

**TOWSON UNIVERSITY
COLLEGE OF GRADUATE EDUCATION AND RESEARCH**

THE FORMATION OF THE PROTO-GERMANIC LANGUAGE

by

Matthew J. Rifkin

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THESIS APPROVAL PAGE

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Print Name

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Committee Member

Date

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Print Name

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Committee Member

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Print Name

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Dean, College of Graduate Education and Research

Date

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ABSTRACT

The Formation of the Proto-Germanic Language

Matthew J. Rifkin

Over the years linguistics and archaeology have been synthesized in order to explain how various language families formed. However, studies examining the problem from a uniquely geographic perspective are lacking. This study examined how the Proto-Germanic language formed. Archaeological, geogenetic, and temporal data was gathered and put into a GIS for analysis using statistics and intersects. The conclusion was that the language formed somewhere in southern Scandinavia through a process of intermingling after an initial clash between an indigenous agricultural group and an invading tribe from the North Pontic Steppes.

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Chapter I

Introduction

Over time, various scholars have synthesized linguistics with archaeology to account for the origins and ethno-genesis of various groups of people. Such endeavors have in part led to the current classifications of lingual and ethnic groups that are found in most encyclopedias and textbooks. Still, many changes regarding how lingual and ethnic groups are broadly classified have been made. Different paradigms and factors have emerged throughout the years.

German, as an Indo-Europeanized language, has been one of the topics on which linguistic and archaeological data have been synthesized in an attempt to acquire perspectives on the origins of the German speaking family of Indo-European languages. A sizable Non-Indo-European word substratum in German has been acknowledged by scholars in many different fields, including Marija Gimbutas (1982), Edgar Polome (1987), John Geipel (1969) and Terry Jordan Bychov (2002). Yet, to a remaining persistent few, notably Georges Dumezil (1973) and his followers claim there are Indo-European cognates for these words, particularly for the names of Norse gods.

This has generated a debate about whether or not there was an actual indigenous group in southern pre-historic Scandinavia (the traditional cultural hearth of the Germanic speaking people) as well as throughout central Europe that spoke a Non-Indo-European language. Furthermore, was there an abrupt lingual and cultural change caused by an intrusion into this region during 3rd and 2nd millennium B.C by Indo-European speaking nomadic pastoralists from the North Pontic Steppes? It is believed that these

invading people had a culture identified with the presence of single barrow graves known as *kurgans* (a Russian word taken from a Turkic language meaning barrow).

Germo-centric scholars such as Lothar Kilian and Alexander Hausler have often placed part of the Indo-European homeland in southern Scandinavia and central Europe (Mallory 1989). Indeed the term “Indo-German” still persists among these scholars as the preferred way to label the lingual grouping of Indo-European speakers.

Further there is ambiguity about how languages are classified. Both Gimbutas and Polome claim German to be an *Indo-Europeanized* language. Their basis for this rests on the premise that there is a 30% Non-Indo-European lexical component found in the modern German language. Yet, they do not specifically define what constitutes an Indo-Europeanized language in numerical terms regarding lexicon. Similarly, English contains mostly Latin based words (roughly 50-60% of the lexicon), yet retains the distinction of being classified Germanic. It is rarely mentioned in the literature as a Latinized language. What can be concluded from this discourse is that lingual analysis alone has done little over the years to clearly define languages and their respective lingual groups. Rather, the evidence points to the conclusion that there are few, if any, clearly defined languages.

Statement of the Problem and Purpose of the Study

This study addresses the geographical origins of the Proto-Germanic language and how it evolved. The study will entail a synthesis of geographical, lingual, historical, genetic and archaeological data. Prior studies have demonstrated an absence of geographical work regarding the problem, as well as a lack of synthesis among these academic fields. Therefore, this study will examine and analyze the alleged geographic

diffusion of the Kurgan culture from out of the North Pontic Steppes to southern Scandinavia circa the 3rd millennium. This diffusion will be compared to the lingual, historical, genetic and archaeological evidence provided, to determine if the migration corresponds with any lingual changes in the region both spatially and temporally.

Hypotheses

The study is based on the working hypothesis that Proto-Germanic represents an Indo-Europeanized language and that the process of Indo-Europeanization corresponds to the diffusion of the Kurgan culture from the North Pontic Steppes into Central and Northern Europe during a time period beginning c. 5000 B.C. and lasting until c. 1900 B.C. The hypothesis also maintains that the 30% Non-Indo-European substratum found in modern German comes from Non-Indo-European speaking Nordic tribes indigenous to southern Scandinavia. When Indo-European speakers came into contact with the indigenous Nordic tribes during the 3rd millennium B.C., they dominated them militarily and imposed both general cultural and specific lingual aspects upon them. Yet, parts of the indigenous lexicon persisted in the formation of Proto-Germanic, thus giving German the unusual status of being an Indo-Europeanized language.

Delimitations

The study has the following delimitations:

1. Only certain parts of the Eurasian continent will be studied, specifically the range of land extending from the North-Pontic Steppes to the Jutland region of present day Denmark, and southern Sweden and Norway.
2. The time frame of the study is the period c. 5000 B.C. to c. 1900 B.C.

3. The primary focus will be limited to two groups of people and the various geogenetic, lingual, historical, geographic and archaeological data pertaining to them: the alleged nomadic warlike Indo-European-dialect-speaking pastoralists from the North Pontic steppe region whose culture was defined by the presence of kurgans, and the indigenous Nordic tribes of southern Scandinavian whose culture resembled that of a supposed prehistoric or “Old” Europe and who spoke a Non-Indo-European Language sometimes called the pre-Indo-European “North Europe” language (Hamp 1990).

Basic Assumptions

This study is based on the following assumptions:

1. The Proto-Indo-European language was formed circa 5000 B.C. on the North Pontic Steppes and was spoken by warlike nomads who spread the language.
2. Where the Kurgan culture appears, so does an Indo-European language or dialect circa 5000 to 2000 B.C.
3. There was a Non-Indo-European language spoken in southern Scandinavia circa 5000 to 2400 B.C by indigenous Nordic people.

Limitations

The study has the following limitations:

1. There are no written records of the following languages during the times that they were spoken: Proto-Germanic, Proto-Indo-European, pre-Indo-European North-Central European.
2. A lexicon for Proto-Germanic and Proto-Indo-European has been established recently through the process of lingual reconstruction; therefore we cannot be absolutely certain what these languages were like.

3. There are no actual historical records from the time of the diffusion of the Kurgan culture and its people from 5000 to 1900 B.C. Yet, other evidences providing insights are referenced in the Literature Review section of this proposal.

4. There are no direct historical records written at the time when the people who spoke Proto-Indo-European existed at 5000 B.C. or any account of their lives, actions, culture, movements, migrations, or what they looked like. Yet, there are other indirect evidences presented in the Literature Review section of this proposal.

5. There are no direct historical records written at the time when the people who spoke a pre-Indo-European “North (Central) European language” (Hamp 1990) existed prior circa 5000 to 2400 B.C. or any account of their lives, actions, culture, movements, migrations or what they actually looked like. Yet, there are other indirect evidences presented in the Literature Review section of this.

