

Chapter Nine

Celtic origins: Archaeologically speaking

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/ Oilthigh na Gàidhealtachd agus nan Eilean

1 Introduction

This chapter uses a systematic evidence-based approach to evaluate three major competing hypotheses for the origins of Celtic languages. Influenced by recent developments in archaeological theory (Kristiansen 2014), a multidisciplinary approach draws upon historical linguistics, archaeology, and genetics.

Table 1: Models discussed in this chapter

Indo-European origins	Celtic origins	Verdict
1. Anatolian hypothesis	1(a) Atlantic megalithic tradition	✗
2. Steppe hypothesis	2(a) Early Atlantic metallurgy networks	✓
	2(b) Orthodox model of Iron Age origins in Central Europe	✗

To avoid ambiguity, unfortunately a frequent feature of archaeological Celtic studies (Karl 2010), the definition of *Celtic* remains purely linguistic; Celtic is a subfamily of the Indo-European language family. The debate between the two major competing explanations for Indo-European's origins and spread, the Anatolian and Steppe hypotheses, is considered one of the biggest disagreements in scholarly understandings of Celtic origins (Cunliffe 2013a). Therefore, when analysing Celtic origins, attention on how Indo-European reached Europe is also necessary. Evaluation of these two competing hypotheses is a feature of this paper's systematic approach.

Gallacher, Johnnie William. 2020. 'Celtic origins: Archaeologically speaking'. In Joanna Kopaczyk & Robert McColl Millar (eds.) 2020. *Language on the move across domains and communities. Selected papers from the 12th triennial Forum for Research on the Languages of Scotland and Ulster, Glasgow 2018*. Aberdeen: FRLSU, pp. 174-199. ISBN: 978-0-9566549-5-3.

The paper deals with the various models in a chronological order. It argues that neither the Anatolian hypothesis for Indo-European origins, nor the megalithic hypothesis for Celtic origins, fit with recent evidence. In contrast, it is argued that the Steppe hypothesis for Indo-European origins remains a coherent model, yet that other ‘secondary homeland’ hypotheses are equally valid.

The orthodox Iron Age model for Celtic origins in Central Europe is challenged herein. This is on account of the interpretation of pre-Hallstatt inscriptions in Iberia as linguistically Celtic, as well as the localising societal impact of ironworking. The model of Celtic having emerged in association with Bronze Age mobility networks in the Atlantic façade is put forward as the best model.

2 Indo-European from Anatolia and Celtic from Brittany

2.1 Literature review

The Anatolian hypothesis attaches Indo-European language onto the spread of agriculture into Europe from Anatolia starting around 6000 BCE, reaching the British-Irish isles around 4000 BCE (Renfrew 1989), see Figure 1. This hypothesis is compatible with a Neolithic origin for Celtic, seeing the megalithic tradition in the Atlantic façade as the archaeological manifestation of the earliest Celtic-speakers, see Figure 2 (Renfrew 1989; Cunliffe 2013b: 246–249; 2018: 58).

The main strength of the Anatolian hypothesis is that the spread of agriculture from Anatolia into Europe is widely supported by evidence and is even treated as fact (Scarre 2013a: 396). Though it is unclear exactly which area of Anatolia these farmers came from, their migration into Europe is most evident from biomolecular findings, which have clearly indicated that the spread was one of populations, rather than of culture alone (Whittle 2015: 1052; Haak *et al.* 2010; Omrak *et al.* 2016; Brace *et al.* 2019). The Anatolian hypothesis holds that over time numerous Indo-European speaking populations became isolated, leading to linguistic divergences from Proto-Indo-European to subfamilies such as Celtic and Germanic (Renfrew 1989: 99–119).

