MARITIME ENCOUNTERS 1

PRESENTING COUNTERPOINTS TO THE DOMINANT TERRESTRIAL NARRATIVE OF EUROPEAN PREHISTORY (ed. J. T. Koch, M. Fauvelle, J. Ling. B. Cunliffe) is the first in the multi-author series Maritime Encounters, outputs of the major six-year (2022–28) international research initiative, funded by Riksbankens Jubileumsfond (grant ref. M21–0018). This major new series examines the contribution and significance of maritime transport, movement, and trade in the shaping of Bronze Age communities and social complexity in north-west Europe. Our research programme is based on a maritime perspective, as a counterpoint to prevailing land-based vantages on Europe's prehistory. It includes a far-ranging, research-led reconsideration of the role of mining and source areas of metals and metal exchange networks in the Bronze Age along the seaboard between Iberia, Ireland, Britain, and Scandinavia, and models a maritime mode of production.

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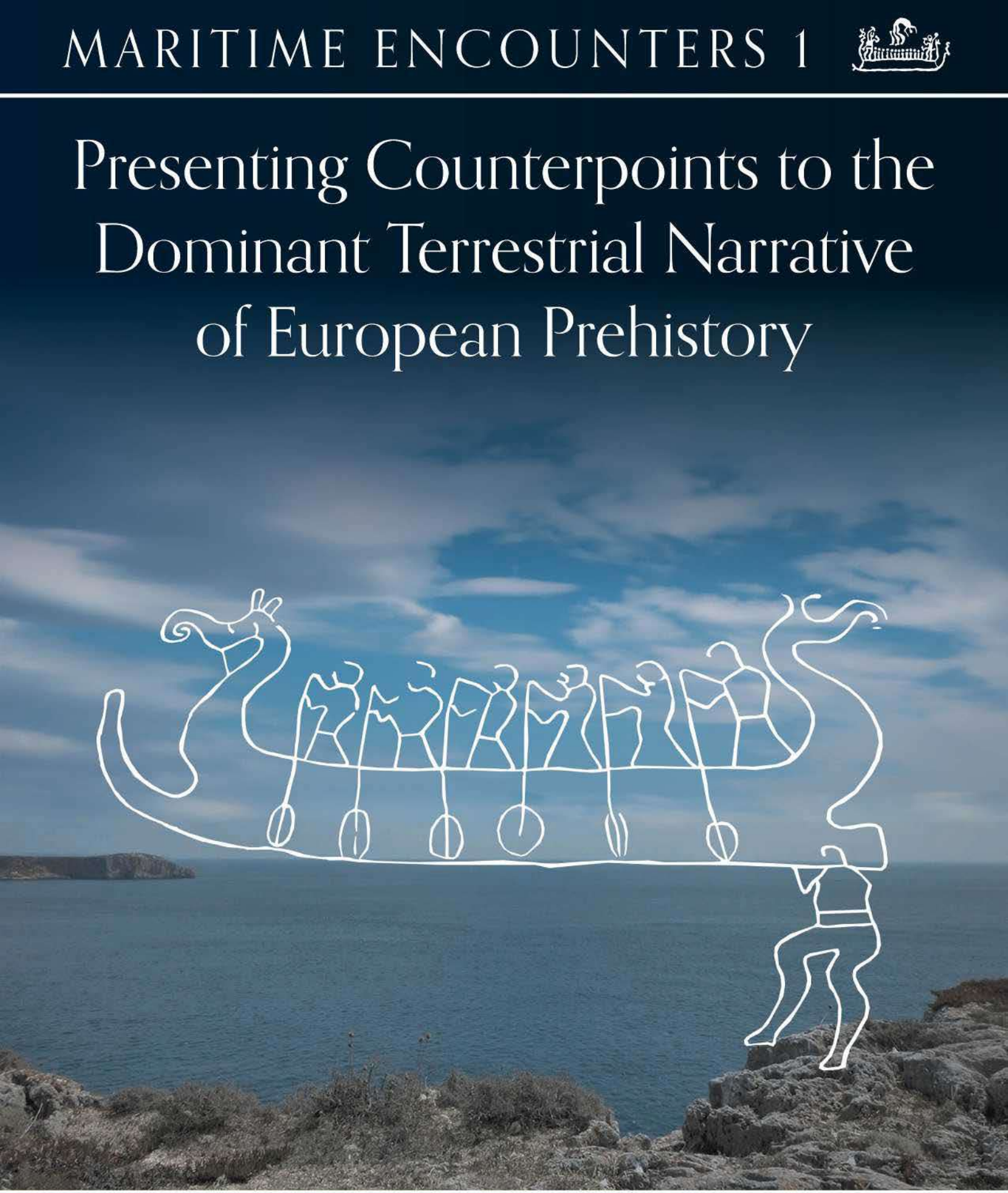
MARITIME ENCOUNTERS 1

Presenting Counterpoints to the Dominant Terrestrial Narrative of European Prehistory



Edited by John T. Koch, Mikael Fauvelle, Barry Cunliffe and Johan Ling

MARITIME ENCOUNTERS I

PRESENTING COUNTERPOINTS TO THE DOMINANT TERRESTRIAL NARRATIVE OF EUROPEAN PREHISTORY

Edited by

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Cross-disciplinary considerations: ‘hedge’, ‘hull’, ‘fool’, and the triumph of linguistic palaeontology

John T. Koch

The archaeogenetic support for the Steppe Hypothesis of the Indo-European homeland lends incidental support to the earlier methods that had led to the same conclusion independent of genetic evidence. Perhaps the chief amongst these is that called ‘linguistic palaeontology’, which is based on inherited vocabulary shared among related languages. Confirmation of linguistic palaeontology’s efficacy opens the way to using this method to locate other reconstructed languages – such as Proto-Celtic and Proto-Germanic – in time, space, and the archaeological record. The study includes case studies of three words: *kaghyo-/ā *‘unsettled enclosure’,* *kup-s-o-, *kŭp- *‘ship’s hull’ < ‘beehive’, and* *dhrūto- *‘jester, buffoon’.*

Background: an earlier project and ongoing research

The e-book *Celto-Germanic: Later Prehistory and Post-Proto-Indo-European vocabulary in the North and West* appeared in late 2020 (Koch 2020) as a research output of the project ‘Rock Art, Atlantic Europe, Words & Warriors (RAW)/*Hällristningar, språk och maritim interaktion i Atlantiska Europa*’, funded by the Swedish Research Council (*Vetenskapsrådet*). Work in this area has continued as part of the programme ‘Maritime Encounters: a counterpoint to the dominant terrestrial narrative of European prehistory/ *Maritima möten: en kontrapunkt till den dominerande landbaserade berättelsen om europeisk förhistoria*’, supported by Riksbankens Jubileumsfond. The intention of this continuation of the research is to expand and refine the dataset, i.e., the inventory of inherited words limited to Celtic and Germanic languages, reaching a better understanding of the history and original meanings of specific words to see how that might throw new light onto aspects of later prehistory along the Atlantic façade, from Scandinavia to Iberia. This chapter presents three case studies, as first fruits of that ongoing research, showing how items of historical linguistic evidence can be brought together with archaeology and archaeogenetics to develop interpretations and hypotheses.

