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Review of 'The passage tomb archaeology of the great mound at Knowth' by George Eogan and Kerri Cleary

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George Eogan and Kerri Cleary, eds. *The Passage Tomb Archaeology of the Great Mound at Knowth* (Excavations at Knowth Volume 6, Royal Irish Academy Monographs in Archaeology. Dublin: Royal Irish Academy, 2017, 838pp., 399 colour and b/w illustr., 104 tables, hbk, ISBN 978-1-908996-76-3)

The archaeological complex of the Boyne Valley (Brugh na Bóinne) in Ireland is one of the major Neolithic monumental landscapes of Northwest Europe together with Carnac-Lozmariaquer in Brittany (France), Avebury (England) or Orkney central mainland (Scotland). Located *c.* 50 km north of Dublin, the complex includes various Neolithic and later prehistoric burial and ceremonial structures, but most notably three clusters ('cemeteries') of megalithic passage tombs on hill tops: Dowth to the east, Newgrange in the centre, and Knowth to the west. Each of these cemeteries share similar characteristics, with a central circular 'mega-mound' of *c.* 80 meters in diameter, covering one or two megalithic tombs, surrounded by smaller 'satellite' mounds (*c.* 15–20 meters in diameter) also covering a megalithic tomb. Knowth is the largest and most complex cemetery of the three Boyne Valley clusters, with a central mound of 90 m diameter, 10 m high, covering two 40-meter-long passage tombs opening at opposite sides (Eastern tomb with a cruciform chamber and Western tomb with a long 'undifferentiated' chamber), and no less than twenty satellite tombs distributed all around the central monument.

Modern excavations in the Boyne Valley started in the early 1960s, conducted by Prof. Michael O'Kelly (University College Cork) at Newgrange, and Prof. George Eogan (University College Dublin) at Knowth. A final report on the site of Newgrange was published in the early 1980s after fifteen years of fieldwork (O'Kelly, 1982) but seasonal excavations continued at Knowth and would last until 2000—a record which certainly makes

it the longest and most intensively excavated Neolithic burial site in Western Europe. An interim overview was published half-way through the excavation (Eogan, 1986). Because of the large amount of data from the excavation and the multi-period character of the site, the final publication was split into a series of monographs published by the Royal Irish Academy ('Excavations at Knowth'). The book under review is the sixth volume of the series and presents the excavation results and specialist analyses of the massive central mound at Knowth (also known as 'Tomb 1' or the 'Great Mound'). Previous monographs in the series, published between 1984 and 2012, were dedicated to the smaller satellite tombs, Neolithic occupation and Beaker activity (Vol. 1), settlements from the passage tomb, Grooved Ware and Beaker periods (Vol. 2), the animal bone assemblage from the Early Christian occupation of the site (Vol. 3), the archaeology of later historical periods (Vol. 4), and the first and second millennia AD occupation activities at Knowth (Vol. 5). A Volume 7 on the megalithic art is currently under preparation, Knowth being the largest assemblage in Europe with more than 350 carved structural stones.

Eighteen years after the end of the excavation and thirty-two years after its last provisional publication (Eogan, 1986), it is needless to say that this final, comprehensive, and up to date monograph on Knowth's central mound was much expected by all archaeologists and members of the public interested in Neolithic monumentality and Irish prehistory. The volume meets the expectation, with a substantial amount of text (more than eight hundred pages) and visual information (more than one hundred tables, one hundred and eighty-two figures, and two hundred and seventeen plates), organised into ten chapters. The Introduction (Ch. 1, Eogan & Cleary) presents the main features of the entire Knowth cemetery and its setting within the wider Brugh na Bóinne complex, which was designated as a World Heritage Site by the UNESCO in 1993. A brief history of previous research and Eogan's

long-term excavation includes exciting narration of the discoveries of the entrances to the Western (1967) and Eastern (1968) passage tombs. The chapter ends with a very useful summary of the main phases of activity at Knowth, from the early Neolithic settlement pre-dating the tombs (and subsequently overlain by them) up to the modern period.