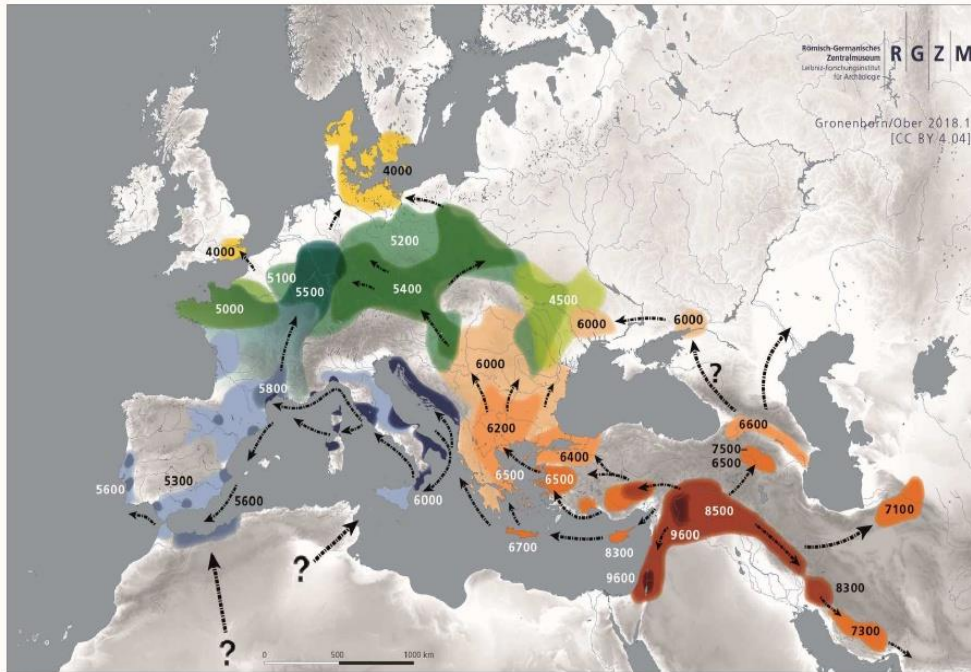


Figure 1: Expansion of farming in Western Eurasia, 9600-4000 BCE (from Gronenborn and Ober 2017: Figure 1). Colours indicate regional variations in material culture.



Figure 2: The Atlantic façade

Renfrew (1989: 249) argues that the differentiations of the various sub-language-families from Proto-Indo-European occurred in the same areas in which those languages are historically attested. Therefore, in the instance

of Celtic, Renfrew (1989: 216, 249) argues that Proto-Celtic diverged from the Late-Proto-Indo-European language of the early Neolithic farmers in the Atlantic façade. Sharing Hawkes' (1973) view of 'cumulative Celticity', Renfrew (1989: 246–248) does not favour any specific part of the Atlantic façade as the Proto-Celtic homeland, but rather sees the linguistic development of Celtic as having occurred throughout that entire region.

Given these views, the Anatolian hypothesis views the megalithic tradition of Neolithic Atlantic Europe as the archaeological manifestation of the earliest Celtic speakers. During the later fifth millennium BCE, early agriculturalists in Brittany began to construct large stone monuments (Sheridan 2003; 2010; 2017; Sherratt 1990; 1995; Furholt *et al.* 2011). This practice subsequently spread out into Britain, Ireland and Iberia, where it continued during the fourth and third millennia BCE. Similarities have been observed between the material culture of these areas, especially the structural similarities between the chambered cairn/passage tomb megalithic monuments and the artistic petroglyph motifs which adorn them (Cunliffe 2013b: 160; Sheridan 2003; 2010; 2017; Noble 2006: 132; Hensey and Robin 2012; Jones *et al.* 2017). These similarities are sometimes taken to indicate continuous or episodic contact and mobility between geographically disparate communities (Cunliffe 2013b: 160; Sheridan 2003; 2010; 2017; Noble 2006: 132; Hensey and Robin 2012; Jones *et al.* 2017), and perhaps also shared values and belief systems (Cunliffe 2013b: 158–160; Sherratt 1995). It has been suggested that Celtic may have developed as a *lingua franca* facilitating these contacts (Cunliffe 2013b: 246–249). Furthermore, that if this was the case, a subsequent period of mobility associated with the Beaker phenomenon, c.2700–c.2400 BCE, may have triggered the differentiation of Continental Celtic and Insular Celtic, see Figure 3 (Cunliffe 2013b: 246–249).

As will be shown below, whilst the Beaker phenomenon may have been associated with Celtic language, as per Cunliffe's (2013b: 246–249) suggestion, it seems much more likely that this would have been with Proto-Celtic, rather than the later Continental and Insular branches. Whilst the evidence for contact throughout the Atlantic façade during the late fifth and fourth millennia BCE is convincing, it is unlikely that such contacts were conducted in any Celtic language. This is primarily because, as the following evaluation will show, the Anatolian hypothesis has not stood up well against scrutiny from recent evidence; and in turn the megalithic theory for Celtic origins cannot be accepted.

