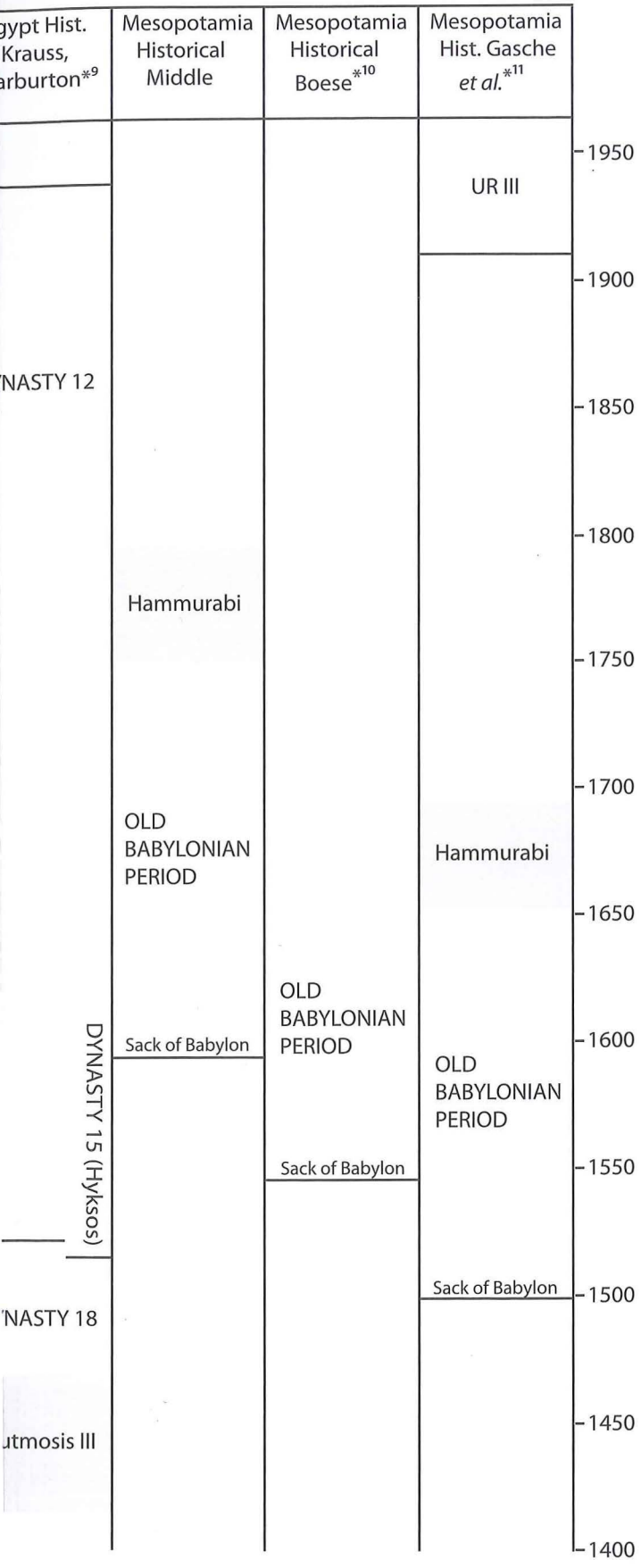
Time's Up!
Dating the Minoan eruption of Santorini

Acts of the Minoan Eruption Chronology Workshop,
Sandbjerg November 2007
initiated by
Jan Heinemeier & Walter L. Friedrich