Some statistics: CG, CG+, and NW

One advantage of creating a broad-based Celto-Germanic (CG) dataset – to be expanded and refined in continuing research and as a foundation for in-depth case studies on individual words – is that it is large enough to be interrogated meaningfully for statistical analysis. Because of the research that has been carried out in the meantime, the following statistics will differ somewhat from those in *Celto-Germanic* (Koch 2020). CG words, defined as unique to Celtic and Germanic or showing innovations unique to Celtic and Germanic, total 175 examples. CG+ words include the foregoing, then, added to that total, words attested and innovations of words also found in one or both of Italic (in most cases Latin) and/or Balto-Slavic. Note that in this definition, it is not the same a North-west Indo-European (NW), which is more inclusive and would thus have a greater total. NW words would include those attested in any two or more of the following: Germanic, Italo-Celtic, and/or Balto-Slavic. So to be counted as NW, a word could have no attestation in Celtic or Germanic, or conceivably both, being found only in Italic and Balto-Slavic. Because many linguists think that Italo-Celtic formed a Post-Proto-Indo-European branch (Cowgill 1970; Ringe et al. 2002; Kortlandt 2007; Weiss 2012; Schrijver

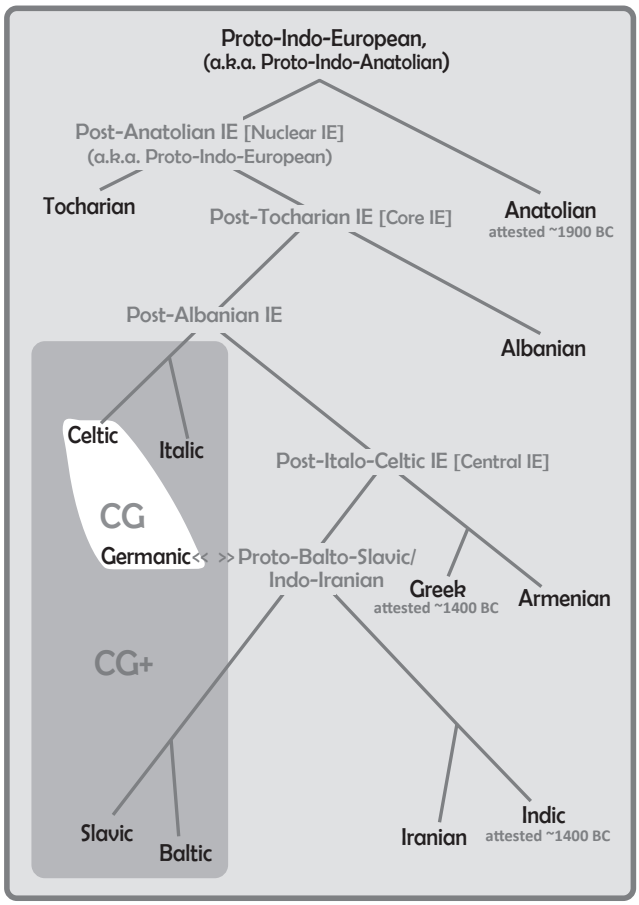

Figure 11.1. Tree model of first-order branching of Indo-European based on Ringe et al. (2002) with overlays to suggest prehistoric interaction of dialects producing the phenomena of North-west Indo-European and Celto-Germanic word sets (J. T. Koch).

2016; versus Watkins 1966; Clackson & Horrocks 2007) and most think this for Balto-Slavic, words found only in Italic and Celtic or Baltic and Slavic cannot be counted as NW, as they only certainly share a narrower common ancestry. The current total of CG+ words is 284. Therefore, a high proportion of those are CG – i.e., Celtic and Germanic only – 175 or 61.6%, a disparity that is probably significant in indicating especially intense and/or prolonged contact between those two branches or their dialectal forerunners.

Words whose Germanic forms show signs of having been borrowed after the operation of Grimm 1 and/or Grimm 2 have been excluded. These are the prior two of the three known collectively as 'Grimm's law' (Fulk 2018, 102–12):

Grimm 1 *p, *t, *k, *k^{w} > *f, *þ, *h, *h^{w}
Grimm 2 (*b,) *d, *g, *g^{w} > (*p,) *t, *k, *k^{w}
Grimm 3 *bh, *dh, *gh, *g^{w}h > *b, *d, *g, *g^{w}

Of the 175 CG words, 88 or 50.3% were clearly part of Pre-Germanic before the operation of Grimm 1. A further 37 or 21.1% show earmarks of predating Grimm 2. Because some words include consonants that could show both changes, these totals and percentages cannot simply be added. 104 or 59.4% of the 175 CG words show Grimm 1 and/or Grimm 2. The other examples do not have the relevant consonants. As explained below, the Grimm 3 change is usually not diagnostic. Thus, for 71 or 41.6% of the CG words, other criteria must be considered in assigning them to prehistory. For example, a word attested in two or three of Goidelic, Brythonic, and Continental Celtic is more likely to go back to prehistoric period. Likewise, on the Germanic side, a word found in two or three of Gothic, West Germanic, and North Germanic is more likely to be old. Conversely, a word or specific word form or usage attested only in two languages that were in close contact in historical times, such as Brythonic and English, is open to suspicion of late borrowing if the criteria of sound laws are inconclusive (Fig. 11.1).

Which languages each of the CG words are attested in make for an interesting and probably significant statistical pattern: 133 of the 175 (76.0%) are attested in Old Norse; 120 or 68.6% are attested in Old and/or Middle English; 110 or 62.9% in Old High German or Middle High German. On the Celtic side, 142 or 81.1% are attested in Old and/or Middle Irish and 134 or 76.6% in Brythonic. Note that in their respective language families North Germanic and Goidelic show the highest proportions of CG words (Fig. 11.2). These are languages that were not in direct contact at all in historical times until about AD 800 and it is unlikely that many if any Viking Period loans have slipped into the CG corpus undetected. If the largest proportion of the corpus was the result of contact in Central Europe in the Iron Age, the relatively low count in High German – spoken where that contact took place – would not be predicted.

