati indizi di attività quaternaria in letteratura.

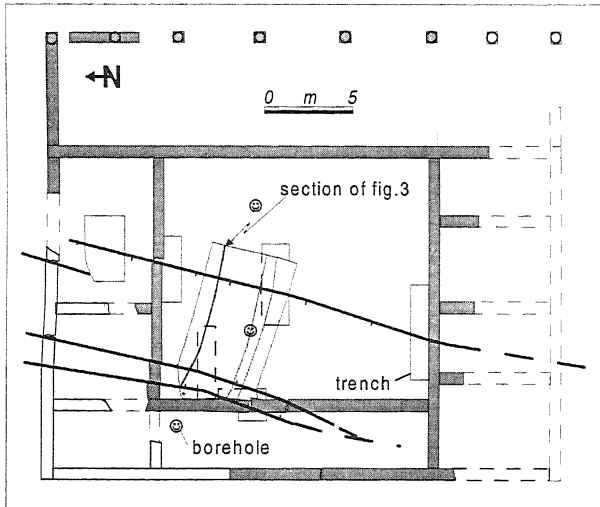


Fig. 2 - Planimetry of the Roman *mansio* with the location of the 7 trenches. Hatched and empty walls have been discovered in 1996 and 1981 excavations, respectively (dashed walls are supposed).

Planimetria dell'edificio romano di Egna ed ubicazione delle 7 trincee scavate all'interno dello stesso. Le murature campite e bianche sono quelle esposte durante gli scavi del 1996 e 1981 rispettivamente. A tratteggio sono indicati i muri non esposti

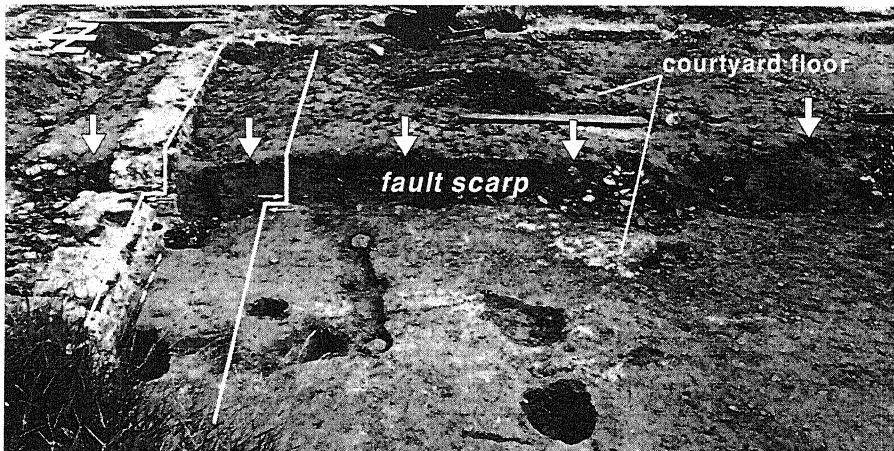


Fig. 3 - View from west of part of the courtyard and northern wall (left). Note the fault scarp cutting the wall and the plastered floor of the courtyard.

Veduta da ovest di parte del cortile interno dell'edificio e del muro interno settentrionale (a sinistra). Le frecce evidenziano il gradino prodottosi durante il movimento nel pavimento del cortile e la dislocazione del muro.

faults striking N10°-20°E visible on the ground surface (Fig. 4). The faults affect the deposits and continue, through the foundation of the wall, inside the wall itself, being sealed by a dark level of reutilisation of the site at the top.

The paleoseismological analysis permitted the identification of two different displacement events. The most recent one is responsible for the displacement of the walls and the oldest occurred immediately after 2570-2145 years BC (calib. ¹⁴C age).

The site is located in a flat area, far from the mountain slopes which border the Adige valley, in the distal part of an alluvial fan. Due to two millenia of fluvial alluvium and to the diffuse anthropic coverage, the fault

trace is recognisable on the ground surface only as a lineament on aerial photographs, crossing the site with a strike of N10°-30°E.

Geomorphological surveys allowed to exclude that the deformations are related to gravity. Four 20-m-deep boreholes were also made and they show the absence of clay levels, possibly responsible for sliding, and peat levels, possibly responsible for differential settlements.

The surveyed fault-planes are parallel to the main structures of the region, in particular to the so-called Mezzocorona-Cortaccia thrust, which affects the western flank of the Adige valley (Fig. 1).

Archaeological data concerning destruction and reconstruction phases in the neighbouring areas have also been collected (Fig. 5). These show that one of these periods is in agreement with the age of the last event recognized in the trenches.

3. CONCLUSIONS

The event, which affected the Roman building, was characterized by closely matching geological and archaeological data.

Geological and geomorphological data permit to

exclude sliding and differential settlements among the causes of the displacement and destruction of the Roman building.

Archaeological data point out the possibility of a general "crisis" affecting the Roman settlements of the region in the first half of the third century A.D. This crisis may not be related to historical facts, such as the economic problems which affected the Roman empire in that period or to Barbarian invasions (which are not reported in the region during the first half of the third century A.D.).

In conclusion, available data may indicate the occurrence of a strong earthquake in the Adige valley and related surface faulting observed at the Egna site along a right-lateral normal-oblique fault.