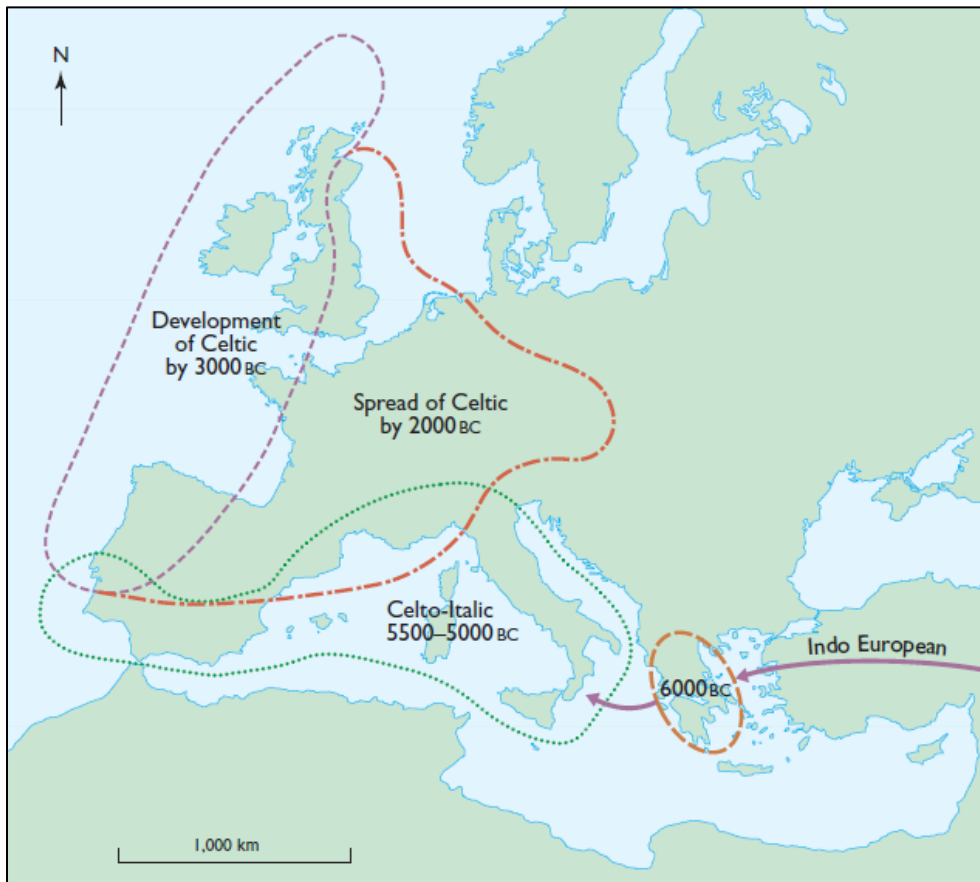


Figure 3: Celtic origins as per the Anatolian hypothesis (from Cunliffe 2013b: Figure 7.5).

2.2 Evaluation

Notably, there has been some support for the Anatolian hypothesis from certain computational phylogenetic linguistic studies (Gray and Atkinson 2003; Bouckaert *et al.* 2012). These studies have not only dated Proto-Indo-European to a time-scale suitable for the Anatolian hypothesis (Gray and Atkinson 2003; Bouckaert *et al.* 2012) but have also geographically placed Proto-Indo-European in Anatolia (Bouckaert *et al.* 2012). The methodologies of these studies are however heavily flawed (Pereltsvaig and Lewis 2015). Furthermore, another study using a similar methodology concluded that the Anatolian hypothesis should be rejected in favour of its competitor, the Steppe hypothesis (Chang *et al.* 2015).

One domain of historical linguistics involves reconstructing earlier forms of known languages (Mallory and Adams 2006: 39–45). Reconstructed Proto-Germanic, whilst mostly Indo-European, also holds some non-Indo-European linguistic influence (Kroonen 2012; Iverson and Kroonen 2017). The overrepresentation of agricultural terminology in this non-Indo-European linguistic substrate does not support the Anatolian hypothesis' view of the Proto-Indo-European speakers as having been deeply agricultural people (Kroonen 2012; Iverson and Kroonen 2017). Rather, it suggests that early Indo-European speakers did not have full knowledge of agricultural crops, and that they learned much about agriculture inside Europe from pre-existing populations. Agricultural terms cannot have come from hunter-gatherers; therefore, this non-Indo-European substrate is viewed as demonstrating that (at least some of) Europe's first farmers did not speak Indo-European languages.

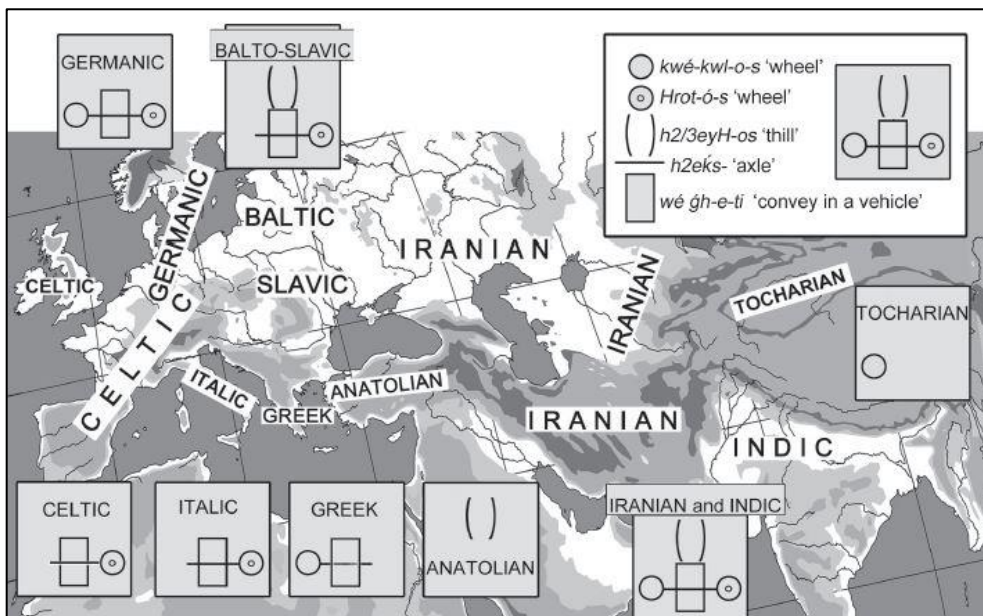


Figure 4: Distribution of PIE terms referring to wheeled vehicles (from Anthony 2017: Figure 2.1).