A major impetus for studying Celto-Germanic vocabulary together with Bronze Age archaeology within multi-disciplinary research projects is that numerous societal or cultural concepts or items of material culture designated by CG words can be related to Bronze Age material culture and society (89 words = 50.9%). A large subset of that group (75 words = 42.9%) can be related to motifs on Bronze Age Scandinavian rock art or Iberian warrior stelae (most often both).

Post-Proto-Indo-European, Pre-Celtic and Pre-Germanic, Proto-Celtic and Proto-Germanic, degrees of mutual intelligibility

Since the sound change known as Verner's law (Fulk 2018, 107–12) is 1) conditioned by the Proto-Indo-European (PIE) position of the accent and 2) operates on the output

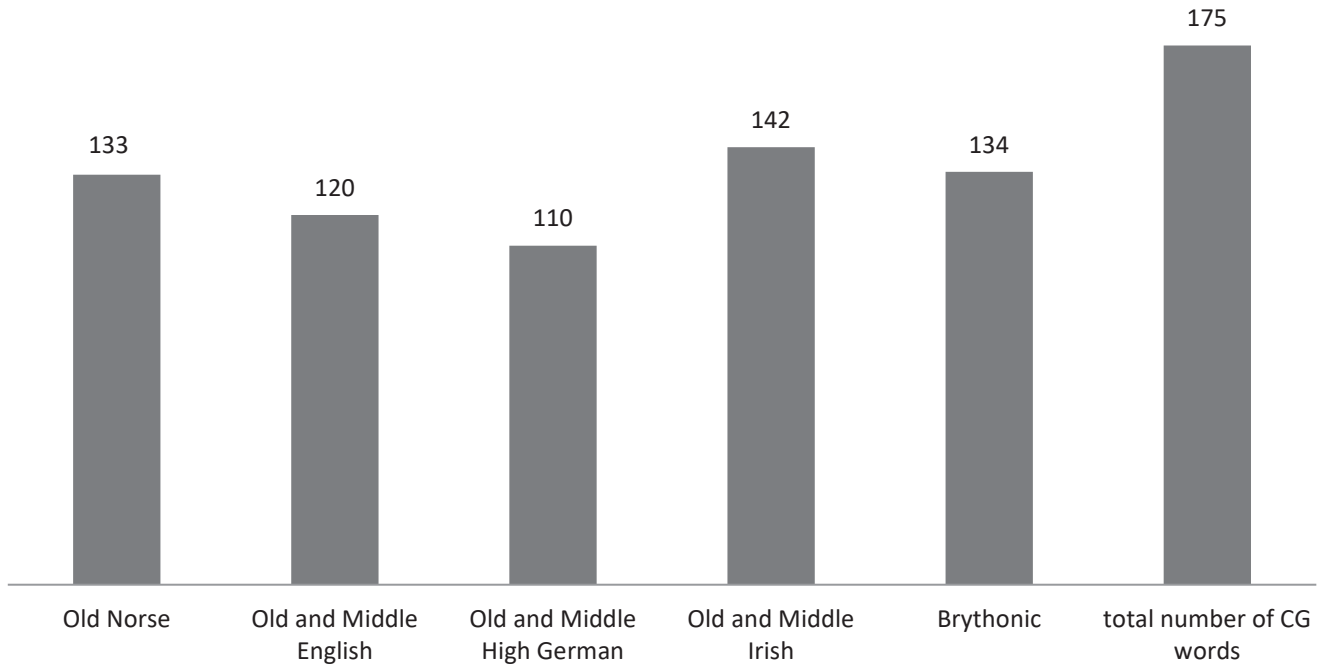

Figure 11.2. Attestations of the 175 Celto-Germanic words in well attested medieval languages: Old Norse, Old and Middle English, Old and Middle High German, Old and Middle Irish, Brythonic (Old and Middle Welsh, Breton, and Cornish) (J. T. Koch).

of Grimm's law, that means that the CG words entered Pre-Germanic at a time when Pre-Germanic had not yet generalized the Proto-Germanic word-initial stress accent but still retained its earlier position. Now, taking these facts together, it is seen that the bulk of the CG corpus dates to the stage when the consonant systems of Pre-Celtic and Pre-Germanic had not yet greatly diverged and the two languages were not accented differently. At such a stage we would expect these Post-Proto-Indo-European branches to have retained a relatively high degree of mutual intelligibility. A socio-linguistic context for this situation is the intensity of long distance contact indicated by both gene flow and evidence for metal trade found in the Middle to Late Bronze Age. The precondition for the divergence of the two branches and breakdown of Pre-Celtic/Pre-Germanic mutual intelligibility came at Bronze-Iron Transition, after which the long distance copper trade was greatly diminished and the gene flow into southern Britain largely ceased.

Semantics in collaborative research

In any cross-disciplinary collaboration involving historical linguistics the off-putting nature of that discipline will be an obstacle. Most of what we do – phonetic and phonological description, linguistic reconstruction, the formulation and sequencing of sound laws, etc., etc., along with a knowledge of several pre-modern languages – cannot be emulated by researchers outside linguistics. Often they struggle in vain even to understand. Experience at cross-disciplinary meetings, conferences, or research projects, or teaching undergraduate modules with no prerequisites will prove this point.

Semantics, the domain of meaning, is the exception. When it comes to what the words refer to – items in the man-made and natural world, social roles and institutions, beliefs and ideology – archaeologists will not only find the work of the linguists more accessible, but their own input will be essential. Linguistics alone cannot tell us, for example, exactly what kind of 'wheel' a reconstructed word with that meaning referred to, or where or when in time and space and the archaeological record that item might or might not be found. The upshot of the foregoing thoughts is that in the research of the cross-disciplinary Maritime Encounters programme – while full-spectrum historical linguistics remains essential (with sound laws, phonological reconstruction, and so on) – foregrounding semantics is likely to repay the effort, supplying our colleagues in archaeology with accessible data and stimulating feedback from them that may prove decisive in determining what exactly a word originally meant and where and when that meaning arose.