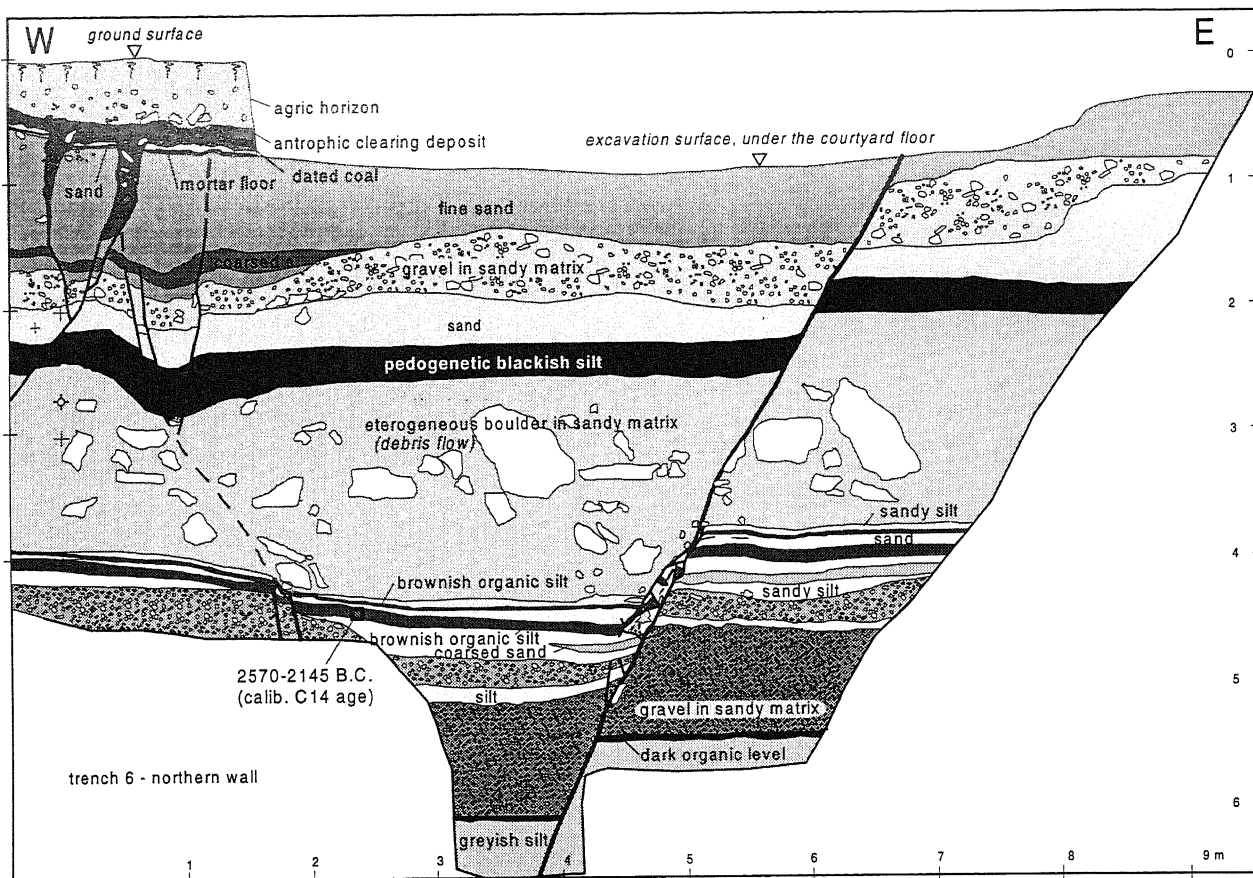
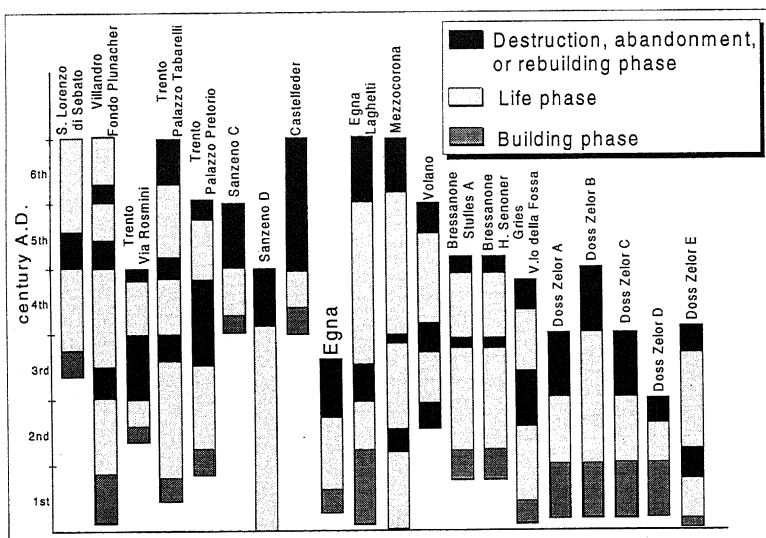


Fig. 4 - Geological scheme of the northern wall of trench 6. The first event occurred immediately after the deposition of the brownish organic silts dated 2570-2145 B.C. (calibrated age. Evidence of this event on the opposite wall of the trench). The last displaces the mansio mortar floor and has been "buried" by anthropic clearing deposits.

Schema della parete settentrionale della trincea 6. Il primo dei due eventi individuati è occorso subito dopo la deposizione del livello di limi organici scuri datati 2570-2145 a.C (età calibrata). L'ultimo movimento disloca il pavimento del cortile ed appare sigillato da depositi antropici di bonifica del sito.

Fig. 5 - Phases of abandonment, destruction and rebuilding occurred at the archaeological sites of the Trentino-Alto Adige region.

Schema delle fasi di abbandono, distruzione e ricostruzione individuate od ipotizzate in diversi siti archeologici del Trentino-Alto Adige.



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