The second chapter ('The Excavation of the Great Mound', by Cleary & Eogan, with a contribution by Roche) is the core part of the volume (pp. 47–276). It provides a detailed and comprehensive description of the results of the excavation of the Great Mound (Tomb 1), focusing on the architecture of the monument (construction material, building techniques, and sequence), and associated ritual activities. Only the outermost part of the mound was excavated down to the old ground surface, exposing a large part of the long megalithic passages that lead to the Eastern and Western chambers (the interior spaces of which were also explored). Three main phases of construction are identified for both the internal megalithic tombs and the large mound that covers them. Phase A ('Tomb 1A') refers to an earlier passage tomb, subsequently dismantled, which has left no evidence except decorated stones that were reused during the following phases of construction. Phase B ('Tomb 1B') corresponds to the construction of the two back-to-back megalithic chambers (Eastern and Western), both with a short megalithic access passage, the whole covered by a single cairn of approximately 40 meters in diameter. Various episodes of well-preserved burial depositions (mostly cremated bones, associated with grave goods and placed into separate shallow pits) were carefully excavated in the Eastern chamber (the Western tomb was only superficially explored).

Phase C ('Tomb 1C') is an extension phase: a 20-meter megalithic passage was added to both tombs, and the entire construction was incorporated into a 90-meter-diameter mound made of

curves, boulder clay, and stones, and enclosed by one hundred and twenty-seven massive, carved kerbstones. Beyond the construction prowess, the excavation reveals all the engineering of Neolithic building, for instance the clay mantle overlying passage capstones to protect internal spaces from infiltrating water. Evidence of pre-mound activity is presented, including an intriguing structured deposit of a bull horn and mandible with wood branches. Stratigraphic evidence shows that four of the satellite tombs (Tombs 13, 16, 17, and 18), pre-dating phase C, were either affected during the extension of the mound or were carefully 'skirted' by the construction of the kerbstone enclosure. The neighbouring tomb of Newgrange is famous for its alignment to the rising sun of the winter solstice: the Eastern and Western megalithic tombs at Knowth have long been suspected to be aligned to the rising and setting sun at the equinoxes, but an appendix to this chapter (Appendix 2, Prendergast & Ray) concludes this was unlikely.

After an osteological report on the human remains (Ch. 3, Buckley, Power, O'Sullivan & Thakore), the results of an ambitious dating programme, with sixty-six new AMS determinations on cremated and non-cremated bones and other organic material from Knowth 1 and seven satellite tombs, are presented and discussed (Ch. 4, by Schulting, Bronk Ramsey, Reimer, Eogan, Cleary, Cooney & Sheridan, and Appendix 4, by Schulting & McClatchie, with a contribution by Sheridan). The various Bayesian models overall confirm that the main phase of burial activity of the complex was in 3300–2900 cal BC, which is consistent with results obtained in other passage tombs in eastern Ireland. Dates also demonstrate that the two burial practices (cremation and inhumation) and the two main architectural types found in the cemetery (cruciform and undifferentiated chambers) were used contemporaneously. However, disappointingly, no clear-cut answers are given to the chronological sequence at Tomb 1 and its relation to the satellite tombs.

Gabriel Cooney offers a useful discussion on mortuary practices (Ch. 5). At least two hundred and four individuals were buried in Knowth 1, with an unusually high representation of juveniles (thirty-five per cent in the Eastern tomb). The main characteristics of the burial deposits are highlighted: these were found essentially in chamber areas (few in passages); cremated and non-cremated remains were mixed together within deposits; some pits contained remains of single individuals while others were collective deposits. These, overall, reflect rather complex post-mortem body treatments, whose sequence preceding tomb placement is difficult to reconstruct and interpret (e.g. evidence for defleshing or pyre location is missing at Knowth).