Chapter II

Review of the Literature

Despite many studies on the Kurganization and Indo-Europeanization (IE) of Europe, and the Non-Indo-European lingual elements found in Proto-Germanic (PG), there is a deficiency of scholarship from a uniquely geographic perspective focusing on the Indo-Europeanization of the pre-IE “North Europe” language, which in turn led to the creation of Proto-Germanic. Literature on Proto-Germanic, Proto-Indo-European and the diffusion of Kurgan culture, as well as theories contrary to the thesis hypothesis, have been gathered and presented for review. Much of the critical literature reviewed is based on the works of Marija Gimbutas (1997), Edgar Polome (1969, 1982, 1986, 1987, 1990, 1998) and J.P. Mallory (1989, 1997). Their research, in particular Gimbutas’ synthesis of archaeology with linguistics, made this study possible.

Marija Gimbutas, whose theories provide the foundation of this study, was born in Lithuania during the first half of the 20th century. She received much of her archaeological education in Germany and eventually migrated to the U.S. during World War II. In 1956, Gimbutas first introduced her theories on the Kurgan culture as well as the idea of a matriarchal “Old European” civilization centered on the worship of a mother goddess. Edgar Polome, a French born linguist, presented many works dealing with the non-IE component of the PG language. Other linguists who have contributed significantly to the PG substratum thesis are Marlies Philippa (2004), Peter Schrijver (2001), and Krzysztof Witczak (1994). J.P. Mallory is one of the leading figures of IE archaeology and linguistics. Most of his work has involved providing invaluable

encyclopedia references for both the archaeological and linguistics aspects of the Indo-Europeans.

Sources regarding various theories opposing Gimbutas' school of thought have also surfaced. The primary architects of these oppositional theories are British archaeologists Colin Renfrew (1987), and Ian Hodder (2005) who advocate the archaeological wave of advance model. Others who refute Gimbutas' theory with their non-migrationist theories are German archaeologist Alexander Hausler and Italian linguist Mario Alinei.

There are many other scholarly contributors regarding the various archaeological regions of this study. Ukrainian archaeologist Yuri Rassamakin (1999) has been most concerned with reexamining Ukraine's Eneolithic and challenging its traditional framework, which fellow countryman and archaeologist Dmitri Telegin (1992, 2003) has argued for. David Anthony and Dorcas Brown have been the foremost scholars concerned with horse domestication on the North Pontic Steppes. For varying opinions on the Yamnaya culture, works by Natalia Shishlina (2003) and Elena Kuzmina (2003) were examined.

The leading central European archaeologists are all from Poland. They are Tadeusz Sulimirski (1968), Tadeusz Wislanski (1970), and Miroslav Buchvaldek (1986). All of them have written on the Globular Amphora and Corded Ware cultures. British archaeologist Magdalena Midgley (1995) has provided the most comprehensive work for the Funnel-necked Beaker culture in central and northern Europe. German archaeologist Joachim Preuss' work has dealt with mapping the archaeological points of all major

central European cultures during the Neolithic and cataloguing various pottery types (1996).

The most dominant figure of Neolithic Scandinavian archaeology is Mats Malmer (1975, 2002). His interpretations of the Funnel-necked Beaker, Pitted-combed ware, and Straight-Axe cultures all favor continuance from a common source. The major challengers to Malmer who favor migrationalist models for culture change between the Funnel-necked Beaker and Corded Ware cultures in northern Europe are fellow Scandinavian archaeologists Kristiansen Davidsen (1977) and Fredrik Hallgren (1997). Christopher Prescott's and Eva Walderhaug's work is one of the few studies demonstrating the process of Indo-Europeanization in Norway (1995).

Linguistic paleontology generally favors an IE homeland located on the North Pontic Steppes (NPS). This is precisely the stance of British linguist Robert S.P. Beekes (1995). Others who have written about the development of Germanic languages such as John Waterman (1991) and Frans Coestem (1994) generally favor an NPS homeland as well.

Georgian linguist Thomas Gamkrelidze and his Russian colleague Vyacheslav Ivanov see the NPS as a secondary homeland (1995). They feel that Proto-Indo-European (PIE) had its origins somewhere in Anatolia. They believe this to be true since Hittite and many other Anatolian IE languages possess certain laryngeals and grammar absent in other IE languages. Tho these scholars, this demonstrates that IE Anatolian languages are the closest IE subfamily to the proto form. Eventually a large group of IE speakers migrated over the Caucasuses and onto the NPS. From there they would further

diffuse. To account for such uniqueness others maintain that the IE Anatolian speakers would represent the earliest tribal split from the IE tribes of the NPS (Beekes 1995).

IE mythology and culture have largely revolved around the theories of French linguist Georges Dumézil. Yet many scholars have sought other ways to interpret IE mythology. T.J. Cornell (1995), Pierre De La Saussaye (1977), Gamkrelidze and Ivanov (1995) are just some of the scholars who have interpreted IE mythology under non-Dumézilian theories.

John Geipel (1969) wrote one of the most comprehensive works on European anthropology reviewed. He felt that some human remains from the European Neolithic suggest an intrusive physical type from the NPS into southern Scandinavia. Geogenetics also plays an important role in the discussion. Much of the literature regarding geogenetics comes from the work of Italian geneticist Luigi Luca Cavalli-Sforza. He has spent much of his life collecting DNA from various populations around the world. His general stance regarding the spread of IE languages is akin to Gamkrelidze's and Ivanov's (2000). His close colleague, Spencer Wells, favors the traditional Kurgan culture theory (2002). Contributions of British geneticist Bryan Sykes (1999, 2001) have also been important, though he typically stays out of the IE debate.

Finally, there is the literature regarding this problem from a geographic point of view. Only one source actually presents geographic methods for examining the problem. It was written by American anthropologist Grover Krantz (1988). His methods involved formulas for factoring the spread and growth of populations based on their mode of economy using hypothetical computational models. Such formulas included waves of advance for not only agriculturalists but pastoralists as well.

Chapter III

The Three Major Paradigms for an Indo-European Homeland

Gimbutas' Kurgan Culture Theory

The first paradigm to emerge that accounted for an IE homeland was Marija Gimbutas' Kurgan Culture Theory. Her theory, introduced in 1956, was in part based on the work of several other archaeologists before her. Much of Gimbutas' work on this subject has been reprinted collectively in *The Kurgan Culture and the Indo-Europeanization of Europe*. In one of her works featured in the book, she states that “the cultures in South Russia of the 5th millennium B.C. are the mother cultures of all later cultures which are attributed to the speaking of south, west, and north “Indo-European” (Gimbutas 1997). Gimbutas gave these mother cultures the collective title of Kurgan culture. She further described the areal extent of the Kurgan culture, which “covers early, middle, and late periods of cultural development between the lower Dneiper and Southern Siberia and all its synchronous manifestations outside this area” (Gimbutas 1997). The common core component shared by all these cultures is the single grave in deep shafts with a mound over top (Fig. 1) (Gimbutas 1997).

This study is primarily concerned with the Kurgan culture hearth between the Don and Dnieper rivers known as the North Pontic Steppe cultural area; it is the oldest to date according to her formulations (circa middle of the 5th millennium B.C.). It also represents the area from which the Kurgan culture and its people diffused west into central and northern Europe. Gimbutas also claims that the spread of Indo-European languages corresponds to this geographical diffusion pattern, thus placing the formation

of the Proto-Indo-European language roughly in the North Pontic Steppe region circa mid 5th millennium B.C.