Terms relating to wagons are contained within reconstructed Proto-Indo-European, see Figure 4 (Anthony 2007: 75–82). The Anatolian hypothesis dates Proto-Indo-European to c.7000 BCE (Renfrew 1989), though wagons are not found archaeologically in Europe until c.3500 BCE (Anthony 2007: 75–82). If Proto-Indo-European was in existence c.7000

BCE, it would be expected that the numerous Indo-European sub-families such as Germanic and Celtic, would have diverged by c.3500 BCE (Anthony 2007: 75–82).

Without a high degree of inter-regional verbal interconnectivity, the European continent is too large an area for a single language not to change over such a duration (Anthony 2007: 75–82), and yet the Indo-European-speaking area extended far beyond Europe. In times when land transportation was limited to walking, such a high level of interconnectivity would not have been forthcoming. These issues are amplified when considered alongside the diversity of material culture in Neolithic Europe (Anthony 2007: 75–82), see Figure 1. Although a post-modernist stance would hold that there are no universal laws of culture (Thomas 2015: 1288), ethnography has shown that in undisturbed tribal societies linguistic diversity tends to be greater than material diversity (Anthony 2007: 75–82). This leaves the linguistic ‘wagon’ scenario unexplained, as ‘the wagon vocabulary cannot have been created *after* Proto-Indo-European was dead and the daughter languages differentiated’ (Anthony 2007: 77). Similar arguments can be made about other reconstructed Proto-Indo-European terms relating to wool (Anthony 2007: 59–63); though the wagon argument is much stronger.

There is a counter-argument that the wagon-related noun words may be derived from verbs (Anthony 2007: 59–63). To give a modern example of this, there was a term for ‘boiling’ before the invention of the boiler. The noun *wheel* (PIE: k^wék^wlos) may be derived from the verb *turn* (PIE: k^wel) (Anthony 2007: 78). This counter-argument is flawed because there are no fewer than four terms for the verb *turn* in Proto-Indo-European, and it seems unlikely that each Indo-European branch would derive the term *wheel* from the same verb for ‘turning’, when there were also terms which might be translated as ‘rotating’ or ‘revolving’, etc. (Anthony 2007: 78).

3 Indo-European from the Steppe

The Steppe hypothesis holds that Indo-European language spread outwards from the Pontic-Caspian steppes, see Figure 5, from around 5000 BCE with the migrations of nomadic pastoralists (Anthony 2007; Mallory 1989). This hypothesis is compatible with a Bronze Age origin for Celtic, viewing the impact which early metallurgical technology had on Atlantic society as a key factor in the differentiation of Celtic from Proto-Indo-European (Koch 2013;

Cunliffe and Koch 2019). The Steppe hypothesis is also compatible with the more orthodox theory of an Iron Age Celtic origin in Central Europe.

The Indo-European language family is linguistically closest to the Uralic, Semitic, and Caucasian language families (Mallory and Adams 2006: 81–83). Given, these linguistic similarities, a Proto-Indo-European homeland somewhere between the Caucasus and the Urals, such as in the Pontic-Caspian Steppe, is supported (Anthony 2007: 93–98).



Figure 5: Pontic-Caspian steppe (dark green), contemporary Indo-European-speaking areas in Eurasia (light green).

Other linguistic support for the Steppe hypothesis stems from Proto-Indo-European reconstructed vocabulary. Though the cultural vocabulary of Proto-Indo-European does not clearly specify a homeland, the vocabulary makes some geographical areas less likely, and offers cultural knowledge which can be checked against the archaeological record of any region suggested (Mallory and Adams 2006: 449; Mallory 1989: 183). The archaeological record of the Pontic-Caspian Steppe meets all demands which the vocabulary of reconstructed Proto-Indo-European places upon suggested homelands, and it does so prior to 4000 BCE (Mallory 1989: 183). The hypothesis of linguistic migrations from the Steppe into Europe has gained substantial support from recent population genetics studies (e.g. Haak *et al.* 2015; Allentoft *et al.* 2015; Cassidy *et al.* 2016; Kristiansen *et al.* 2017;

Mathieson *et al.* 2018; Reich 2018; Olalde *et al.* 2018). From the results of whole genome analysis of ancient DNA samples belonging to more than a hundred prehistoric individuals, archaeo-geneticists have asserted that a ‘massive migration from the steppe’ into Europe occurred during the third millennium BCE (Haak *et al.* 2015: 207). This has resulted in a view of European prehistory as that shown in Figure 6. Some of these archaeo-genetic papers explicitly state the significance of their findings to the Steppe hypothesis (Allentoft *et al.* 2015; Haak *et al.* 2015; Cassidy *et al.* 2016). In a study relating to Rathlin Island, situated just off the northeast coast of Ireland, Cassidy *et al.* (2016) also tentatively connect their findings with the Celtic subfamily.