The Indo-European homeland problem and the 'archaeogenetic revolution'

Although historical linguistics and archaeology have both focused intensely on aspects of European prehistory for well over a century, effective collaboration has proved a

formidable challenge. For those many years, the Indo-European proto-language and the prehistoric stages of its dialectal branches have been reconstructed in great detail and, though these models have continued to evolve, the main outlines discerned by the pioneers of modern philology have generally held up. On the other hand, it was rarely possible to situate these reconstructed proto-languages in a more-or-less universally convincing way in time and space, mapping them on to archaeological cultures.

The obvious case in point is the overarching question of the Indo-European homeland, which long remained unresolved, though perhaps no longer. Among many competing hypotheses there were, up to about a decade ago, two mutually exclusive contenders, neither of which enjoyed a decisive advantage: a model in which Indo-European spread with pastoralism from the steppe of what is now Ukraine and south-west Russia ~5000 years ago (Gimbutas 1970; 1981; 1997; Mallory 1989; Anthony 2007) and the model associating the expansion of Indo-European with the expansion of farming from Anatolia from ~9000 years ago (Renfrew 1987; 2013; Gray & Atkinson 2003; Bouckaert et al. 2012; 2013; Heggarty et al. 2023).

This standoff appeared to be going nowhere fast until what is sometimes called the 'archaeogenetic revolution' intervened, notably in the shape of the simultaneously published studies of Allentoft et al. (2015) and Haak et al. (2015), which appeared clearly to confirm the Steppe Hypothesis, or some version of it. In the fast pace that this startling new evidence had to be absorbed, the main takeaway was that the homeland of post-Anatolian Proto-Indo-European was more probably the steppe ~3500×3000BC than Anatolia ~8000×7000 BC (cf. Lazaridis et al. 2024). But a question important for subsequent research has not been so often raised. The Steppe Hypothesis already existed before the full genome sequencing of ancient DNA. Why was it right? Was it just the luck of a coin toss? Or were its methodology and theoretical assumptions better and more correct from the outset?

At the stage before the archaeogenetic revolution the main difference between the two arguments was that the Steppe Hypothesis relied heavily on 'linguistic palaeontology', whereas the Anatolian Hypothesis discounted that evidence. Linguistic palaeontology is again semantics. For example, attestations in several of the Indo-European daughter languages have cognate words for 'wheel', which, including English *wheel* itself, can be reconstructed as Proto-Indo-European ***k*^{w}*ek*^{w}*lóm*. Proponents of the Steppe Hypothesis argue from this that the society that spoke Proto-Indo-European had the wheel. And, then running through hundreds of such examples of reconstructed Proto-Indo-European words and their meanings, the Steppe Hypothesis envisioned a Proto-Indo-European world that corresponded to that of pastoralists on the Pontic-Caspian steppe at the Late Neolithic/Copper Age stage of development with many features (such as the wheel) absent from the Anatolian Early Neolithic ~8000×7000 BC. The counter argument from the Anatolian Hypothesis, again using the example of 'wheel', is that this word was derived from the verb ***k*^{w}*el*- 'turn' – which it does – and that that 'meaning' is completely compatible with an Early Neolithic way of life and word view; words looking like reflexes of ***k*^{w}*ek*^{w}*lóm* might have been generated independently after the branches had divided and they independently encountered the wheel. And so on and so forth, until the entirety of Late Neolithic/Copper Age Indo-European world could be explained away as a mirage of parallel developments between separate cognate languages with an Early Neolithic latest common ancestor. If that counter argument was fully accepted, the basic core procedure of historical linguistics – i.e., historical-comparative reconstruction – would be called seriously into question. This is not an altogether fanciful proposal. Related languages can continue to borrow/translate new vocabulary from an inherited stock in such a way as to mimic cognates, though belonging to a later cultural stage. For example, an unthinking application of the historical-comparative method to German *Sprachwissenschaft* and Swedish *språkvetenskap* could lead to the conclusion that these go back to a word meaning 'linguistics' in Proto-Germanic, their last common ancestor.

Nonetheless, beyond the provisional triumph of the Steppe Hypothesis in the Indo-European homeland debate, the archaeogenetic tie breaker is also a methodological triumph for linguistic palaeontology. And that carries potential applicability for a further wide range of questions in which archaeology and historical linguistics can be combined. For the main questions facing Maritime Encounters – namely what was ongoing in the north-western maritime fringe of the Indo-European world in later prehistory – this provides further rationale for foregrounding semantics.

Middle to Late Bronze Age = 'Indo-European dark ages'

The Allentoft et al./Haak et al. leap forward in the archaeogenetic revolution was the easy part – the low-hanging fruit. That research involved genetically starkly different populations that had been isolated from one another for millennia. These groups also had very different ways or life and material cultures. They undoubtedly spoke different languages. With rapid gene flow from the steppe ~3000 BC, the new people entering many new areas often introduced their distinct genetic type at high percentages, double-digit intrusions, in many cases over 50%. In the case of the Afanasievo culture of the Siberian Altai and middle Yenisei, genomes approach 100% steppe component, thus virtually indistinguishable from individuals of the Yamnaya source population.

There was the good fortune that, when this genomic evidence came into the debate, it was then largely a matter of deciding between two hypotheses that been developed in detail and argued about for many years. Archaeogenetics then endorsed the contestant that had already won over many adherents on the strength of linguistic and archaeological evidence alone. By now a three-way language-archaeology-genetics (LAG) correlation is well established – cumulatively powerful but approximate and not to be taken as a claim that these three are invariably coterminous – (Post-Anatolian) Proto-Indo-European ≅ Yamnaya ≅ steppe component.

From here things get trickier. Mallory (1996) has written of an ironic 'Indo-European dark age'. Thus, between the relative certainty situating (Post-Anatolian) Proto-Indo-European among users of Yamnaya on the Pontic-Caspian steppe ~3000 BC and the even greater certainty of the early Indo-European languages were spoken as we start to find them in writing, there are considerable uncertainties. For example, the Afanasievo culture mentioned above is regarded as a good candidate for the context of the Indo-European that evolved into the attested Tocharian languages, despite a gap of 1000 km and over 3000 years between the archaeological evidence and the texts. So where were Pre- and Proto-Tocharian in the meantime? Of more immediate relevance to Maritime Encounters, Proto-Celtic has been much debated as to both time depth and location. The Beaker Complex, Urnfield Bronze Age, and Atlantic Bronze Age have all been proposed repeatedly. Are we so certain that Celtic in the Iron Age (stretching from Ireland to Iberia to Galatia) was far more extensive than Proto-Celtic in the Late Bronze Age to be sure that it could not possibly have been spoken within both the Atlantic and Urnfield Bronze Age? In the English speaking world at least, there is an ingrained notion that Proto-Celtic is to be identified with the earliest Hallstatt Iron Age in west-central Europe, Ha C1a ~800×750 BC, though this is impossibly late (Koch 2013). The findings of Patterson et al. (2022; see also this volume Chapter 10), indicating that the population of Britain was relatively isolated and stable in the period ~800 BC–AD 43, amount to highly significant negative evidence, a 'dog that didn't bark',[1] showing the British Iron Age to be a relatively unlikely context for the introduction of new language from the Continent, despite the deeply ingrained scenario 'the coming of iron' = 'the coming of the Celts'.