Edited by
David A. Warburton

Monographs of the Danish Institute at Athens
Volume 10

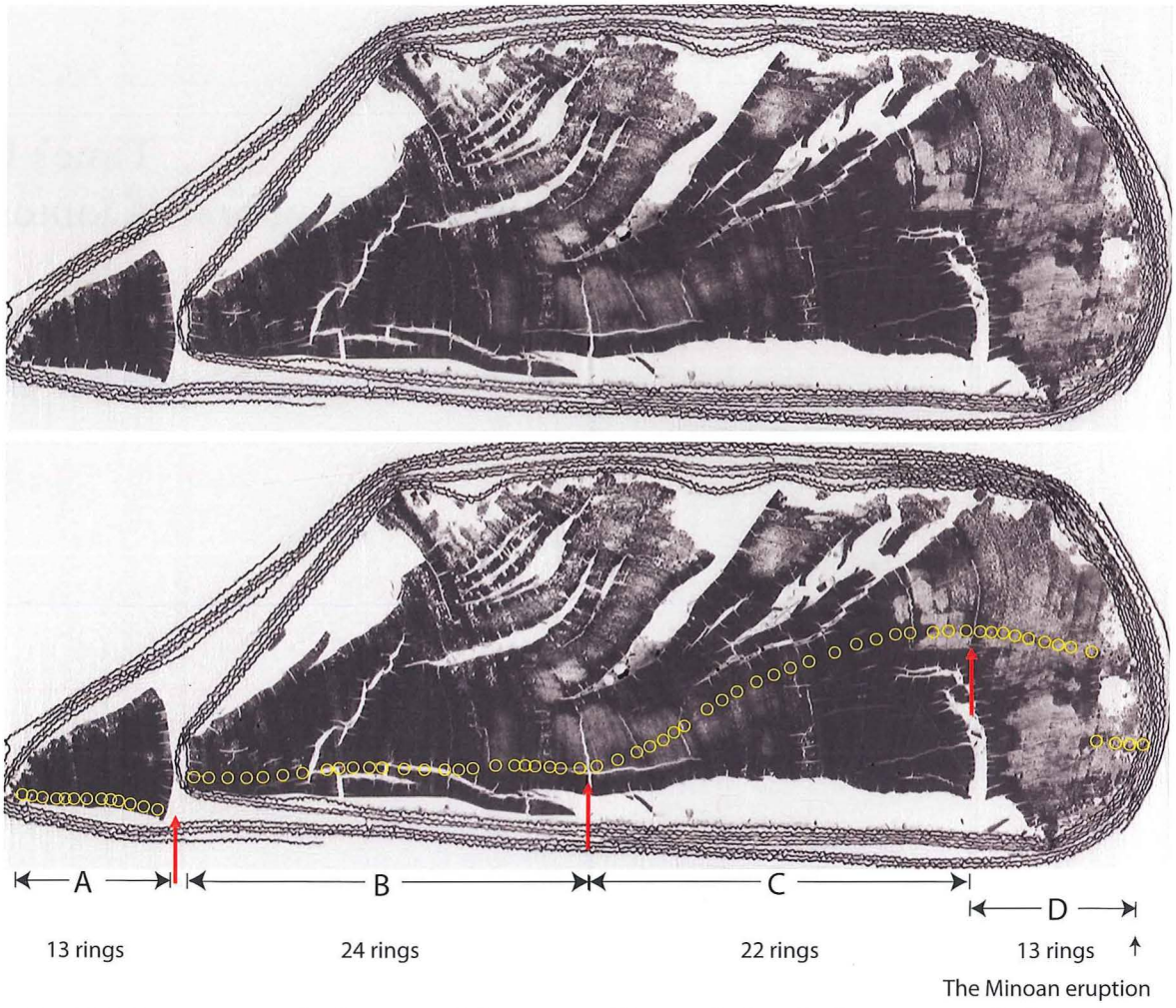

Crete & Santorini Radiocarbon*1
Crete & Santorini Hist. Warren*2
Crete & Santorini Hist. MacGillivray*3
Cyprus Historical Merrillees *4
Cyprus Historical Åström *5
Levant Historical Dever *6
Levant Historical Bietak *7
Egypt Hist. Hornung et al.*8
1950
1900
1850
1800
1750
1700
1650
1600
1550
1500
1450
1400
MMIB
MMIB (19th cent.)
MMII (19th cent.)
MMIIA
MMIIB
MMIIIA
MMIIIB
MMIII
LMIA
LMIB
LMII
Santorini Eruption
LMIA
LMIB
LMIA
LMIB
MCII
MCIII
LCIA
LCIB
MCI
MCII
MCIII
LCIA
MBI
MBI/II
MBII
MBIII
MBIII/LBIA
LBIB
MBI (MBIIA)
MBI/II
MBII (MBIIB)
Sack of Alalakh VII
MBIII (MBIIC)
LBI
DYNASTY 12
SECOND INTERMEDIATE PERIOD
DYNASTY 13
DYNASTY 15 (Hyksos)
DYNASTY 18
Thutmosis III
SECOND INTERMEDIATE PERIOD



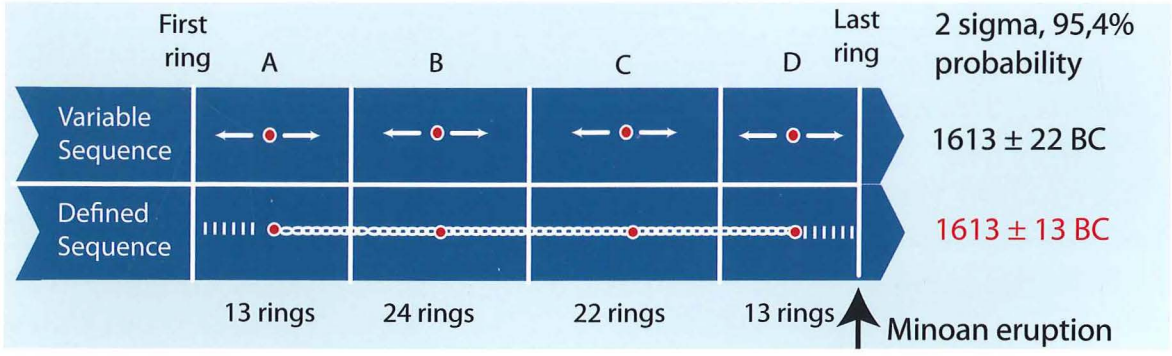
*1 Friedrich *et al.* 2006 (Eruption); Manning 2009
*2 Warren & Hankey 1989 (MMII-III); Warren 2006 (LMI)
*3 MacGillivray forthcoming (MMIIB-MMIIIB); Pers. comm. March 2009 (MM IB-IIA, LMI)
*4 Merrillees 1992
*5 Åström 1972 (MC); 2001 (LCIA)
*6 Dever 1992
*7 Bietak 2002, 2007
*8 Hornung *et al.* 2006
*9 Krauss & Warburton 2009
*10 Boese 2008
*11 Gasche *et al.* 1998

Annette Højen Sørensen & Walter Friedrich

The olive branch (above)
and the results of the OxCal programme (below) used to date the Minoan eruption of Santorini



Using 3D X-ray tomography it was possible to count 72 growth rings in four groups. The last ring was formed in the year of the eruption. The upper illustration shows the original (inverted) X-ray picture, while on the lower image circles have been added to indicate the position of the individual rings.



The diagram shows the effect of the options "Variable Sequence" and "Defined Sequence" of the OxCal programme. The option "Defined Sequence" was used, since we knew the number of rings in each group. The red dots show the measured means of the ring groups A-D. The option "Variable Sequence" allows for a possible uncertainty in the annual ring count and leads to slightly higher uncertainty in the calibrated age. In the example shown, the gap width is increased by 25% and the uncertainty in the gap width is set to 25%.

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Für meine geliebte Tochter Margareth,

die sich für die Physik entschlossen hat

– in der Meinung, dass die Physik mit der Archäologie nichts zu tun hätte…

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Cover illustration: drawing vulcanic eruption, © Walter Friedrich
Front cover:
Stone vase NM 592, © National Museum, Athens
Olive branch from Thera eruption, © Walter Friedrich

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