Discussion of "The 'lost' islands of Cardigan Bay, Wales, UK: insights into the post-glacial evolution of some Celtic coasts of northwest Europe" by Simon K. Haslett and David Willis[1]

CATHERINE DELANO-SMITH[1,2], PHIL BRADFORD[3,2], AND WILLIAM SHANNON[2]

1. Institute of Historical Research, University of London, Malet Street, London WC1 7HU, United Kingdom
2. Gough Map Research Project (Leverhulme Trust, RPG-2019-070), The Bodleian Library, University of Oxford, Broad Street, Oxford OX 1BH, United Kingdom
3. Department of History, University of York, Heslington, York YO10 5DD, United Kingdom
*Corresponding author: <c.delano-smith@qmul.ac.uk>

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DISCUSSION

In their article 'The 'lost' islands of Cardigan Bay, Wales, UK: insights into the post-glacial evolution of some Celtic coasts of northwest Europe', Simon K. Haslett and David Willis argue that two islands off the coast of Cardigan Bay were lost to erosion by the mid-sixteenth century. Taking as their starting point medieval Welsh folklore about these islands, the authors use the medieval map of Britain known as the Gough Map as evidence that these islands still existed above sea level in the later Middle Ages. They then turn to a copy of the Gough map made in the sixteenth century by Thomas Butler as proof that the islands had disappeared by the middle of the sixteenth century. Moreover, they claim that Ptolemy's Geographia shows that 'the mouth of the Afon Ystwyth in the 2nd century CE [was] 10–15 km to the west of its present position' (p. 141). Unfortunately, these arguments are based upon a fundamental misunderstanding of early maps and, as the present note shows, not one of the arguments presented stands up to scrutiny.

There is no reason to doubt the authors' understanding that during the Pleistocene the Cardigan Bay area was occupied by Irish Sea ice from the north and west, and Welsh ice from the east. Nor that the Pleistocene left a land surface covered by unconsolidated deposits that subsequently disappeared as a result of the Holocene sea-level rise (which coincided with the Mesolithic archaeological period). It is not unreasonable to maintain, as the authors do, that a 'memory' of this land was retained in various historical and folkloric sources relating how this 'Cantre'r Gwaelod' (the Lowland Hundred) was overrun by the sea at some time in the past, although the extent to which such myths and legends can be relied upon to identify and date the lost lowlands of Cardigan Bay might be a matter for speculation. Such legends are far from unique. There are plenty of myths of lost lands and sunken cities around the British Isles, many supported by botanical and archaeological evidence of the large scale loss of real areas (Pennick 1987). One has only to consider Doggerland, the great land-mass between Britain and the continent that was finally submerged around 6500 BCE, or well-documented cases of settlements lost to storms and coastal erosion more recently such as Ravenser Odd at the mouth of the Humber, a prosperous port abandoned and overwhelmed in the mid-fourteenth century. However, it is abundantly clear that early maps, including the three cited by Haslett and Willis, cannot be used in the way they do to provide details of coastal erosion, still less to date the existence and disappearance of particular islands.

Haslett and Willis attempt to use Ptolemy's Geography (compiled ca. 150 AD) to argue that roughly 1900 years ago, the coast of Wales was some eight miles to the west of its current position. This is to misunderstand the original source completely. Claudius Ptolemy, based in Alexandria, did a brilliant job of pulling together disparate sources to produce a map of the known world. That map has not survived. What does survive are his instructions for making it, and a series of regional maps in the form of lists of coordinates or grid references. It is probable that the latitudes of a small number of Ptolemy's places were located from astronomical observation. But no secure method existed for estimating longitude, and the position of most places given by Ptolemy from his sources would have been derived from statements of the approximate distance and direction between them (as in itineraries). For Britain, it may be that Ptolemy was using