There are also issues of remaining uncertainties about the shape of the Indo-European family tree. For example, there is the status of Italo-Celtic mentioned above. Whether Italo-Celtic is thought of as an undifferentiated node on the family tree or something more like a chain of neighbouring dialects will of course affect how, where, and when it might be situated on a map of Bronze Europe. If the former, when and where was the split?

The archaeogenetic revolution has yet to decisively illuminate this dark age. Unlike the stark first meeting of steppe pastoralists and early European farmers, the later prehistory of the separating Indo-European branches must now be unravelled in the context of the bewildering interaction of groups with blends of steppe, EEF, and hunter-gatherer (HG) ancestry. We need to up our game.

The transformation of southern Britain in the Middle to Late Bronze Age

An important archaeogenetic study deals with a time and place of particular interest for the Maritime Encounters programme shows a major genetic inflow (bringing a ~50% population shift) into what is now England and South Wales in the period ~1300–800 BC (Patterson et al. 2022). They find an overall rise of Early European Farmer (EEF ancestry) 31.0% to 37.9%, levelling off in the Early Iron Age from ~800 BC. For the same group, the steppe component went down 51.8% to 50.4%. At the same time, the reverse shift occurred in Iberia: steppe ancestry rose 14.9% to 21.4% as EEF declined 64.5% to 59.4% (Patterson et al. 2022: supplementary table 7). In other words, the general trend in the Middle to Late Bronze Age was towards an equalization or convergence of these ancestry types between southern Britain and south-west Europe.

Another key finding is that the rise in EEF ancestry in Britain was not due mainly to a population increase in groups with British Neolithic ancestry, but rather incomers from somewhere overseas to the south on the European mainland. Proxy populations such as Iron Age France, 'Tartessos' (south-west Spain ~700 BC), and Late Bronze Age Urnfield Central Europe are modelled. Though suggestive, none of these proxies fit exactly and, in any case, many of the genomes are too late to belong to the actual source population.

Nonetheless, it is proposed, albeit with due caution, that the incomers came in large part from what is today the territory of France and that they brought Celtic speech with them. This is possibly right. However, there other possibilities, as this case is much more complicated than that of the rapid and massive expansion of the steppe component in the 3rd millennium into regions where it had previously been altogether absent. The gene flow into Middle to Late Bronze Age Britain blended native-born and incoming groups both of whom had high levels of steppe and Neolithic farmer ancestry. And the indigenous group actually had the higher level of steppe ancestry. Because Celtic is an Indo-European language, our first thought in seeing an increase in EEF ancestry and decline in steppe ancestry is not necessarily 'here come the Celts'.

We will want answers to other questions. If the population influx bringing high levels of steppe ancestry to Britain in the Beaker–Early Bronze Age period (~2450–1800 BC)

also brought an early Indo-European language, as is likely, was this a fully separated Indo-European language from that brought less than a millennium later through the same cross-Channel corridor from the Continent? Must there be two Indo-European languages – as opposed to dialects retaining a high degree of mutual intelligibility – involved in this scenario? And, if one was ancestral to Celtic, must the other not be? Must it be 'either/or'? Had the evident lull in interaction between Britain and the Continent between ~1800–1300 BC been deep enough for the sea to become a linguistic barrier as well as geographical one? How many fully separated Indo-European languages were there in Western Europe at this time? Was it impossible for the incomers and descendants of the British Early Bronze Age population to speak to another without one of them learning a second language?

Case study: Germanic *hedge*, Celtic *cae* 'hedge, enclosed field'

To assess the implications of the population shift in southern Britain identified by Patterson et al. (2022), it is important to consider what else was happening in Britain in the Middle to Late Bronze Age. One key detail is that extraction of copper from the Great Orme mine in North Wales fell off precipitously from ~1400/1300 BC (Williams & Le Carlier 2018; Williams 2023). Its output had reached widely over Britain, but also further afield, representing, for example, one of the major sources for copper imported in Scandinavia in the period ~1700–1400 BC (Nørgaard et al. 2019; 2021). From ~1300 BC, chemical and isotopic tests show that copper from south-west Europe, most probably metal-rich Iberia, was arriving in volume in the Atlantic North, including Britain and Scandinavia (Ling et al. 2014; 2019; Ling & Koch 2018; Berger et al. 2022; see also this volume Chapters 8 & 9). That finding of course raises immediate implications when weighed alongside the Patterson et al. data. Did the two-way north–south population movement of ~1300–800 BC drive the expansion of the metal trading network? Or was it more the reverse? Or were both symptoms of a larger systemic process (Fig. 11.3)?

For an overview of British society at this stage, it is useful to quote the first paragraph of Chapter 8, 'The Productive Land in the Age of Warriors, 1500–800 BC', of Barry Cunliffe's *Britain Begins* (2013, 251):

> In the middle of the second millennium the appearance of Britain and Ireland began to change as communities started to impose themselves on the landscape, not to create monuments to ancestors or the gods but to take hold on the land itself and to tame it once and for all. Man-made boundaries began to proliferate. Regular patterns of fields were laid out: on sloping hillsides the cultivated areas were shaped by constant ploughing, while on the gravel terraces and claylands ditches were dug to define and drain the plots. Elsewhere linear earthworks running for kilometres across the landscape separated vast tracts of territory. The coercive effort needed for such endeavours implied, at the very least, that communities were working together to impose a permanent system of management on the land. In the long history of Britain this was a major revolution. We are seeing here the control of the productive capacity of the land eclipsing the manipulation of rare raw materials as the imperative driving society.