At the time that the Kurgan culture came into being, a separate distinct culture existed in northwest Europe consisting of Non-Indo-European speaking people known as “Old Europe”. According to Gimbutas:

Old Europe (the term Old Europe is used for Pre-Indo-European Europe during the Neolithic, Chalcolithic and Copper ages) existed for nearly 3 millennia (c. 6500-3500 B.C.) without major cataclysms. The culture rose in a linear fashion, unbroken by destruction or disruptions. The people lived in an egalitarian society, very probably in a matri-linear system, had virtually no weapons except in the last (Copper Age) stage, and indulged in arts and crafts, stimulated by their ideology and mythical imagery. (1997)

Additionally, these people often dwelled in “large agglomerations”, were sedentary-horticulturalist, had an ideology which “focused on the eternal aspects of birth, death, and regeneration, symbolized by the feminine principle, a mother creatrix”, buried their dead in communal megalith graves and were generally peaceful (Gimbutas 1997).

This social structure contrasted with the Indo-European Kurgans who were mobile and non-egalitarian; their system was accordingly ranked into a three category hierarchy: warrior priest rulers, warrior nobility, and laborers/agriculturalists at the bottom. The IE Kurgans were also warlike, lived in smaller villages at times, and had an ideology that centered on the virile male (Gimbutas 1997). Their gods were often heroic warriors of the shining and thunderous sky rather than peaceful mother goddesses of birth and regeneration (Gimbutas 1997). In sum, when comparing and contrasting these two groups through the eyes of Gimbutas, it can be said that, “the Old Europeans put no emphasis on dangerous weapons whereas the Kurgans glorified the sharp blade”

(Gimbutas 1997). What eventually occurred was the “drastic upheaval of Old Europe” as the:

three millennium long traditions were truncated by 2 waves of semi-nomadic horse riding people from the east: the towns and villages disintegrated, the magnificent painted pottery vanished; so did the shrines, frescoes, sculptures, symbols and script. (Gimbutas 1997)

Accordingly, this is all evident in:

...the archaeological record not only by the abrupt absences of the magnificent painted pottery and figurines and the termination of sign use, but by the equally abrupt appearance of thrusting weapons and horses infiltrating the Danubian Valley and other major grasslands of the Balkans and Central Europe. Their arrival initiated a dramatic shift in the prehistory of Europe, a change in social structure and in residence patterns, in art and in religion and it was a decisive factor in the formation of Europe’s last 5,000 years. (Gimbutas 1997)

A final major point that can be extracted from Gimbutas’ work in addition to the socio-economic, cultural, and linguistic impacts regards the genetic consequences of this outside infiltration into Western Europe:

The change in physical type of the population was marginal or uneven (more effective in the east than in the west). The process of Indo-Europeanization was essentially a cultural, not a physical transformation. It must be understood as a military victory in terms of successfully imposing a new administrative system, language and religion upon the indigenous groups. The social organization greatly facilitated the Kurgan people’s effectiveness in war. The patrilinear and patriarchal structure and tripartite class system of rulers, warrior nobility, and laborers is proved by the Indo-European mythologies. The Old Europeans had neither a warrior class nor horses. They lived in (probably) theocratic monarchies presided over by a queen-priestess. (1997)

Eventually, certain aspects of the Indo-European speaking Kurgan people’s culture and language, along with the people themselves, made their way into southern Scandinavia circa the 3rd millennium B.C. This gradual process can be categorized according to Gimbutas’ four Kurgan time periods, which serve not only to mark the time frame, but also the areal extent of the culture:

Kurgan I – the 5th millennium B.C., a period of relative uniformity known from the sites in the Dnieper-Volga steppes east of the Cucuteni (Tripolye) civilization. The archaeological label of this complex is “Srednij Stog II” in the Dnieper and Don basins and the earliest “Yamna” or “Pit-grave” in the lower Volga, lower Ural, and north Caspian regions.

Kurgan II – the first half of the 4th millennium B.C., the time of the beginning of a crisis west of the Black Sea when Kurgan II graves appear in the area of civilized Old Europe and infiltrate central Europe via the Danube. At this stage Old European civilizations continue their existence.

Kurgan III – the second half of the 4th millennium B.C., this phase is marked by a formation of a new culture in the northern part of the Balkan Peninsula and east central Europe (the Cernavoda-Boleraz-Proto-Baden-Baden complex) in central Europe (the Globular Amphora complex) and in Transcaucasia, all bearing Kurgan elements. This period saw the complex process of hybridization or “kurganization” resulting in marked changes in economy, social structure, and religion. The horse in strategic positions in the former lands of the Vinca and Lengyel civilizations are converted to strongholds and tribal centers; not a single town or village of Old European character is known in these areas.

Kurgan IV – the early 3rd millennium B.C., marked by the consolidation of tribal groups dominated by the Kurgan elements and the increase of mobility and expansion. This is the time of Corded-Battle-Axe complexes in the Pontic steppes, the Maikop phase in the northern Caucasus, and the period of destruction of towns in the Aegean and in the eastern Mediterranean. Northern Europe up to southern Sweden and southern Finland and Greece were “kurganized”. (Gimbutas 1997)

The diffusion occurred in three waves. This study is most concerned with the alleged “Third Wave” which occurred soon after 3000 B.C. (coinciding with Kurgan IV); it was triggered by population migrations out from east central Europe (Gimbutas 1997). New areas of settlement were gradually reached in present-day northern Europe, southern Scandinavia, the East Baltic area and central Russia (Gimbutas 1997). “Heir to the Globular Amphora culture” of east-central Europe, the Corded-Ware-Battle Axe people “diffused north into the East Baltic area and southern Scandinavia” (Fig. 2) (Gimbutas 1997). “By 2000 B.C., the world of Old Europe had been transformed, except for Old European groups on Crete, on Aegean Islands and in Iberia” (Gimbutas 1997).

Renfrew: Anatolian Origin

More recently, contrary schools of thought have emerged placing the PIE homeland in different locations and developing under different time frames and processes. One such paradigm traces the beginnings of PIE to the southeastern-most fringes of Anatolia circa 8000 B.C. along with the spread of agriculture (Fig. 3). British archaeologist Colin Renfrew in his 1987 book *Archaeology and Language: The Puzzle of Indo-European Origins* presented this theory representing his own archaeological school of thought known as “processualism”. Rather than solely seeking any functional reasoning for its existence, this approach aims to recreate the social processes from which an artifact may have risen in order to determine why it is there. Renfrew in this study attempts to synthesize this approach with the diffusion of languages by arguing that agriculture is what pushed people to expand, then spreading their language as well.

One rather interesting argument for placing the Indo-European lingual homeland in eastern Anatolia comes from a lingual analysis conducted by Gamkrelidze and Ivanov (Renfrew 1987). They observed that Indo-European languages share a few words in common with the Semitic languages. Placing the Indo-European homeland near the Levant region of the Middle East, in close proximity to the place where most linguists believe Proto-Semitic was formed, would seemingly constitute a reasonable claim. Renfrew found this to be congruent with his theory.