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three or more independent sources, perhaps one for the inland places and two for the coastline, written down several generations before Ptolemy's own time. The opportunities for error, both in the original sources and in later written copies, are enormous; the whole of Scotland is tipped away from pointing north to pointing due east, possibly as a result of an error in copying and transmission, as is readily appreciated from the earliest surviving maps (thought to have been constructed from Ptolemy's figures in Byzantium). Within Britain, many places are mislocated (Shannon 2012). It is also important to note that Ptolemy makes no attempt to describe coasts. Instead, he gives us a series of points in space, between which the coastlines have to be interpolated as straight lines. It is impossible, in short, to work out from Ptolemy's data where the coast of Wales might have been in his day. To imagine that a Ptolemaic map can be interpreted as evidence that the coast was in his day some thirteen kilometres (eight miles) from its present position is far-fetched in the extreme; to go on to use this position to calculate the 'mean rate of removal of the depositional landscape between the recording of Ptolemy's coordinates and the drafting of the Gough Map' (p. 142) is stretching the evidence well beyond breaking point.

Yet it is the Gough Map on which the Haslett and Willis thesis relies most heavily and that is used to show that the two lost islands in which they are interested must have still existed when it was compiled (Fig.1).

Since it came to light in the mid-eighteenth century, the Gough map has attracted considerable interest but the conclusions reached by individual commentators have tended to vary, often considerably and sometimes misleadingly. Notwithstanding, the authors of 'The 'lost' islands of Cardigan Bay' have selected from this literature the parts they find supportive rather than showing an understanding of the problems its (often incompatible) diversity presents. Since 2012, the Gough Map has been intensively studied by a multi-disciplinary team of historians and scientists. Some provisional conclusions were published in 2017 (Delano-Smith *et al.* 2017) but ongoing research (funded by the Leverhulme Trust, RPG-2019-070) is shedding new light and sharpening our understanding of this unique historical document. From this, it can be stated with a reasonable degree of confidence that the extant map dates from approximately 1400 and not from ca.1360 as in the older scholarship (e.g., Parsons 1958).

Although the Gough Map is the finest example of a map of Britain pre-dating 1500, the statement by Haslett and Willis that it is 'the earliest known map of Great Britain' (p.132) is not true. A century and a half before the Gough Map, the St Albans monk Matthew Paris had drawn four maps of Great Britain, improving them as he went along. The basic outline that Paris used was taken from a *mappa mundi*, or world map, where the British Isles are generally shown, with little detail, at the extremity of the known world. Hundreds of these world maps survive from the Middle Ages, from small diagrams on the pages of ecclesiastical chronicles and other

Figure 1. The Gough Map of Britain. ca. 1400. East at the top. ca. 55 × 116 cm. Parchment (two skins joined), Oxford, Bodleian Library, Gough Gen. Top. 16 (Bodleian Libraries, University of Oxford).

books to large stand-alone detailed compilations for display, such as that of ca. 1300 in Hereford Cathedral. A map dating from two centuries before Matthew Paris, now in the British Library and known as the Cotton or Anglo-Saxon map, depicts a recognizable British Isles, albeit with Wales shown as a separate island (probably a miscopying of the rivers Dee and Severn). This map was almost certainly derived from an earlier map which has not survived but which may have dated from the ninth century and that, in turn, owed its origins to late classical maps, also long lost. However, it is clear from the early literature that, for more than a thousand years before the Gough map, the general size and shape of Britain was known; Julius Caesar's figure of 800 miles in length was repeated by medieval authors, including Matthew Paris, and the island was traditionally described as triangle or lozenge in shape.

The most significant of the sources cited by the authors in support of that contention that the Gough Map is the first of its kind, E.J.S. Parsons' important study of 1958, says no such thing and, moreover, explicitly acknowledges the influence of the *mappae mundi* and of Matthew Paris (Parsons, 1958, pp. 1–5). The most that can be said for the Gough Map is that it is the earliest extant depiction of the British Isles in large format. On even the largest *mappa mundi* (Hereford, Ebstorf) Britain was shown tucked away on the periphery of the whole (known) world; while Matthew Paris' maps were in books; and all these early representations of Britain are restricted in size and detail. The Gough Map, by contrast, focuses entirely on Britain (with a token recognition of Ireland and Continental Europe), and was drawn on two sheepskins stitched together to give the required dimensions of 56 by 115 cm. It was produced not for display but as a working document, to be updated as necessary.