This focus on the new control of land draws attention to one CG word in particular, the original meaning of which can be teased out with the attested Celtic and Germanic forms. Thus, pre-dating Grimm 1, there are Old English *hecg* 'enclosure, hedge', Old High German *heckia, heggia* 'hedge' < Proto-Germanic **hagjō-* < CG **kaghyo-/ā*, as well as Old Norse *hagi* 'pasture with a fence, field for grazing', Old English *haga* 'hedge, enclosure', Old Saxon *hago* 'hedge', Old High German *hag* 'hedge, enclosure, dam' < the byform **hagan-* < CG **kagh-on-*. On the Celtic side, the Gaulish *caio* glosses '*breialo siue bigardio*' 'field or enclosure', which occurs as local place-name *cagiíon* inscribed on a tile from Cajarc, France, also *Caiocum* now 'Cayeux-sur-Mer, Somme', and *Matu-caium* in Noricum (Delamarre 2003, 97). In Hispano-Celtic, the place-name *Caius mons*, present-day *Moncayo,* corresponds to the Celtiberian coin legend **kaio** (A.82) (Jordán Cólera 2019, 134, 319–20, 663). In Brythonic, these correspond to 9th century Old Breton *caiou* glossing '*munimenta*' 'defensive enclosures', Middle Welsh *cae* 'hedge, hedgerow, fence, field, enclosure; clasping brooch', Breton *kae* 'hedge or embankment', Cornish *ke* 'hedge, ditch, enclosed field', all going back to Proto-Celtic **kagyo-*, which in turn goes back to **kaghyo-*, like the Proto-Germanic. It is clear enough that these must all derive from a single word with a specialized meaning, that is, rather than a natural clearing, a maintained agropastoral land with man-made enclosure – hedge, fence, or bank and ditch. None of the words range to meaning inhabited land with a house or houses, a defended settlement. So, in terms of the British landscape, as in the passage above, what is most significant about **kaghyo-* for present purposes is that it describes very specifically – in both Celtic and Germanic – something that came into existence in the British landscape and socio-economic order in the middle of the Bronze Age, but uncommon or non-existent before that. That is, a large piece of land, exploited and of value for agropastoral purposes and enclosed with man-made demarcation or barriers of some sort, but **kaghyo-* is not a defended settlement.

This example may throw some light on linguistic chronology as well. As a CG word **kaghyo-* '(hedge) enclosed agropastoral land', does not occur outside Celtic and Germanic and so is more probably Post-Proto-Indo-European, rather than having fortuitously died out in all the other branches. That this word did not yet exist

mentioned above, it was in the Germanic word stock before Grimm's law. Nonetheless, **kaghyo-* may rest on an older Indo-European word that had not undergone the specialized development of meaning found in Celtic and Germanic. Thus, Latin *cohum* 'hollow in the middle of a yoke', Umbrian **kukehes** 'will take, get', and Albanian *ke* 'has, holds' may all reflect an earlier Post-Proto-Indo-European < PIE **kH$_2$gh-* 'take, catch, grasp'.

With the rising importance of enclosed fields, as implicit in the quotation above, there coincided a rising importance of labour to exploit the land more intensively. Therefore, while the shift at this time to a population with higher EEF ancestry might involve some incoming elites and possibly the introduction of a new Indo-European language, i.e., what became Celtic or specifically Brythonic, we should also consider that possibly large numbers of unfree farm labourers were involved in this gene flow. Low status or zero status individuals were possibly exchanged as commodities within the long distance networks over which metals were also traded. This possibility is consistent with the Maritime Mode of Production model (Ling et al. 2018), in which the Bronze Age society at this period is seen as closely analogous to the patterns recurring in the Viking Age 2000 years later.

Case study: Celto-Germanic 'boat's hull' < Post-Proto-Indo-European 'beehive' < 'curved container'

The origins of the most common present-day Welsh word for 'boat' or 'small ship', namely *cwch*, could be of obvious interest for Maritime Encounters. But these have remained fairly mysterious. The word is not included in Matasović's (2009) *Etymological Dictionary of Proto-Celtic*, nor in the first edition of *Celto-Germanic* (Koch 2020). At the time of writing, the online *Geiriadur Prifysgol Cymru* (*CPC* 1959–2002) lists only the Breton cognate *couc'h* (now spelled *kouc'h*).

A suggestive clue is that Welsh *cwch* means both 'boat' and 'beehive'. Similarly, Breton *kouc'h* means both 'hull of a ship or boat' and 'top of a beehive'. In Germanic there is a word with a similar remarkable set of meanings: thus, Old English *hȳf* 'beehive', Kentish *hēve*, corresponds to Old Norse *húfr* 'hull of a ship', both derived from **hūfiz* or **hūbiz*, which would go back to **kūp-* before the operation of Grimm 1. Although Proto-Indo-European **p* is most often simply lost in Celtic, the sound [x], which written *ch* in Welsh and *c'h* in Breton, can derive from a Pre-Celtic **p* if that sound was followed immediately by **t* or **s*. Therefore, the Greek word *κυψέλη kŭ̄psélē* 'chest, box, beehive' may offer a key linking the Brythonic word meaning both 'vessel with a hull' and 'beehive' to the Germanic word with the same two, rather distant meanings. *κυψέλη* is not the only relevant Greek word in this connection: note also *κύπελλον* 'beaker', *κόβαθος* 'cup, drinking vessel', *κύβεθρον* 'beehive'. The variation in vowel and final consonant of the root suggests that this may be a trade word borrowed repeatedly in various forms, a conclusion also consistent with meanings. Note also Latin *cūpa*, *cŭppa* 'cask, barrel, tub' and Sanksrit *kū́pa-* 'pit, hole'. The variations in forms with short and long [u(:)], also [o], and [p] alternating with [b] are hard to explain as regular outcomes from a common Indo-European proto-form. They rather suggest borrowing, possibly repeated borrowing, from a non-Indo-European language. That the attestations extend from the western branches to Sanskrit suggests that the borrowings took place in Europe before Indo-Iranian had spread to South Asia. It is also possible that a trade word is involved, designating containers for traded goods or containers that were themselves traded. A word resembling **kŭ̄p* originally meant broadly 'something holding a curved void'.

That meaning is continued with Old Breton *penn cuh* 'cranium' or 'round head-gear'. In Gaulish **CVXSVS** is found as a potter's name from Rheinzabern (ancient Rhenanae Tabernae), in which case it is probably the occupational name of a maker of ceramic containers. Phonologically, **CVXSVS** corresponds exactly to the preform Welsh *cwch* and Breton *kouc'h*, namely Proto-Celtic **kuχso-* < **kup-s-o-*. With the rise of beekeeping in the ancient world (cf. Van Sluis 2022, 23), **kŭ̄p* came also to mean 'beehive' in Post-Proto-Indo-European languages including Greek. Like Gaulish **CVXSVS**, Greek *Κυψέλος* also occurs as a personal name (for the first tyrant of Corinth, r. *c.* 655–625 BC). Herodotus (5.91) explains that as an infant *Κυψέλος*'s mother hid him in a *κυψέλος*, 'chest' or possibly 'beehive', to protect him from killers seeking to head off a fateful prophecy. The child survived and received his name from the incident.

