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REASSESSING ANCIENT EARTHQUAKES ON MINOAN CRETE GETTING RID OF CATASTROPHISM

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Abstract(Assessing ancient earthquake on Minoan Crete. Getting rid of catastrophism): Early in the 20th century Arthur Evans invoked catastrophic earthquakes to explain the destruction encountered in the Palace of Knossos. Ever since, these earthquake catastrophes have been used as reference events to which structural damage or destruction layers on Minoan sites are indiscriminately attributed in archaeological and archaeoseismological publications. However, structural damage to archaeological remains cannot be unequivocally attributed to earthquakes. A detailed analysis of Late Minoan contexts moreover reveals that multiple moderate earthquakes occurred during this 200-year period (c. 1600 – 1400 BC). All evidence suggests that earthquakes did not play a crucial role in Minoan history and did certainly not cause the decline of Minoan civilization. This reassessment of the Minoan case clearly demonstrates that earthquakes in itself are incapable of causing the collapse of a civilization.

Key words: Minoan Crete, Late Bronze Age, catastrophism, earthquake archaeology

Early in the 20th century Arthur Evans invoked catastrophic earthquakes to explain the destructions encountered during the excavations of the Minoan Palace at Knossos, Crete (Fig. 1). Such seismic catastrophes were considered to have ended the Protopalatial period (c. 1700 BC), to have been responsible for the “great destruction” during the Neopalatial period (c. 1600 BC), and to have ultimately caused the collapse of Minoan civilization around 1450 BC (Evans, 1928).



Fig. 1: The “house of the fallen blocks” at the palatial site of Knossos, a particular damage interpreted by Evans (1928) to have been caused by a catastrophic earthquake.

Ever since, these earthquake catastrophes have been taken for granted and used as reference events to which structural damage to buildings and other cultural remains or earthquake-related destruction layers are indiscriminately attributed in archaeological (e.g., Sakellarakis & Sapouna-Sakellarakis, 1991) and archaeoseismological publications (e.g., Monaco & Tortorici, 2004; Vallianou, 1996). But is there any reliable evidence to support the existence of such catastrophic earthquakes and can we parameterize them?

First, it is extremely difficult to attribute unequivocally structural damage to Minoan archaeological remains to earthquakes. In most cases it cannot be excluded that other physical and/or anthropogenic agents have generated the damage observed (cf., Driessen, 1995). A macroseismological parameterization of these ancient earthquakes based on the detailed archaeological record remains a very challenging prospect.

Secondly, a detailed analysis of Late Minoan (c. 1600 – 1400 BC) archaeological contexts (cf., Driessen & Macdonald, 1997) shows that earthquake-related damage, repairs, adjustments (e.g., Driessen, 1987) and/or abandonment are all rather isolated and local phenomena within and not necessarily contemporaneous between the different sites. This evidence reveals that most probably multiple moderate earthquakes occurred during this 200-year time period, rather comparable to today’s seismicity of the island.

There is seemingly only consistent archaeological evidence for widespread, earthquake-related damage on Crete, as well as on Thera (Santorini), Kos, and

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Rhodes at c. 1600 BC (transition of ceramic stage MM IIIB to LM IA), known as the “*great destruction*” (Evans, 1928). This potentially “catastrophic” event is, however, followed by a sudden increase of the number of secondary sites, in particular in eastern Crete (cf., Driessen & Macdonald, 1997), new palatial architecture with new architectural (anti-seismic?) elements, such as ‘pier-and-door partitioning’ (cf., Driessen, 1987), and the greatest construction program of any prehistoric era in the Aegean. The heyday of Minoan civilisation followed this major seismic event.

Between c. 1520 and c. 1480 BC (ceramic stage LM IA) this prolific building program came to an abrupt end. Monumental buildings were left unfinished. This heralded the demise of Minoan society. In a period of one to two generations – from c. 1480 to c. 1425 BC (ceramic stage LM IB) – a wave of fire destruction raged over the island. Settlements were abandoned, population density declined. Both a “crisis architecture” (cf., Driessen, 1995) and a “crisis cult” took hold of Minoan society. Evidence for earthquake-related damage in that period indicates multiple moderate earthquakes affecting local communities rather than island-wide destructive events. Most of the destruction was indeed caused by man. All evidence indicates that the socio-political and economic landscape of Minoan society completely disintegrated and collapsed in that period, leaving behind a “failed state”. The power vacuum was later – during ceramic stage LM II (c. 1425 to c. 1400 BC) – filled by the Mycenaeans.

Although Late Minoan society can clearly be characterized as a society in crisis (cf. Driessen & Macdonald, 1997), no hard evidence exists to link this societal decline with (catastrophic) earthquakes. Even the existence of such seismic catastrophes during Minoan history – except for the c. 1600 BC event – should be questioned. Minoans lived with earthquakes, very much as modern Cretans do. Earthquakes did not play a crucial role in Minoan history and did definitively not cause the decline of Minoan civilization. At most, they added some extra stress to a society already in crisis.

This reassessment of the Minoan case illustrates that earthquakes, irrespective of their magnitude and recurrence, provoke different societal responses, largely depending on the political, social, economic and military context. Earthquakes in itself are incapable of causing the collapse of a community, let alone a civilization. It's therefore time to get rid of the catastrophism that has burdened earthquake archaeology for too long (e.g., Nur, 2008; Nur & Cline, 2000).

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