Haslett and Willis are correct in noting that the Gough Map was derived from an earlier or predecessor map. The mapmaker had pricked through that predecessor to mark the new made-to-measure parchment to help lay out the replacement map. With few exceptions, the pinholes served also to indicate the different classes of signs for the settlements to be portrayed on the new map. One or two mark the source of a river, to help with locating places. Almost no pinholes are found on the coastline, and while some places on islands were pricked, no island was indicated in this way.

It is not surprising, then, to find in the specific case of the two islands off West Wales, no pinholes at all, making it impossible to say whether those islands were on the predecessor map or whether they appeared for the first time on the extant map. The suggestion that the predecessor map dates from around 1280 — as accepted by the authors when talking about the '13th–14th-century Gough Map' (Haslett and Willis 2022, pp. 133, 141) — derives solely from the arguments of Daniel Birkholz (2004). Birkholz's view, however, has not been widely accepted by other scholars, and ongoing research for the Gough Map project suggests that a date in the fourteenth century is a much more likely date.

Pinholes are absent too from large parts of the east and south-east of England on the Gough Map, suggesting that, as had long been held, new information had become available to the copier of the predecessor map regarding the shape of East Anglia (Andrews 1926). The information would have come from navigation charts (portolan charts) carried on board the ships from the Mediterranean that in the fourteenth century were regularly coming through the Channel and into the North Sea to trade at ports along the east coast of England before heading across the sea to Flanders. The copier was accordingly able to show a probably much-improved coastal outline for this part of England – although not for the west coast of Britain, which remained largely unknown to the Mediterranean chart-makers. Crucially, though, whereas the shape of the south-eastern coast depicted on the Gough Map is familiar to the modern eye, and we know from the geomorphologists that 'the low-lying coastal zones of the North Sea basin have changed dramatically over the centuries', we are warned that 'our knowledge of those changes is weak' (Bailey *et al.* 2021, p. 86). Even for so intensively studied an area as the Suffolk coastlands, for which significant changes are well documented, the Gough Map was found to be of no use when seeking an 'accurate' idea of what the coastline might have been like around ca. 1400. If this is the case for places, ports and inlets along as well-travelled a shore as that of southeast England, how much more cautious and skeptical we should be when faced with regions about which the compiler of the Gough Map obviously possessed far less information.

The idea that a scale can be determined from the Gough Map, to be used to calculate distances and dimensions (Haslett and Willis 2022, pp. 133–134) is also fundamentally misguided. The Gough Map is not a scale map. Maps to mathematical scale were not drawn at this time and remained rare before the later sixteenth century. There are far too many problems and errors to argue for the 'apparent geographical truthfulness' of the Gough map, as the authors do with reference to Lloyd and Lilley (Lloyd and Lilley 2009, p. 29; see also Lilley and Lloyd 2009; Haslett and Willis 2022, p. 133). The red lines that have intrigued previous commentators on the Gough Map are not roads but a construct, not drawn to mathematical scale, devised to help map users to understand the shape and size of the kingdom and the interrelationships between a mass of places; they were reader aids, in other words (Delano-Smith 2002, pp. 81–82).

Nor was the Gough Map the product of any sort of 'survey'. The information that word conveys is far too variegated and inconsistent for that to have been the case. Moreover, any extensive official fourteenth-century survey would have left some trace in the abundant records of England's highly centralised administration, as did those of 1086 (Domesday Book) and of 1279–1280 (the Hundred Roll

enquires; see Roffe 2000; Raban 2004). Rather, the achievement of the Gough Map was to improve upon its predecessor using the latest knowledge as part of an intellectual process that had been going on (in effect) for a thousand years and more.