What is uniquely Celto-Germanic is that related forms, having come to mean 'beehive', came also to mean 'hull, boat'. Considering that both Old Norse and Brythonic had many words for vessels or containers similar to boats and their hulls, it is remarkable that it was these cognates in particular that acquired this transferred sense, which points to a shared inheritance.[2] The Vikings were active in Brittany in the period AD 843–939, but by that time Old Norse *hýfr* and Old Breton *cuh* could hardly have influenced one another as forms of the same word, recognizable as such.

In the original Celto-Germanic transfer of meaning 'beehive' > 'ship's hull', a metaphor was possibly involved, in which a fierce crew rapidly disembarking and then crowding back into their vessel was likened to a swarm and hive (Fig. 11.4). Such a metaphor occurs in the Iliad:

> Just as tribes of swarming bees emerge from some hollow rock, constantly coming on afresh, and in clusters over the flowers of spring fly in throngs, some here, some there, so from ships and huts by the low sea beach marched out in companies their many tribes to the place of assembly. (2.87–93, Murray 1999; similarly Iliad 12.167–70; Aeneid 1.470–6; see further Hollingsworth 2005, 31–75).[3]

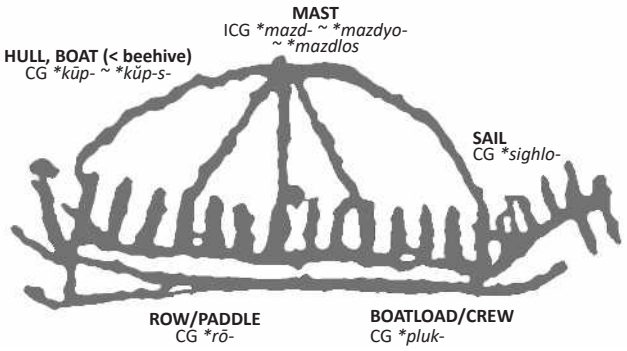

Figure 11.4. Bronze Age rock carving depicting a sea-going vessel with a mast, rigging, and crew: Järrested, Skåne, Sweden, with reconstructed Celto-Germanic and North-west Indo-European words for the vessel and its components (J. T. Koch).

Case study: Grimm's law and 'fool'

In compiling the CG corpus, loan words from the historical period have been excluded. Usually, that is easy enough. Celtic words borrowed in Germanic, or vice versa, in the post-Roman Migration Period or Viking Age are usually obvious, as they will have run the gamut Proto-Indo-European to Celtic or Germanic sound laws first. So they look more like a vocabulary item in the branch they came from, rather than an inheritance traceable to Proto-Indo-European in both cases, but having a distribution limited to two neighbouring subfamilies. On the Germanic side, as mentioned above, an important diagnostic is the Germanic consonant shift, also known as Grimm's law, which comprises three linked changes – Grimm 1, Grimm2, Grimm3 (see above). Most often Grimm 3 is not relevant as a diagnostic because the path of Proto-Indo-European to Proto-Celtic also underwent the change **bh, *dh, *gh, *g^{w}h > *b, *d, *g, *g^{w}*. But to deem it altogether inconclusive would imply that this sound change occurred at exactly the same time in the evolution of both branches. Most of the CG words (i.e., inherited words and forms of words shared uniquely by Celtic and Germanic) behave with regards to this sound change as though **bh, *dh, *gh, *g^{w}h > *b, *d, *g, *g^{w}* had happened in neither Pre-Celtic nor Pre-Germanic at the time the item became established in both branches. However, as Guus Kroonen has pointed out to me, a CG word meaning 'jester, fool, buffoon' suggests that change happened earlier on the Celtic stream, though more examples can be explained as reflecting a situation in which the change had not happened yet in either pre-branch see Kroonen 2013).

To put it another way, more of the CG corpus appears to reflect a lengthier stage that was both before Grimm's Law and also before the convergence of the voiced stop consonants and voiced aspirate stops in Pre-Celtic; this was followed by a briefer period in which the change had happened in Pre-Celtic – so that the language had evolved closer to Proto-Celtic – but Grimm 3 had not yet happened in Pre-Germanic. So, Old Norse *trúðr* glossing '*histrio'* 'juggler, fool', Old English *trūð* 'trumpeter, actor, buffoon' can be explained as derived from Proto-Germanic **trūþa-*. *trúðr*, etc., can be understood as the cognate of Old High German *trūt* 'dear, beloved',[4] reflecting Proto-Germanic **drūda-* < Pre-Germanic **dhruH-tó-*, if the word meaning 'fool' is explained as a loanword from Proto-Celtic after **bh, *dh, *gh, *g^{w}h > *b, *d, *g, *g^{w}* in Celtic, but before Grimm 2 in Germanic. The meaning of Middle Irish *drúth* 'professional jester, fool; legally incompetent, idiot' is so close that a common origin is likely. Note also Middle Irish *drúthacht* 'buffoonery'. These forms point towards a Proto-Celtic **drūto-* < Pre-Celtic **dhrūto-*. As a Celtic loanword into Pre-Germanic, **drūto-* became **trūþa-* by Grimm 1 and 2 and Germanic **a* regularly from Proto-Indo-European **o*.

Middle Welsh *drut* 'reckless (in battle), furious, foolish, foolhardy, extravagant' is probably an inter-Celtic loan from Goidelic. In present-day Welsh, the word *drud* is common, usually meaning 'expensive'. But the earliest occurrences in poetry can be understood as applying to an ill-fated hero who conspicuously performed with reckless ferocity in battle, which is an understandable semantic development from an earlier sense of a performer acting like a fool or madman. The vowel of Middle Welsh *drut* implies a preform **drouto-*. A loanword from Primitive Irish **drūto-* datable to the Roman period (i.e., after Ancient Brythonic **ū* had become **ī̄* and **ō* < **ou* had become **ū*) is one possible explanation for the Brythonic form. Therefore, both the Germanic and the Welsh look like early loanwords from Proto-Celtic **drūto-* and Primitive Irish **drūto-*, respectively.