Another book challenging the Kurgan theory is by Renfrew acolyte Peter Bellwood, *The First Farmers: The Origins of Agricultural Societies* (2005). Bellwood essentially reiterates Renfrew’s theories as presented earlier, but with more clarity and brevity. Bellwood wrote that the IE lingual group spread with agriculture from western

Anatolia and into Europe through Italy. A PIE homeland can be found in eastern Anatolia stemming from the fact that that IE languages share words with Semitic, (Hittite may possibly be nearly synonymous with PIE), and that the Kurgan culture originated from the Cucuteni and Tripolye cultures.

Perhaps the most compelling argument that Bellwood makes for an IE homeland in Anatolia concerns Gamkrelidze's and Ivanov's reconstruction of the PIE term for mountain:

The reconstructed Proto-Indo European vocabulary certainly does not rule out an Anatolian homeland, and indeed supports it to a degree, especially if we accept the claim of Gamkrelidze and Ivanov that there was a term for "mountain", which in turn tends to rule out the flat Pontic Steppes. (2005)

Other findings that Bellwood presents regard the Indo-Europeanization of northern Europe. He mentions a theory proposed by Norbert Strade who suggests that the Germanic languages spread over a Uralic substratum by a process involving considerable language shift (Bellwood 2005). He concludes this brief discussion by quickly mentioning some of Polome's works as well as others that discuss place names and terminology of non-Indo-European origin that persist throughout Northern Europe.

Another relevant book regarding Renfrew's model that also opposing the idea of an IE Kurgan Culture is Michael Balter's *The Goddess and the Bull* (2005). This is a semi-biographical account based around the life and theories of British archaeologist Ian Hodder, his fellow colleagues and his work at the Anatolian excavation site at Catalhoyuk, a site which dates back roughly to 8000 B.C. Hodder himself, somewhat of a radical figure in archaeology, established the post-processual archaeological approach in opposition to forms that looked at artifacts in mostly functionalist terms. He is also portrayed as being largely sympathetic to Renfrew's views and less to Gimbutas'.

Balter shows this by discussing how Hodder and his colleagues have argued against Gimbutas' theories of a mother-goddess diffusing from out of the Middle East and into Europe via Anatolia. The basis stems from the fact that they identified her underlying feminist agendas in archaeology, which coincided with the 1960's feminist movements (this was at the time during which Gimbutas wrote much of her mother goddess theories).

Paleolithic Continuity Theory

Another recent theory, the Paleolithic Continuity Theory, emerged from studies conducted independently by several archaeologists and linguists. As a result, there is really no uniformity to this theory that manifests itself in multiple forms. German archaeologist Alexander Hausler is the most fervent supporter of this theory.

Hausler's version, perhaps the best known, was presented in an article entitled *Zur Problematik Des Ursprungs Der Indo-Germanen* (2004). He began by stating what he felt was most likely the original areal extent of the speakers of PIE:

Überblicken wir die Kulturentwicklung Europas, können wir für das Gebiet zwischen Nordsee und Kaspischem Meer, von Griechenland, Südosteuropa und Europa nördlich der Alpen bis nach Skandinavien und ins Baltikum, zumindest seit dem Mesolithikum eine kontinuierliche Weiterentwicklung ein und derselben Bevölkerung feststellen. (Hausler 2004)

We view the cultural development of Europe, from the zone Between the North Sea and Caspian Sea comprising of Greece, southeastern Europe, and Europe north of the Alps up to Scandinavia and into the Baltic States, at least since the Mesolithic demonstrating continuity and the same population.

From this area, a language continuum was formed from which the Indo-European language families all grew, dating back somewhere between the late Paleolithic to early Mesolithic eras. His evidence mainly stems from Hans Krahe's Old European toponym theory in which several river names spanning from Great Britain to Russia appear to be

cognates of each other; he felt they represented an early common IE continuum of river names. Hausler worked off this theory to specify the original areal extent of IE languages somewhere in between the North European Plain and eastern shore land of the Caspian Sea. It is on the northern European plain that he believes that the Celtic, Germanic and Baltic speakers emerged from the Funnel-necked Beaker culture in an uninterrupted sequence from the cultures earliest appearance to the late Bronze Age. The Indo-Iranian speakers are said to have of their origins on the North Pontic Steppes from the Yamnaya culture in roughly the same temporal manner.

Hausler feels that such a theory is sound since it needs not invoke any specific archaeological culture or migration theory (which he feels are outdated) concerning warrior elites or agriculturalists. According to his logic, he also sees no reason to consider what linguistic paleontology has to say on the matter. All the sub-language families of the IE group simply sprang up from where they were. At the end he sites a hypothetical computational scenario conducted by a colleague as proof that such a model is feasible. Much of his writing also deals with pointing out alleged historical and archaeological problems regarding any existence whatsoever of nomadic pastoralism existing on the North Pontic Steppes c. 3500-3000 B.C.

Chapter IV

Six Principles for Assessing an IE Homeland Applied to the three Major Paradigms

In 1997, Indo-Europeanist and archaeologist J.P. Mallory presented the most commonly used criterion among various scholars for assessing a PIE homeland under six principles:

1. *Exclusion principle.* It is widely argued that the homeland should not be set in an area where there is evidence of prior non-IE occupation. Examples: Iberia (Tartessians, Iberian, Basque), Italy (Etruscan and possibly North Picene), north central (Hattic) and eastern (Hurrian) Anatolia, the Caucasus, almost the entire Near East (Semitic, Sumerian), southern Iran (Elamite) and much of if not all of the Indian subcontinent (Dravidian, Munda). Included for the purpose of this study are central and northern Europe.
2. *Temporal principle.* Any homeland solution should be set within the broad temporal constraints of the lexical cultural evidence for PIE. The lexico-cultural evidence indicates that the PIE vocabulary cannot predate the Neolithic, i.e., the establishment of a settled way of life based on domesticated plants and animals and the technology associated with such a subsistence base. Any date after c. 2500 BC is unlikely to accommodate the degree of linguistic differentiation already present by the second millennium B.C. If the full range of the reconstructed vocabulary is taken into consideration, including those items of material culture that only appear at the end of the Neolithic or early Bronze Age, the date of PIE should be broadly set to the period c. 4500-2500 B.C.

3. *Relationship principle.* The interrelationships of the IE languages suggest that their dispersal was not unidirectional but appears to involve a series of interrelationships. While the specific nature of the branching of the IE stocks is subject to debate, there are certain broad patterns that are generally agreed upon. They would include the following:

- A. Anatolian would appear to have separated early from the other IE stocks (or the reverse).
- B. A core of “Late” IE stocks formed which comprised Greek, Armenian, Indo-Iranian
- C. A “Northwestern” group of languages formed comprising Germanic, Baltic and Slavic.
- D. The western stocks of Celtic and Italic seem to be more closely associated with the Northwestern rather than the Late IE stocks.
- E. The position of Tocharian is disputed but it does not appear to be in any particular close association with Indo-Iranian.

4. *Cultural Principle.* The minimum cultural and environmental picture derived from the reconstructed PIE lexicon should be accommodated within a homeland solution. In some instances where we have an animal such as the horse, which is both fully reconstructable to PIE (notwithstanding debate as to whether it was wild or domestic) and appears to have a limited distribution in the prehistoric record, it may be employed as a test of a solution’s plausibility. Such tests however are also dependent on time, i.e., although limited in distribution at 4500 B.C., the horse was found over a much

broader area of Eurasia by c. 2500 B.C. Diagnostic cultural items are hence time factored, i.e., they only have meaning if one can control for time as well.