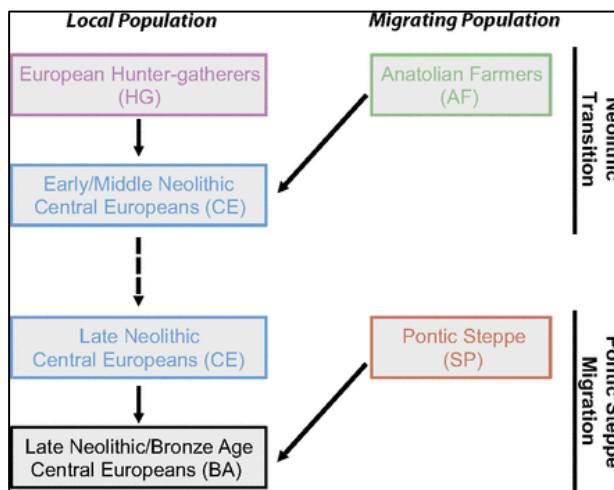


Figure 6: European population history (from Goldberg *et al.* 2017: Figure 1).

3.1 Bronze Age origins for Celtic

The introduction of the genetic Steppe component into the British-Irish isles, c.2500–2000 BCE, occurred in parallel with other important developments in these islands (Olalde *et al.* 2018), see Figure 7. Namely the occurrence of the Neolithic-Bronze Age transition (Roberts 2013), as well as the introduction of Beaker material culture (Carlin 2018), and arguably the linguistic differentiation of Celtic from Proto-Indo-European (Koch 2013; Cunliffe and Koch 2019).

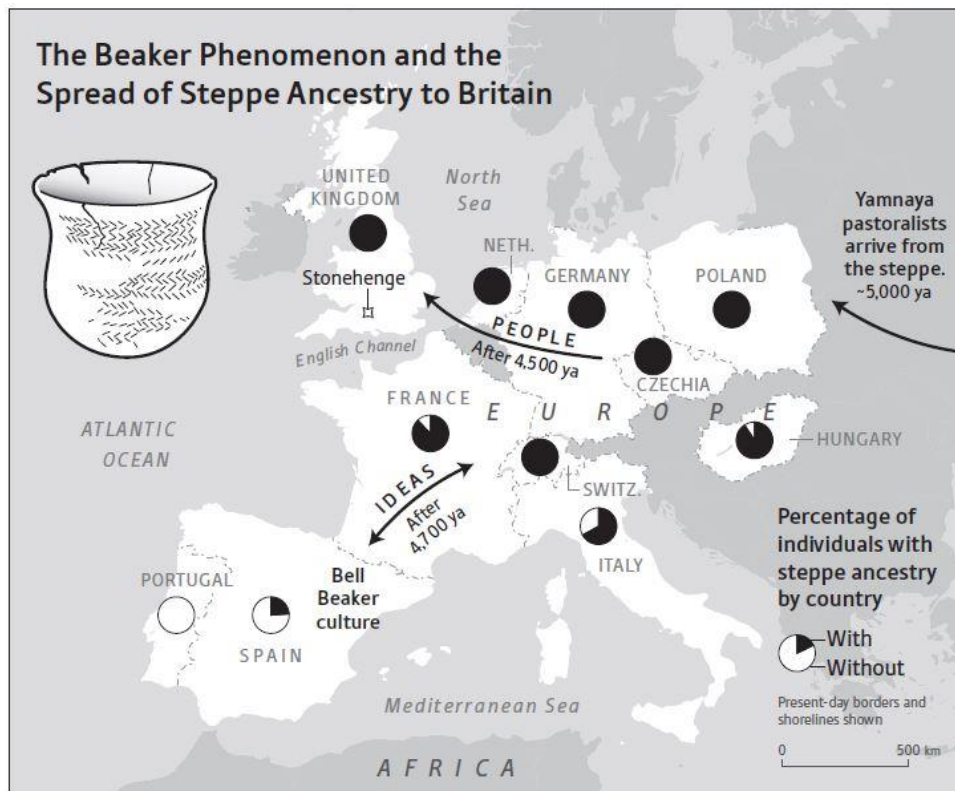


Figure 7: ‘The Beaker Phenomenon and the Spread of Steppe Ancestry to Britain’ (from Reich 2018: Figure 16).

Unlike many areas of continental Europe, where metallurgy emerged very gradually, in Ireland and Britain metallurgical technology developed fairly rapidly (Roberts 2009; Ottaway and Roberts 2008: 197). The earliest metallurgy practiced in these islands was already relatively advanced, likely due to a diffusion from the European continent (Fitzpatrick 2013; Gibson 2013). This early metalworking occurred at the Ross Island arsenical copper mine in Co. Kerry, c.2400 BCE (O’Brien 2014: 127; Roberts 2009: 467). Arsenical copper is essentially a naturally formed bronze, considerably harder than non-arsenical coppers (Ottaway and Roberts 2008: 208–209). These metal supplies from Ross Island were circulated widely throughout Ireland, Britain and into continental Europe (O’Brien 2004; Fitzpatrick 2013: 55–56).