The fact that the word itself referred to an itinerate occupation possibly explains why it was prone to borrowing between cognate dialects in contact. It is also worth noting in this connection that, in medieval Irish texts, *drúth* 'fool, jester' is often confused with *druï*, genitive *druäd* 'druid'. Welsh *drud* can also mean 'druid'. In large part, these developments can be explained as the result of the similarity of the words' forms. But also, in any narrative context there would be similarities: both jesters and druids were special groups of outsiders, who would exhibit unusual behaviour and empowered to speak special truths by virtue of their status.

Returning to the implications for historical phonology, the foregoing scenario – taking into account also the bulk of the CG words in which PIE **bh, *dh, *gh, *g^{w}h* behave as in native vocabulary – points to a relatively brief window when Pre-Celtic **dh* could become Proto-Celtic **d* and then, after borrowing into Pre-Germanic, become **t*, undergoing Grimm 2. Saying that this window was 'relatively brief' means that this would not be a matter of absolute chronology. Unless we are sure that the CG

words arose at a steady frequency, it cannot be certain that the smaller number showing PIE **dh* > Proto-Celtic **d* > Proto-Germanic **t*, than those showing the earlier treatment (**dh* > Proto-Germanic **d*), must mean that the latter were spread over a greater number of years. It may be that the earlier contact was more intense, but not necessarily longer. In fact, that the Pre-Celtic/Pre-Germanic contact became less intense is likely to be the reason that the sound systems of the two branches began to evolve away from one another.

It would not be surprising had **bh, *dh, *gh, *g^{w}h* > **b, *d, *g, *g^{w}* happened in Celtic at an absolute date earlier than the occurrence of Grimm's law. Both sound changes are prehistoric and so can't be seen in their before and after states in the written record. However, the consensus date for Grimm's law is ~500 BC and **bh, *dh, *gh, *g^{w}h* > **b, *d, *g, *g^{w}* is not one of the latest Proto-Indo-European to Proto-Celtic sound laws. For example, Isaac (2007, 62) lists it as the 11th of 25 PIE >PC sound laws. The Continental Celtic languages, which are attested in Iberia and northern Italy in the Early Iron Age, could not have had an undifferentiated common ancestor much after ~1000 BC.

Concluding thoughts and possible ways forward

The archaeogenetic revolution has incidentally vindicated the method known as linguistic palaeontology. With this, it is important to recognize that a single example or small number of examples, like the three discussed here, can be suggestive of possible prehistoric contexts and processes, but – as with the case for the Steppe Hypothesis from linguistic palaeontology – can only be decisive cumulatively as part of a large corpus of examples. So, for example, Mallory and Adams (1997) compiled 1364 Indo-European, and the looser criteria of Pokorny (2002) permitted 2044 Indo-European roots (Mallory 2019, 36). Individual examples are always susceptible to a new interpretation in the face of new evidence or a sharper argument. On the other hand, with a larger corpus overall patterns and precedents will become apparent and, with them, the interpretations that are outliers and call for reconsideration. In other words, an approach combining breadth and depth will be needed to move forward with conviction. With the 175 CG words and 284 CG+ we approach the kind of critical mass needed to make significant progress. As a large cross-disciplinary, multi-year project and building on the *Celto-Germanic* collection of the RAW project, Maritime Encounters is in position to make significant headway with the Indo-European dark age, to find more clearly what developments and where and when these developments occurred in the gap between Proto-Indo-European and the attested languages of the north-western edge of the Indo-European world. In moving forward into this period, corresponding more or less to the Bronze Age, subtle skills will have to continue to be developed in archaeogenetic interpretation. Such new skills will not invariably lead to a clear-cut disentangling of the later prehistory of separating Indo-European-speaking groups, distinct from their non-Indo-European neighbours with whom they were in close and prolonged contact and at least sometimes show similar indices of steppe ancestry. For example, even where the non-Indo-European Palaeo-Basque and Iberian survived in south-west Europe, paternal steppe ancestry had by ~1900 BC replaced the y-chromosomes formerly prevalent in the Iberian Neolithic and Chalcolithic (Valdiosera et al. 2018; Olalde et al. 2019). A similar pattern occurs in some Dravidian-speaking parts of south Asia (Silva et al. 2017), where strongly male sex-biased steppe ancestry also reached further than linguistic Indo-Europeanization.

Future investigation should bring better understanding of how the downturn at Great Orme ~1400/1300 BC was linked to other phenomena affecting the Atlantic façade during the latter half of the Bronze Age, including the following:

1. the onset and then intensification of metal trade linking the Atlantic North and the Iberian Peninsula;
2. an intensification of agropastoral land use and systematizing of land tenure evident in Britain and Ireland;
3. the onset of large scale bidirectional north–south gene flow, which probably involved some elite groups, but also the rise of unfree farm labour as a commodity within the new economy and rising social complexity;
4. the numerous shared motifs of the warrior stelae of the Iberian Peninsula – especially the copper rich south-west – and Scandinavian rock art (both datable to the period ~1400–800 BC), reflecting a shared ethos at the terminus zones of this trade;
5. the evidence of the Celto-Germanic vocabulary suggesting that the post-Proto-Indo-European dialects of northern and western Europe had not yet diverged into fully formed and separated Proto-Celtic and Proto-Germanic (with minimal mutual intelligibility) at this time, but could still be used to communicate over wide distances across the network; and
6. subsequently, the genetic stabilization and Bronze–Iron transition, both of which affected Britain ~800 BC, reflecting a new situation in which contact between Pre-Celtic (on its way to Proto-Celtic) with Pre-Germanic fell off and ceased to act as a restraint on the emergence of Proto-Germanic as a fully separate language; in other words, it is unlikely that the Germanic consonant shift (Grimm's law) and accent shift would have occurred so long as there was regular, intense, and high status contact with speakers of Pre-Celtic >Proto-Celtic.

Notes

1 This phrase alludes to Arthur Conan Doyle's Sherlock Holmes story 'Silver Blaze' (1892) Holmes refers to 'the curious incident of the dog in the night-time', namely that a watchdog did not bark during the theft of a racehorse from a stable, suggesting that the dog probably knew the thief.

2 English *cock* meaning 'small boat' is likely to derive from Old French *coche* 'small boat', which lacks a clear Latin origin and, therefore, may reflect a borrowing of Old Breton *cuh*.

3 I am grateful to Malcolm Nicholson for drawing my attention to these examples.

4 possibly also Lithuanian *drū́tas* 'thick, strong, deep (of voice)', though the meanings are not close.

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