5. *Archaeological principle.* Although ignored in some purely linguistic solutions to the problem, it is difficult to accept any homeland solution that lacks some form of confirming evidence for dispersals in the archaeological record. While archaeologists will freely acknowledge that there is great uncertainty as to what constitutes evidence for population dispersals in the archaeological record (much less how that evidence should be “read” linguistically), the archaeological record does indicate trajectories that require some spatial and social mechanism of explanation and it also can evaluate to some extent the conditions of social change under which linguistic replacement may have occurred. Fragile although it may be, archaeology offers one of the few tactile forms of confirming evidence in addition to purely linguistic arguments.

6. *Total distribution principle.* Probably one of the single greatest reasons for rejecting many solutions to the IE homeland problem are breaches of the total distribution principle. Any homeland solution must account for the dispersal of *all* the IE stocks.

When applying this criterion to Renfrew’s model, Mallory found that the *Anatolian solution* fails on just about every principle except the sixth, since it tries to account for all IE languages. For the first principle, non-IE languages such as Hurrian, Uratian, Semitic, Sumerian, and Elamite preceded all known IE languages within the area for thousands of years. In terms of a time frame, an IE dispersion from Anatolia c. 8000

B.C. would perhaps be too early since certain terms for agricultural tools, wool, and wheeled vehicles which most IE languages possess were not known in the area at that time. As for the *cultural principle*, the introduction of domesticated horses into Anatolia most likely occurred from steppic IE tribes to the north. The very first most likely being either the Hittites or Mittanni Aryans (Gamkrelidze and Ivanov 1995).

In regards to interrelationships among other IE languages, the theory postulates that IE languages swept into Europe first from Anatolia, then through Greece/the Balkans, then into Italy eventually moving up into northern, central, and eastern Europe where respectively the IE languages of Germanic, Celtic, Balto-Slavic formed. This is perhaps the most untenable aspect of Renfrew's model; Italic speaking tribes predated the presence of Greek colonists in the northern and central territories of the Italian peninsula by roughly 100-300 years as indicated by archaeological evidence. In addition there are numerous other relational errors involved. The archaeological evidence is perhaps the strongest since agriculture was introduced to Europe from the Middle East through Anatolia. However, agriculture arrived in India well before the presence of any IE speaking people. Therefore, it fails on this principle as well.

When applying the criterion to the Paleolithic school of thought, Mallory uses Hausler's areal distribution for the PIE homeland, which extends west to east from Southern Scandinavia and Baltic Europe across central Europe and ends at the eastern most limits of the Pontic Steppes. He calls the solution *Baltic-Pontic*. Although Mallory does not believe that this solution fails on the *exclusionary principle*, it is the postulation of this present study that it ultimately does.

The *temporal* and *cultural* aspects are also pitfalls since there is no way that a homeland set among hunter-gatherers c. 8500-5000 B.C. can explain the agricultural and specific technological vocabulary reconstructed to PIE. It also fails the *total distribution* principle and thus as a result the *archaeological principle* since it doesn't account for IE speakers in the Balkans (i.e. Thracian, Dacian), and Anatolia (i.e. Hittite, Luwian etc.) all of which would require different archaeological explanations unique to their own areas.

Hausler's model lacks this explanation. The only principle, on which it does not fail, is the *relational*. This is due to the fact that it is a rather incomplete model and thus does not reflect any inherent strength for accommodating this aspect of the criterion. The only solution, which succeeds in fulfilling nearly every one of these principles, is the one, which Mallory terms *Ponti-Caspian* otherwise known as Gimbutas' Kurgan culture. The only principle it falls short on is the *archaeological* since the hard evidence for kurgan westward expansion from the steppes seems to end at the river Tisza in Hungary.

Establishing firm genetic links between the archaeological record of Northern and Central Europe with the NPS has remained rather elusive over the years. The major issue of dispute occurs "north of the Black Sea between the rivers Dnestr and Dnieper since this has traditionally formed a division between two cultural "worlds"" (Mallory 1997).

Chapter V

Research Methodology

Subjects

The North Pontic steppe region of Eastern Europe and the region extending west-northwest to and including southern Scandinavian was selected as the study area for the following reasons:

1. The North Pontic Steppe region is where the Kurgan culture and the Indo-European language first emerged.
2. The area of northern and central Europe north of the Carpathian Mountains is where the Kurgan culture diffused. There it formed the culture defined as Corded Ware c. 3200-2800 B.C.
3. The Jutland peninsula as well as other parts of southern Scandinavia is the region where the bearers of the Corded Ware culture migrated. Here they synthesized with the indigenous Nordic tribes, giving birth to the Proto-Germanic language.

Instruments

ArcMap of the ArcGIS computer software was used to create a map of Europe showing the diffusion of the Kurgan culture into southern Scandinavia. A Moran's I spatial autocorrelation from Arctoolbox was run on the coordinate of the map's features after they were digitized and their attributes added. The utility and validity of ArcGIS has been substantiated through its use for over many years in the analysis of various geographic spatial problems. Misuse or misleading interpretations generated from the ArcGIS software can be avoided by finding data with exact coordinates already in GIS

format or from reputable scholarly sources that use various topographic features to help pinpoint general locations of cultural, genetic, archaeological and linguistic areas.

Collection of Data

A base map of Europe from the 2003 ESRI CD package of world geographic data was used as the background layer in ArcMap. A layer of major rivers and country outlines from the package was overlaid on the base map of Europe to help establish boundaries when defining the various Kurgan waves of diffusion. Gimbutas' three waves of Kurgan diffusion map was also used as a data source.

After the ESRI data sets were added to the base map, the three Kurgan waves were digitized manually into polygonal features and assigned time frames.

Archaeological maps were also gathered showing the areal distribution throughout Europe of cultures regarded as Kurgan featuring major sites, settlements and graves, otherwise known as "found spots". These were represented as a collective feature of point symbols placed within the Kurgan wave features. Stray finds of artifacts were not used. A major rivers layer in addition to a world .TIF map layer displaying topography (included with the ArcGIS 9.1 software package) assisted with the placement of these points.

Next, the points of these features were assigned coordinates. Finally, data from the work of Cavalli-Sforza relating to geo-genetics in Europe were used to create a manually digitized feature displaying the areas of where Rh- and Rh+ blood frequencies were at roughly 50% each (Fig. 4). It was overlaid with the areas in which Kurgan waves and archaeological data diffused into southern Scandinavia from the NPS in order

to determine when and where the pre-Indo European and IE speaking populations first met and how this led to the formation of PG.

Method of Analysis of Data

Analysis of the data focused on the mapped areal extent of the Kurgan culture's diffusion into Western Europe and Southern Scandinavia from the North Pontic Steppes. Close examination was given to the areas where migration occurred, as indicated by the archaeological and geogenetic records. The archaeological points corresponding to the Kurgan wave features created in the ArcGIS software allowed for a spatial statistical analysis to be performed.

The test conducted was a spatial autocorrelation (otherwise known as the Moran I) on two different elements of the problem relating to the subjects: Gimbutas' model of Kurgan diffusion and an Alternate model of Kurgan diffusion. The number of observations is large in both cases. The large samples, justified the use of the normal distribution to test for significance. The significance level of .05 was selected. The critical values of the normal distribution for the level of significance are ± 1.96 . The null hypothesis to be tested is:

Ho: there is no spatial autocorrelation.