By c.2100–2000 BCE, tin-bronze alloying had begun to be practiced in Britain (O’Brien 2014: 140). This invention was potentially inspired by a desire to imitate the arsenical strength of the Ross Island supplies, lacking in Britain’s non-arsenical coppers. Intentional tin-bronze alloying was practiced

in Britain considerably earlier than in the rest of northwest Europe, see Figure 8 (Pare 2000: 20–21, Figure 1.14; Kienlin 2013: 420–421; Ottaway and Roberts 2008: 197).

Given the geological rarity of tin, and, to a lesser extent, of copper, the early metallurgists of this era would have needed to engage in long-distance trading networks (Roberts 2008; Pare 2000: 21). The Atlantic networks which Ireland, Britain, Brittany and at times Iberia participated in are sometimes considered to have been isolated from Eurasia’s other third and second millennia connectivity spheres (Koch 2013: 109–115, Figure 4.5; Burgess and O’Connor 2008; Bradley 2007, 227). The combination of these factors, inwards Atlantic connectivity and isolation from the other networks to the east, can be considered fertile sociolinguistic grounds for language differentiation (Koch 2013).



Figure 8: Map indicating the approximate dates at which tin-bronze superseded copper (from Koch 2013: Figure 4.4; map by Crampin and Koch; after Pare 2000: Figure 1.14).

Mallory (2013a: 274; 2016: 391–393) rejects the view of Proto-Celtic emerging as a trading language. The reasons cited for this rejection include the supposed linguistic simplicity of trading languages, as opposed to the

asserted complexity of Celtic. However, modern linguists do not consider trading languages to be any more or less simple than non-trading languages (Velupillai 2015). This is in large part because of the difficulty in defining terms such as *linguistic complexity* and *linguistic simplicity* (Velupillai 2015). Furthermore, the Bronze Age connectivity spheres outlined above demonstrably comprised many more aspects of human interaction than trade alone (Fitzpatrick 2013: 62–64).

For example, isotopic analysis of human remains and artefacts have shown high levels of mobility in the late third and second millennia (Fitzpatrick 2013). Often this mobility occurred in childhood, perhaps for apprenticeships, fosterages or cultural exchanges; all of which would have strongly encouraged linguistic shift (Koch 2013; Fitzpatrick 2013: 62–64). These networks can be considered as a key part of the industrial revolution of the innovation of tin-bronze metallurgy (Fitzpatrick 2013: 62–64).

Consideration of the metallurgical stages which occur prior to trade is also appropriate; these are, mining, fuel procurement, smelting, waste management and casting/working (Thornton and Roberts 2008: 182). Technological expertise and social complexity are prerequisites for each of these stages. However, these metallurgical developments did not necessarily replace the pre-existing cultures of the Neolithic. To demonstrate, early metalworking appears to have benefitted from certain transferable skills from pre-existing, non-metallurgical industries such as flint mining and the pyrotechnology of ceramic production (Roberts 2009: 468–469). Furthermore, advances in metallurgy seem to have galvanised advances in the pre-existing lithic industries (Roberts 2013: 536; Cunliffe 2013b: 214–219). Clearly the early metallurgists possessed and passed on a wealth of knowledge, and it is argued here that such knowledge included that of Celtic language.

3.2 Iron Age origins for Celtic

The view that Celtic originated in Atlantic Europe is relatively new and unorthodox. More traditional accounts hold that Celtic originated further east, in association with the Central European Hallstatt and La Tène material cultures which originated c.700 and c.500 BCE respectively, see Figure 9 (Karl 2010: 39–41; Renfrew 1989: 212–213, 234–235).

In southwest Iberia at around the same time as the emergence of the Hallstatt and La Tène material cultures, over 95 Tartessian language inscriptions dating c.800–400 BCE were carved in the Phoenician script. Though far from universally accepted, Koch (2010) claims to have deciphered the Tartessian inscriptions as demonstrably ‘Indo-European and specifically Celtic’. If this is accepted, Tartessian would be the earliest known Celtic language (Koch 2013: 5–6; Renfrew 1989: 212–213). Furthermore, the marked absence of Hallstatt or La Tène material culture in Iberia, would dissuade from the views of Celtic having originated in Central Europe around this time (Koch 2013: 5–6; Renfrew 1989: 212–213, 234–235).