A total of sixty-nine Neolithic artefacts was recovered during the excavation of the Great Mound, which are presented in a detailed catalogue and discussed in Chapter 6 (by Cleary, Eogan, Little & Warren, with contributions by Goodhue, McCormick, and Sevastopulo). These consist of classic assemblages for Irish passage tombs: bone and antler pins, beads and pendants (heat alterations suggest they were worn on cremation pyres), and Carrowkeel Ware pottery. Two maceheads, including the now famous flint one covered in elaborate incised spiral motifs, are presented, as well as the large basin stones discovered in both chambers. A separate section (Appendix 6b, Warren & Little) discusses the 4200 lithics found on the site, the majority of them dating to the Early Christian/Medieval period. Reflectance Transformation Imaging (RTI) analyses, presented in an appendix to this chapter, reveal tool-marks on some of the most iconic artefacts from Knowth, showing how they were manufactured and reworked through time (Appendix 6a, Jones & Díaz-Guardamino).

Turning to the broader environmental context of the site, Chapter 7 investigates possible sources (mostly non local and distant) for the stones used in the construction of Tomb 1 using geochemical analyses and thin-sections (Corcoran & Sevastopulo), while Chapter 8 presents an overview of a recent, ongoing programme combining GIS, LiDAR, and various geoarchaeological approaches to reconstruct the evolution of the prehistoric environment in the Boyne Valley (Davis, with contributions by Allen, Brady, Brown, Collins, Foster, Gallagher, Guinan, Lewis, McClatchie, McCormick, Meehan, Mulrooney, O'Donnell, Ostericher, Turner, and van Breda). There follows a presentation of the conservation and restoration works at Knowth, which started in the 1970s and expanded alongside the excavations (Ch. 9, Gowen, with contributions by Cumming, Dolan, and McMahon).

The final chapter ('Discussion', Cleary & Eogan), summarises the main outcomes of the excavation report and specialist analyses, and offers developments on some key aspects of Knowth's central monument, such as its overall chronology or the symbolic dimension of its elaborate architectural design and construction.

The monograph overall is very nicely produced, with a hard cover and glossy paper. More importantly, it manages to present a vast amount of extremely detailed archaeological information and analyses in a clear and attractive way, combining a comprehensive excavation report of one of the most important prehistoric sites in Europe with state-of-the-art analyses by forty-three specialist contributors. This is helped by a large number of excellent illustrations, ranging from detailed line drawing of site plans and sections, to archive photographs, reconstruction illustrations, and very appealing photographs of artefacts and internal, external, and areal views of the monument by Ken Williams.

This impressive research work was sometimes unable to fully answer a set of questions. Most frustratingly, ‘it is currently not possible to confirm which tomb, or group of tombs, at Knowth or in the wider Brugh na Bóinne area is the earliest, nor is it possible to establish the overall sequence of tomb construction’ (p. 47), despite some stratigraphic relationships and the extensive radiocarbon dating programme. This sadly prevents us from eventually understanding the general evolution of the entire cemetery and interpreting changing social dynamics behind it (a pending question to which theories have long been offered and debated, e.g. Sheridan, 1986; Cooney, 2000: 153–58). Possible locations of the invisible (rather conceptual) ‘Tomb 1A’, from which twenty-four decorated stones were extracted and reused in the construction of the Eastern and Western tombs (phases B–C), are listed and discussed (pp. 73–77); however, the possibility that reused stones may originate from some of the known satellite tombs at Knowth, several of which were found with orthostats missing, does not seem to be considered. Perhaps this will be developed in the forthcoming seventh volume of the series, dedicated entirely to the decorated stones of the complex.

Finally, as a minor point, the terminology used to describe the different phases of construction of such a complex monument can sometimes lead to confusion: for instance, ‘Tomb 1B East’ and ‘Tomb 1C East’ do not refer to two different tombs, but to two phases of construction of the same megalithic tomb. Terms like ‘phase B’ and ‘phase C’ would have prevented confusion between architectural entities and construction episodes.

Despite these small anecdotal gaps, this volume makes a major contribution to the archaeology of Neolithic monumentality of Europe, and will provide a mine of information for future studies and research across the continent.

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