The Moran I score for each case was then standardized as a z score.

Decision rule: if $z < 1.96$ or > -1.96 accept Ho

if $z > 1.96$ or < -1.96 reject Ho

Finally an analysis of the geo-genetic Rh- blood feature layer was done to determine any spatial relationship to the Kurgan culture. If the data showed an Rh- presence in Southern Scandinavia and an absence in Eastern Europe along with the

Moran I test proving a spatial dispersion of a common Kurgan culture from the North Pontic steppes then this would allow for the acceptance of the main research hypothesis alternative stated in Chapter I. All of these procedures were built into a model using ArcGIS (Fig. 5).

Chapter VI

Analysis of Data

Profile of the subjects

The area stretching from the NPS to southern Scandinavia is the primary geographic area of analysis. The Elbe River was used as an arbitrary cut off point for plotting migrations into southern Scandinavia, as it seems unlikely that the tribes moving west of it would later have the intent to move back eastwards and then north into the aforementioned area for settlement.

The archaeological data collected from secondary sources were used to plot two versions of how the kurgan culture most likely diffused from the NPS: (1) Gimbutas' paradigm and (2) an alternate paradigm based on the research of several scholars. In addition to archaeological data, geogenetic and temporal information were gathered as well. The geogenetic data entitled "RHMIX" shows where Rh- and Rh+ blood types are found at a roughly 50% frequency on the North European plain. This is believed to represent a mixture between Non-IE and IE speakers that first occurred sometime during the Neolithic. The temporal waves added into the GIS, entitled "Kurgan WavesV.1" and "Kurgan WavesV. 2" were based on how Gimbutas believed the process occurred and how other scholars suggested, respectively.

Elements of the Problem

Gimbutas' Kurgan Model of Diffusion

As discussed, Gimbutas' Kurgan paradigm for the spread of IE speaking tribes into the North European plain is based on the premise that c. 3500 B.C., Yamnaya tribes from the upper reaches of the Volga River swept down into the southern part of the NPS

and northern Caucasus pushing the Lower Mikhailovka-Kemi-Oba-Maykop community from its original territory. The LMKO-Maykop cultural community moved westward and reestablished itself as the Globular Amphora culture on the North European Plain. The genesis for the Kurgan culture stems from the formation of the Khvalynsk and Sredny Stog cultures of the NPS. The cultures involved according to their chronological order of appearance are: Khvalynsk, Sredny Stog, Lower Mikhailovka-Kemi-Oba, Maykop, Globular Amphora, and finally the Corded Ware culture into southern Scandinavia (Fig. 6).

The Alternate Kurgan Model of Diffusion

Many scholars do not agree with Gimbutas regarding the process of Indo-Europeanization into northern Europe. Alternate explanations of how Kurgan cultural elements made their way into central and northern Europe have been sought. Many with opposing views have centered the notion of Kurgan intrusion into the North European Plain and ultimately southern Scandinavia under the guise of Yamnaya tribes entering the region after a brief period of transition with other cultures along the Pripyat River. This in turn would have led to the formation of the Corded Ware culture. The initial formation of the Yamnaya culture stems from the Lower Mikhailovka, Sredny Stog, and Khvalynsk cultures. Similar to Gimbutas' paradigm, the formation of the Kurgan culture on the NPS stems from the Sredny Stog and Khvalynsk cultures. The chronology of the alternate paradigm is as follows: Khvalynsk, Sredny Stog, Lower-Mikhailovka, Yamnaya, Middle Dnieper, Masovian, and finally Corded Ware (see Fig. 7).

Relationships of the elements

Gimbutas' Kurgan Model of Diffusion

After running a Moran's I test on the various archaeological data gathered according to how Gimbutas defined the spread of the Kurgan culture, the following index scores were produced: $x=0.40$ and $y=0.33$. The intersection of the Rh blood type mixed layer with Gimbutas' temporal waves of Kurgan diffusion layers indicates that the earliest meeting of IE and non-IE tribes would have taken place c. 3500 B.C. on the North European Plain towards the mouth of the Dniester River during a westward moving Globular Amphora culture with steppe origins (Fig. 8). The process of Indo-Europeanization in southern Scandinavian would have taken place c. 3000-2800 B.C. under the guise of a northward migrating variant of the Corded Ware culture stemming from the GAC.

The Alternate Kurgan Model of Diffusion

This version of the Kurgan culture's spread into the North European Plain opts for a push of Yamnaya tribes northwest along the Dnieper's Pripyat tributary. Around the area of the middle Dnieper, a local variant of the Yamnaya culture separates from its greater cultural horizon and begins to develop into the Middle Dnieper culture. From there, this culture moves farther north and west along the Dnieper and Pripyat respectively where they come in contact with the local Masovian culture. There, they pick up local cultural variants most associated with aspects of the North European Plain cultures (i.e. perhaps elements of Funnel-necked Beaker and Globular Amphora). Eventually, all this leads to the formation of the distinctive pottery type of the Corded Ware culture in what this study terms a "kurgan wave of transition" (Fig. 10). Along with the practice of kurgan burial, this culture eventually overwhelms the entire North European Plain and southern Scandinavia.

The results of the Moran I index scores showed were as follows: $x=0.59$ and $y=0.54$. The intersection of the geogenetic data with “Kurgan Waves V.2” suggests that the first meeting between IE and Non-IE speakers occurred c. 3300-3200 B.C. at the mouth of the Pripyat along the present day border of Ukraine and Poland. Around 3200 B.C. the earliest variant of the central European CWC appears in South eastern Poland and from there expands nearly simultaneously to the Netherlands and Baltic territory by 3100 B.C (Fig. 11). After roughly a hundred years of inactivity, the CWC then moves into southern Scandinavian.

Chapter VII

Summary and Conclusions

Summary of Procedures

The subjects analyzed were the various subcultures pertaining to the concept of a grand Indo-European speaking Kurgan culture (defined primarily by single burial practice as well as the presence of domesticated horses and weaponry) in accordance with two different models of how this phenomenon spread into northern Europe. Major sites, settlements, and graves were plotted on a basemap of Europe using ESRI'S ArcGIS computer software package. The archaeological data were gathered and presented as two different models.

A Moran's I spatial autocorrelation test was run on the x and y coordinates as Malmer did (see Tilley, 1982) to determine if there was any common spatial relationship that could be inferred on a quantitative basis regarding the two models. Next, temporal waves of Kurgan diffusion layers in accordance with the two varying models were intersected with a geogenetic layer representing the territory in central and northern Europe where IE speaking blood types first intermingled with non-IE blood types. This was done in order to determine when the two different cultures (the IE speaking Kurgan culture variant known as Corded Ware and the non-IE speaking Funnel-necked Beaker/Globular Amphora cultures) clashed or simply absorbed one another.

Summary of Findings

Gimbutas' paradigm describes an initial meeting between non-IE speakers and IE speakers first occurring c. 3500 B.C. towards the mouth of the Dniester River under the guise of the Globular Amphora culture (GAC) which eventually spread into central

Europe, in turn giving rise to the Corded Ware culture (CWC) which would later enter southern Scandinavia. The Moran's I test produced z score's in the rejection zone if the null hypothesis at the 0.5 alpha level, which would lead to the acceptance of Gimbutas' hypothesis regarding the manner in which the Kurgan culture spread into northern Europe, i.e. there is a high degree of spatial autocorrelation of the mapped feature.