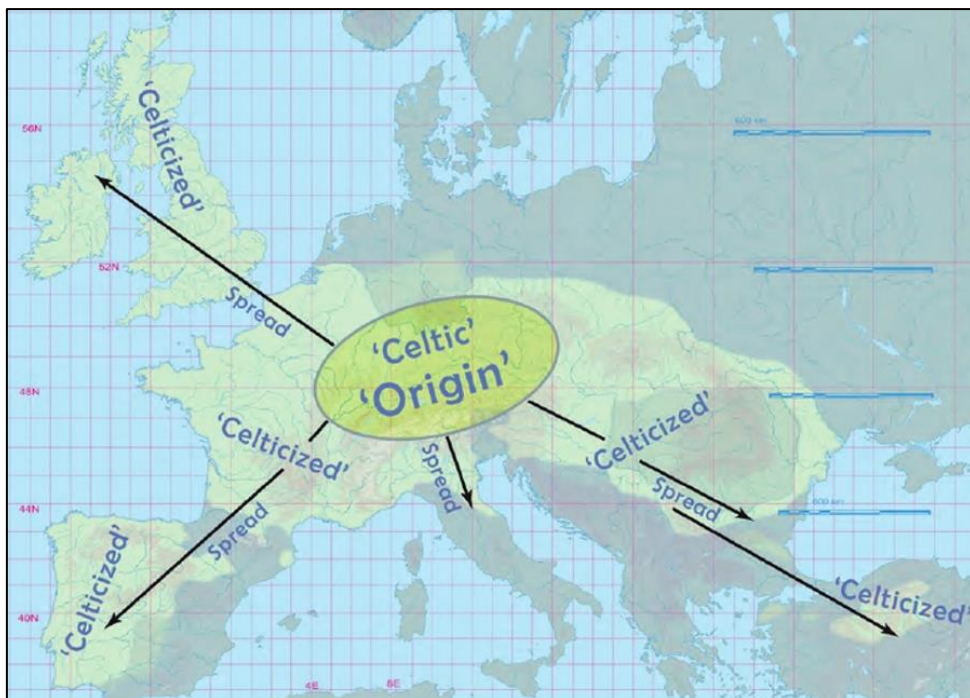


Figure 9: The origins of Celtic, as per the Hallstatt/La Tène hypothesis (from Karl 2010: Figure 2.1).

As outlined above, the emergence of bronze in the late third millennium BCE provided the impetus for long-distance trading networks and connectivity spheres which continued into the second millennium BCE. The emergence of ironworking had a similarly profound impact on society. However, whereas bronze metallurgy had an extroverting effect upon society, ironworking can be considered to have had more of an introverting effect upon society.

This is due to the relative geological ubiquity of bog iron ore, in comparison to copper and tin (Jones 2001: 2). Given the major difference in material sourcing, ironworking had a localising factor upon society which made long-distance travel much less necessary (Bradley 2007: 230–232). Elites of the Bronze Age are sometimes considered to have capitalised on the scarcity of tin in order to tightly control the market. By severing ties with that established regime, ironworking communities would have radically altered society (Bradley 2007: 230–232). Indeed, societal elites may have purposely attempted to suppress the new technology on account of its socioeconomic impacts (Mallory 2013a: 159; Henderson 2007: 116–119). These societal shifts do not seem particularly inductive to language shift. On that account, it is argued here that the archaeological manifestations of Celtic origins are not in the Iron Age as traditionally claimed, but rather in the Bronze Age.

4 Discussion

4.1 Indo-European origins

Whilst this chapter has firmly advocated the Bronze Age model for Celtic origins in the Atlantic facade, it does not advocate any particular hypothesis for Indo-European origins. Although recent findings do suggest that Indo-European languages were spoken in the Steppe, c.3000 BCE, they may have been spoken earlier elsewhere (Renfrew 2017). Reich (2018: 120) has suggested that although Proto-Indo-European was associated with the Pontic-Caspian Steppe, that it may have originated in Armenia or Persia, and spread into both the Steppe and Anatolia. Other scholars (Parpola 2012; Kohl 2007: 236) have placed emphasis on an agriculturalist diffusion from Anatolia into the Steppe during the fifth millennium BCE. Their suggestion is that Proto-Indo-European may have been associated, to some extent, with both areas. The plausibility of these ‘secondary homeland’ hypotheses demonstrates that the debate over Indo-European origins should not be considered as a binary debate solely between the two main theories.

4.2 Sociolinguistics

The use of archaeo-genetic-linguistic proxies is by no means ideal because ‘language is culturally learned, not physically inherited’ (Kohl 2007: 234). However, given that humans usually tend to learn the language of their parents, and only marry partners with whom they share a language, these

proxies comprise a useful approach if used fluidly and carefully (Kohl 2007: 234; Cavalli-Sforza 2000: 150, 167). Nonetheless, archaeo-genetic-linguistic proxies are only of tentative legitimacy, and if used rigidly they are liable to overlook various aspects of prehistoric life (Vander Linden 2016: 720).

Rigid use of genetics as a proxy for language would ignore interesting aspects of the past. The stories of individuals who were polyglottal or who had linguistically deviated from their ancestors would not be told. Similarly, social processes such as assimilation and linguistic shift would be poorly understood. In order to try and understand these important social aspects of prehistory, archaeo-genetic-linguistic proxies can be used alongside social archaeology, in order to gain insights into prehistoric sociolinguistics. Whilst biomolecular studies cannot provide socio-linguistic information, at least not directly (Pala *et al.* 2016: 374), sociolinguistic impressions can be gleaned from societal impressions based upon the archaeological material. For example, from the knowledge of numerous competing social groups, and of the co-existence of different economies (Mallory 2016; Robb 1993; Bayard 1996; Bellwood and Renfrew 2002).