There is no doubt that the depiction of Britain on the Gough Map is better than anything that had gone before. Inevitably, though, it could be no better than the information available to its compiler(s). It was an English map, after all, reflecting a fundamentally English perspective, which means that the more remote (from the compilers' perspective) fringes of Britain contain some notable errors. Scotland is glossed over as an elongated blip, with little internal detail and with the whole of the country north of Stirling depicted as a separate island, joined to the mainland by a bridge (another tradition found in Matthew Paris). Settlements marked as 'Ross', 'Caithness' and 'Sutherland' were not towns but the names of lordships. North-west England appears to be one of the better-known regions but even here the coast trends north-west in a straight line, with no sign of the bulge of Cumbria. Most cogently, Wales is a rough rectangle, with no hint of Cardigan Bay or the Llŷn Peninsula, and an almost empty interior apart from the error of a large lake at Plynlimon instead of the mountain that was undoubtedly shown on the predecessor map.

All in all, the unavoidable conclusion has to be the compilers of the Gough Map were not at all interested in producing a mathematically accurate depiction of the geography and topography of the island. What mattered was to display the distribution of some 650 places within an outline of the island of Britain. The Gough Map is primarily a map of places set out to show how each related to its neighbours and to an impressive network of rivers. The fifty or so islands surrounding Britain are arbitrarily distributed and all are depicted notionally as rough circles or ellipses. Most are over-sized and lack any hints of physical realism. Thus, the score or so Orkney Islands of tradition are represented as a single, large feature (Insula de Orkeney) lying far off the eastern coast of Scotland instead of close to the northern coast. The Scilly islands are likewise shown as a single island (Celly), whereas the western Isles are identified in the plural as 'Les Outislez' but shown as singular. About half the islands have one or more settlement signs, many of which, especially on the unnamed islands around Scotland, do not appear to be intended to represent specific places so much as to heighten in a general way the well-known point that there are many occupied islands off the Scottish coast.

This allusion to context brings us to consider the two islands with which Haslett and Willis are concerned. Of the ten islands off the Welsh coast, Priestholm and Bardsey are each shown as considerably larger than one would expect. In the latter case, this allowed space for a mytho-historical note about the presence of 'the soothsayers of the Britons', one of a number of adventitious 'folkloric' items found on the map (others include the location of Brutus the Trojan's landing in Cornwall and various myths connected with Loch Tay in Scotland). What underlies the selection of myths and legend is uncertain, but we can say firmly that no reference is made on the Gough Map to the lost lowland of Cantre'r Gwaelod. We can also say that the proportions of the islands shown in Cardigan Bay Island are wholly unrealistic.

Bardsey alone, in reality a mere 179 hectares, is shown as larger than Haslett and Willis' two 'lost' islands together. To the south of these, another similarly sized island labelled 'Ramesey' obviously represents Ramsey Island, off Pembroke, which in fact totals 259 hectares. What, however, the makers of the Gough Map intended by inserting the intervening pair of small islands is less clear. For the much-reduced reproduction of the map published in British Topography (1780), Richard Gough's engraver left the circles empty, but Parsons thought he could read '…l…n' and '… well' and took them to be Gwylan (two islets off Aberdaron, not far from Bardsey) and St Tudwal's Island (two islets off Abersoch, also not far from Bardsey) (Parsons 1958, p. 27). At the time of writing, the missing letters have not yet been deciphered on the recent high-resolution photography scanned for the Gough Map Research Project but there is no reason to doubt Parsons' reading and still less to assume they refer to two islands in the lost land of Cantre'r Gwaelod.