As for the alternate model, the initial meeting between IE and non-IE speaking tribes would have occurred c. 3300-3200 at the mouth of the Pripyat. The moran's I of 0.5 produced a z score that rejected the null hypothesis. The alternate model's hypothesis was accepted as well; i.e. that ultimately there was a common Kurgan culture with origins lying on the NPS that eventually made its way into Northern Europe. This is in full accordance with the qualitative data that many archaeologists have presented over the years. Although the test for autocorrelation for both the Gimbutas and alternate models led to the conclusion that there was definite clustering of features (i.e. not a random pattern), the scores for the alternate model were high and reflect a stonger pattern of clustering.

Significance of Moran Test

$$\alpha=.05$$

	coordinates	n	Moran I	z-value	critical values	Decision
Gimbutas Model	x	1868	0.39	147	(1.96, -1.96)	accept
	y	1868	0.32	123	(1.96, -1.96)	accept
Alternate Model	x	1818	0.59	183	(1.96, -1.96)	accept
	y	1818	0.54	169	(1.96, -1.96)	accept

Conclusions

Based upon the findings within the limitations of this study, the formation of the Proto-Germanic language occurred via a process of Indo-Europeanization attributed to the CWC variant of the Kurgan culture c. 3000-2800 B.C. in southern Scandinavia. This process involved the coming together of an indigenous non-IE branch of speakers located in southern Scandinavia and IE speakers with origins from the NPS.

Discussion and Explanations

The results of the Moran's I producing z scores within the acceptance range on both the alpha levels for Gimbutas' and the alternate model of Indo-European diffusion. This has led to the acceptance of the Kurgan hypothesis. However the greater score of .59 on the x coordinate in the alternate model suggests a stronger likelihood that this is the process by which Kurgan tribes made their way into central and ultimately northern Europe. This is not surprising since the alternate model demonstrates a classical invasion route into Europe along the Pripyat River. This was the route taken by the Mongol Golden Horde into Europe as well as when Napoleon marched his Grand Army eastward into Russia. In contrast the Gimbutas model suggests an invasion route into central Europe via the Dniester; that is spatially and historically unlikely.

Archaeologists have pointed out flaws in Gimbutas' model revolving around the notion that Yamnaya tribes indirectly caused kurgan expansion into central and northern Europe by forcing the people of the Maykop culture and Lower-Mikhailovka-Kemi-Oba group (LMKO) to migrate into the North European Plain. Even more problematic were her interpretations of the GAC, which completely ignored the regional chronology of the culture, in question as well as the intricacies of the material items and mortuary practices.

As Wislanski pointed out, the main contributor of the GAC was the Funnel-necked Beaker culture (FBC). The oldest GAC sites are found in central Poland. The same also applies for the FBC roughly 1000 years before the advent of the GAC (Midgley 1992). What the scores indicating high clustering for her model most likely mean is that there was influence or interaction between the GAC among the various cultures that she felt constituted as Maykop. A wholesale migration by the people inhabiting the southern areas of the NPS is still very questionable.

The development of the GAC in central Poland suggests that this was an area of innovation for the tribes of the North European Plain dating back to the beginnings of the FBC. What caused the decline of the FBC in central Europe was not the invasion of IE speaking steppe tribes, but rather the inability of this early farming culture to practice sustainable growth. As Magdalena Midgley explained in her book *The TRB Culture: the First Farmers of the North European Plain* (1995), the FBC's demise was one of self-causation. They simply over farmed the land and were forced to switch to pastoralism.

It is in this context that the GAC developed out of the FBC c. 3400 B.C. This culture defined primarily by a new economic mode of production proceeded to expand eastward. It is here where they entered the steppes of Ukraine in an eastern exodus c. 2900 B.C. This is substantiated by radiocarbon dating of GAC artifacts in this area. All of this is opposed to what was occurring on the NPS where innovation was typically moving from east to west dating back to c. 6000 B.C.

The premise that the CWC evolved from the GAC and ultimately the FBC directly cannot be accepted. There are absolutely no grounds for a direct continuance from the FBC in central Europe according to temporal as well as archaeological evidence

(namely in burial rite while some pottery types resemble those of both the FBC and GAC). This is due to the fact that the GAC is the succeeding culture to the FBC.

This brings us to another problem with Gimbutas' Kurgan model. It fails to clearly and effectively address the fact that the CWC eventually overwhelms not only the entire territory of the North European Plain but also the GAC. Instead, she proposed that the GAC gave birth to the CWC as to explain why elements of the CWC are found in the GAC. The intermingling of CWC and GAC artifacts can be explained as follows: by 3400 B.C. the people of the FBC in central Europe had switched from agriculture to pastoralism brought on by deteriorating environmental conditions somewhat at their own cause, yet they maintained a communal burial tradition. The culture is now the GAC as evidenced by a new pottery type though with firm links originating in the FBC. Most of the faunal remains are of various stock animals, though the domesticated horse is relatively rare (Szmyt, 1996). Wislanski remarked that only in exceptional cases were horse remains found in graves, which indicates some cultic role (1970). Eventually, more obvious IE elements appear in the culture particularly sun discs representing the sky god Deus Pitar and other CWC artifacts.

This suggests that the GAC embraced the incoming CWC due to the introduction of the domesticated horse. When the GAC people saw the horses of the CWC, they realized that these animals could be advantageous to their newly adopted mode of production. The people of the CWC who descended in part from the Yamnaya steppe tribes had been practicing nomadic pastoralism longer. Warring with them would not have made much sense not only due to the fact that the CWC was a more aggressive tribal force but also because the GAC could learn from them. The CWC most likely

possessed a far superior knowledge of pastoralism than the GAC. As a result, whatever aspects of the CWC that could be adopted were accepted into the GAC. This would have included technology (namely the horse), religion, and ultimately language. In roughly 100-200 years though, the GAC of central Europe was completely absorbed by the CWC. The people of the GAC became the first Indo-Europeanized population of the North European Plain through a relatively peaceful process. The story is quite different however in southern Scandinavia.

In Denmark, the FBC did not cease c. 3500 B.C. as it does in most of central Europe, but continued until c. 2650 B.C. (Midgley 1992). Agriculture, in addition to hunting and fishing was still being practiced. Eventually, by c. 3000-2800 B.C. the CWC entered Denmark, southern Sweden, and southeastern Norway. Here it encountered a thriving culture rooted in local economic practices and communal burial rites. Although there is no evidence for the domesticated horse to be found within the initial wave of Scandinavian CW cultures, most Scandinavian archaeologists interpret this as failure of uncovering sites where remains most likely are. The archaeological picture painted by Davidsen (1978) seems to suggest two different ethnic groups in opposition to one another. Though others, influenced by Malmer have suggested that the two cultures represent continuance. Given what happened in central Europe, this notion should be disregarded.