The sociolinguistic scenario of inter-group competition, leading to societal bilingualism, then monolingualism seems a likely occurrence in the spread of Indo-European into Europe, and the language death of most pre-Indo-European languages (Anthony 2007: 340–341; Mallory 2016). This process has been observed ethnographically amongst the speakers of the now-obsolescent *Maraichean* Gaelic dialect of East Sutherland (Dorian 1981; 2010; Anthony, 2007: 340–341). To some extent the process can also be observed in the archaeological record. To demonstrate, there is palaeoecological evidence for a mini ice-age c.4200–3760 (Cunliffe 2015: 83). This period's cold climate would have caused agricultural problems such as crop failure, floods and lower life expectancy of animals (Anthony 2007: 227; Cunliffe 2015: 72, 83–84). These problems would likely have increased the attractiveness and ubiquity of nomadic pastoralism in the Steppe. If it is accepted that the members of the agricultural and the nomadic pastoral economies represented two separate linguistic communities, then the shift away from one lifestyle and towards the other can be understood as a sociolinguistic process.

This sociolinguistic model is just one of many models designed to understand the prehistory of languages. By gaining an appreciation of socio-linguistic models, archaeologists become able to identify certain potential

‘language shift windows’ (Mallory 2013a; 2013b). For example, the Bronze Age model for Celtic origins presented above considers there to have been technological stimulus for language shift. This comprised industrial developments leading to a desire for exotic materials, which in turn encouraged trade, mobility and active social networks (Cunliffe and Koch 2019; Koch 2013).

4.2 Culture-history

Archaeologists analysing the prehistory of languages should take particular care when dealing with culture-history. The culture-historical method offers methods in addressing spatio-temporal similarities and interconnections in material culture. Although flawed, it continues to be widely used and has merits if used carefully (Roberts and Vander Linden 2011: 2–3).

Despite the relevance of the Beaker complex to the Bronze Age model for Celtic origins, the Beaker phenomenon would not have been associated solely with one language community. The earliest Beaker-type material culture seems to have emerged in Iberia, at a time when the Steppe genetic component (and Indo-European language?) had not yet reached Western Europe, see Figure 7 above (Reich 2018). This is interesting considering the persistence of the non-Indo-European Basque language in Iberia.

Furthermore, the Indo-Europeanisation of other non-Celtic regions of Europe has also been associated with the Beaker complex (Prescott 2017; 2012: 41). In using archaeo-genetic-linguistic proxies as a fluid interpretive framework, these narratives of numerous parts of Europe can be understood not as conflicting, but rather as harmonious and mutually complementary. Although the Bronze Age model for Celtic origins advocated herein draws upon aspects of the Beaker complex in the Atlantic façade, it does not view the Beaker complex as a whole, or indeed any other archaeological culture as linguistically, materially or ethnically monolithic. The usefulness as well as the flaws of an archaeo-genetic-linguistic approach are captured in the adage ‘all models are wrong, but some models are useful’.

4 Conclusion

This chapter has outlined reasons why the Bronze Age model for Celtic origins is preferable to other competing models. The megalithic model of Celtic origins was rejected by proxy due to the repudiation of the associated explanation of Indo-European origins, the Anatolian agriculturalist

hypothesis. The Anatolian hypothesis was rejected on historical linguistic grounds. Namely, the inclusion of a non-Indo-European, but highly agricultural, substrate in reconstructed Proto-Germanic. Also, the unrealistic gap of 3500 years between the earliest wagon in the archaeological record of Europe and the supposed date for Proto-Indo-European's wagon-related vocabulary.

The Steppe hypothesis was shown to have been a much more coherent model for Indo-European origins, enjoying multidisciplinary support. The orthodox theory for Iron Age Celtic origins in Central Europe was herein rejected on account of archaeological understandings of Iron Age societal dynamics not conducive to language shifts, as well as the interpretation of the Tartessian inscriptions as Celtic.

This author's preferred model for Celtic origins is that of an association with Bronze Age processes in the Atlantic façade. This is due to archaeological understandings of societal dynamics which would certainly have been conducive to language shifts, as well as archaeo-genetic evidence linking these developments with the migrations from the Steppe.

Future research will further elucidate understandings of the processes outlined above, and it is envisaged that such research will stem from a wide variety of academic disciplines, akin to the multidisciplinary approach taken by this chapter.

Acknowledgements

I would like to thank; Catriona Pickard for her guidance whilst I conducted much of this archaeo-genetic-linguistic research; the participants and organisers at the FRLSU 2018 Linguistic Migrations conference in Glasgow, particularly Joanna Kopaczyk, Viveka Velupillai, and Robert McColl Millar; and at the NEBARSS 2018 conference in Manchester; Martin Carruthers for his tuition on the Iron Age, as well as those who granted permission to reproduce images; and the anonymous reviewers who made helpful comments on an earlier draft. However, any faults and all views expressed herein are solely mine.

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