The obvious unfamiliarity of western and central Wales to the distant compilers of the Gough Map would also caution against accepting their map as an 'accurate' presentation of the topography and geography of the area in the late Middle Ages and trying to use it in scientific research into coastal change. Whoever sketched out the coasts of Wales was clearly unaware of the sweeping indentation of Cardigan Bay and drew instead the western Welsh coast as a roughly straight north-south-line broken only by river mouths. Notwithstanding, Haslett and Willis argue that 'the lack of curvature of Cardigan Bay on the Gough Map does not cast significant doubt in itself on the distinct occurrence of the two "lost" islands depicted on the map offshore the Cardigan Bay coast' (p. 133). This is surely incorrect. If the mapmaker was unaware of Cardigan Bay, how can we be sure that these two islands were intended to lie off the coast of Cardigan Bay? Knowing how geographical outlines were drawn on medieval maps in general at this date (even charts), and bearing in mind that the Gough Map represents effectively the very first attempt to trace the details of the coastline of the whole of Britain on a single large surface, it is far more hard-headed to accept that the islands in question, like so many of the other small islands scattered about the map, are (as noted above) representative, not naturalistic, icons of real islands. It is simply not possible to use the Gough Map to 'prove' the existence of these two islands in the way the authors claim.

Finally, the leap that Haslett and Willis then make to their next conclusion is equally invalid. They say that, because these two islands do not appear on Butler's Map, dated to ca. 1547, they must have vanished — submerged—in the intervening century or so. However, this is to misunderstand Butler's

map. Butler was a merchant (Birkholz 2006). His map, which occupies a double page spread in his commonplace book, was copied directly from the Gough map or, more likely, from another copy of that map (Fig. 2). It has far less room for detail (Scotland is not included, although Ireland is expanded). Like the Gough Map compilers, Butler's interest was also in places, although with less space he had to be more selective as to what he could show, and the fact that he did not bother to include the two islands on his pocket-sized copy proves nothing. They were simply irrelevant to his commercial interests and the purpose for which he sketched his map (he drew only four of the eight Channel Islands marked on the Gough Map). Not only did he omit the two Cardigan Bay islands but he also left off nearby Bardsey, shown so disproportionately large on the Gough Map. Bardsey has obviously not been eroded and is still very much there. The logic the authors apply, that something appearing on the Gough Map but not on Butler's Map means that it had been submerged in the intervening period, is therefore ridiculous, as the case of Bardsey (and plenty of other islands present on Gough but not on Butler, such as the Channel Islands) demonstrates.

Another map of approximately the same period, the larger and much more elaborate *Angliae Figura* (1536–1537) is likewise a derivative of the Gough Map. It too retains the Welsh coastline lacking Cardigan Bay and omits the two islands in question. Like Butler, it also omits Bardsey. Exactly the same is true of other sixteenth-century derivatives of the Gough Map, including Sebastian Münster's of 1540 and George Lily's from 1546. All retain Anglesey, Priestholm and Ramsey but omit Bardsey and the two other islands. Nor do they tell us anything about changes to the coastline or the disappearance of small islands in general.

Rather, these Tudor-era maps provide evidence only that those who used the Gough Map to create their derivatives (or made derivatives from other derivatives) omitted things which were not relevant to their reason for redrawing the map,

Figure 2. Thomas Butler, The Mape off Ynglonnd. c.1547–1554. East at the top. 18 × 26 cm. Ink on paper in his commonplace book bound into a compendium of astronomical and astrological treatises. Newhaven, Connecticut, Beinecke Library MS 558, fols 47v-48r. (Beinecke Rare Book and Manuscript Library, Yale University.)

be it a whole country (Scotland) or some obscure islands off the Welsh coast. That they did not include Haslett and Willis' two 'lost islands' does not prove that these physical features had disappeared any more than that the Gough Map proved their existence. It simply shows us that they were not regarded as significant to the mapmakers.

In sum, the conclusions reached by Haslett and Willis concerning the 'evidence' of these maps are unsupportable. None of the maps they cite can be used to 'prove' the existence of 'lost' islands, still less to make calculations about their size or location, date of emergence and disappearance. This observation applies to any ancient, medieval or early modern map.

The Gough Map has no place in a geomorphological discussion of post-glacial coastal evolution, and it is to be regretted that the authors did not seek the advice of cartographic historians before publishing their findings.

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[NOTE: The ongoing Gough Map Research Project is due to publish its findings in full, in a book edited by Catherine Delano-Smith and Nick Millea and published by Brill, at the earliest opportunity after 2024.]

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Editorial responsibility: Denise Brushett