It is here where history lies in the garb of myth. In Germanic mythology the war between the Vanir and the Aesir most likely represents historically true events passed down through a mythological context. When the sagas refer to Odin casting his spear against the Vanir, this does not represent an inter-ethnic conflict but rather the invading

CWC declaring war on the FBC. What seems to support this notion is that the IE ethnicities that emerged from the meeting between the GA and CW cultures in central Europe (namely the Celts, and Balto-Slavs) seem to lack mythical stories representing conflict between groups of either gods or people. Yet, the Irish Celts do tell of the invasion of the Tuatha De Danann (representing an early Celtic invasion to Ireland), which leads to a clash between themselves and a group called the Fomorians whom they expelled. However, such mythology is lacking among the continental Celts (Cotterell 1999). Furthermore the Fomorians may represent an ethnicity similar to the ancient Picts of Britain. Meanwhile, in Slavic mythology, matriarchal themes abound and are often in harmony with patriarchal deities such as the war god Perun (Cotterell 1999). This would reflect the peaceful coming together between the eastern CWC and GAC tribes.

Of importance here is the notion of Gimbutas' peaceful matriarchal mother goddess culture of "Old Europe". While it seems plausible that the concept of female spiritual entities of love and fertility made their way among the farmers of the North European plain from possibly southern farming cultures often associated with the Middle Eastern wave of agricultural advance (namely the Linear Ware culture and Tripolye both of which influenced the FBC to varying degrees, see Midgley 1992), it is doubtful that they were completely peaceful people. If the war between the Vanir and the Aesir can tell us anything, it is that the indigenous population of Southern Scandinavia was able to fight well enough to resist the Aesir, resulting in a truce. The archaeological presence of stone battle-axes found in the FBC and the non-IE term for "troop" (*druht*) suggest a partly militarized society. Ultimately, this brought the two ethnically different people of the FBC and CWC together as one to form the Proto-Germanic language.

Finally the geogenetics of Denmark must be addressed. Cavalli-Sforza's data on the surface would suggest that there doesn't appear to be a mixture of IE and non-IE speaking tribes in Denmark based solely on Rh blood types. However, there is a significantly high frequency of the R1b haplogroup at 36.1% (Tambet et al. 2004), which is mostly associated with the non-IE speakers who migrated out of Iberia and into Scandinavia c. 1200 B.C. R1a, which has been identified to correspond with the diffusion of the Kurgan culture (Wells 2002), is found at frequencies of 16% (Brion et al. 2004, Tambet et al. 2004) mostly in the southeastern region of Jutland. The distribution of R1a and R1b in Norway and Sweden is at nearly equal frequencies: Norway: 23.6% R1a and 27.8% R1b compared to Sweden: 18.4% R1a and 22% R1b (Tambet et al. 2004). This may seem to suggest why Rh- and Rh+ are nearly half and half in Sweden and Norway. However, no data were provided by Cavalli-Sforza showing the frequency levels of Rh- and Rh+ blood types in Denmark. This is why it is important to address the frequencies of haplogroup markers associated with non-IE and IE speaking populations in Denmark to demonstrate IE invasion on the grounds of geogenetics.

Recommendations for Further Study

Procedurally, it would have perhaps been better to use a different spatial statistical approach as the scores produced by the Moran's I contained much ambiguity. More time needs to be spent on how to implement a proper spatial statistical test in regards to archaeology and language diffusion. Also it would have been useful to gather haplogroups and digitize them as layers for analysis in ArcGIS because the Rh blood type data used seems to lack explanations for certain areas in Europe. However, assigning haplogroups to specific geographic regions exclusively (particularly within countries)

would not be without ambiguity either. Fieldwork pertaining to not only the archaeological record involved but also geogenetics would have been beneficial to the study.

There are many other researchable topics regarding the spread and formation of Indo-European languages. Perhaps the most elusive of all IE sub-families that is in dire need of a study to determine if it can be attributed to the Kurgan culture or any archaeological phenomenon is the Italic. Linguists feel that it most likely belongs to the same Neolithic group of North West IE dialects stemming from the CWC; some even argue for an early Italo-Celtic unity. Yet demonstrating actual archaeological links has been a rather fruitless endeavor. Others have opted for an east to west IE invasion into the peninsula from the Balkans, but this seems unlikely given the linguistic nature of Italic languages. Even the geogenetic evidence is ambiguous. R1a is found at only a 4% (Rootsi 2004) frequency within the entire Italian peninsula and to complicate matters further at opposite ends, specifically south in Apulia and north around Verona (Giacomo et al. 2002).

Other IE language families that are ambiguous but could easily be settled with a more coherent archaeological model involve the Greek and Anatolian languages. Although Greece and Turkey have relatively high levels of R1a frequencies particularly in the areas where Mycenaean Greek and Hittite were spoken (Giacomo et al. 2002, Cinnioglu 2003 et al.), they lack clear-cut explanations regarding Kurgan archaeology.

Celtic does present a problem in geogenetics. Haplogroups associated with its present day speakers are almost exclusively R1b. Yet given the archaeological and lingual evidence, it seems likely to be derived from the CWC. But, Austria, the country

where the early Celtic Halstatt culture occurred, has R1a frequencies at significant levels (Brion et al. 2004). Also, the Baden culture (predominantly located in Hungary, see Preuss 1996) should be considered too when discussing the origins of not only Celtic speakers but also Italic languages. Such a culture may in some part represent an early ancestral component to the hypothetical Italo-Celtic speaking tribes as Gimbutas once suggested (1997). Indo-Iranian, and Balto-Slavic are really the least problematic since all have genetic and archaeological traits that could easily be associated with the Kurgan culture.

Two more final calls for study can be made. The first is that further excavation needs to be done in the areas where southern Scandinavia's CW cultural sites are located to determine if there are any domesticated horse remains. Indeed, this matter seems far from resolved. Finally, a geographic study concerning the dispersal of haplogroup I should be undertaken since it is actually the most widespread in Europe (though typically confined to Europe and not found in India, see Kivisild et al. 2003, Rootsi et al. 2004). The National Geographic Human Genographic Project mentions a working hypothesis of its dispersion under the guise of Celtic expansion. It would be interesting to see if this is really plausible or if its dispersion reflects earlier Neolithic migrations. Can any linguistic impact be attributed to the bearers of this European lineage?

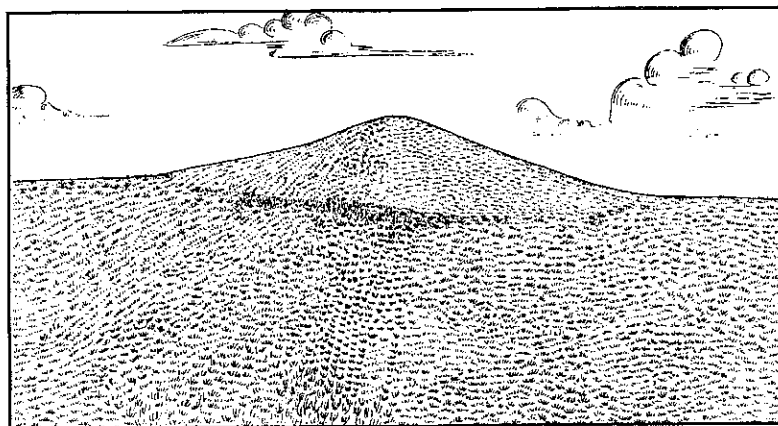


Figure 1. Kurgan burial mound (Gimbutas 1997).

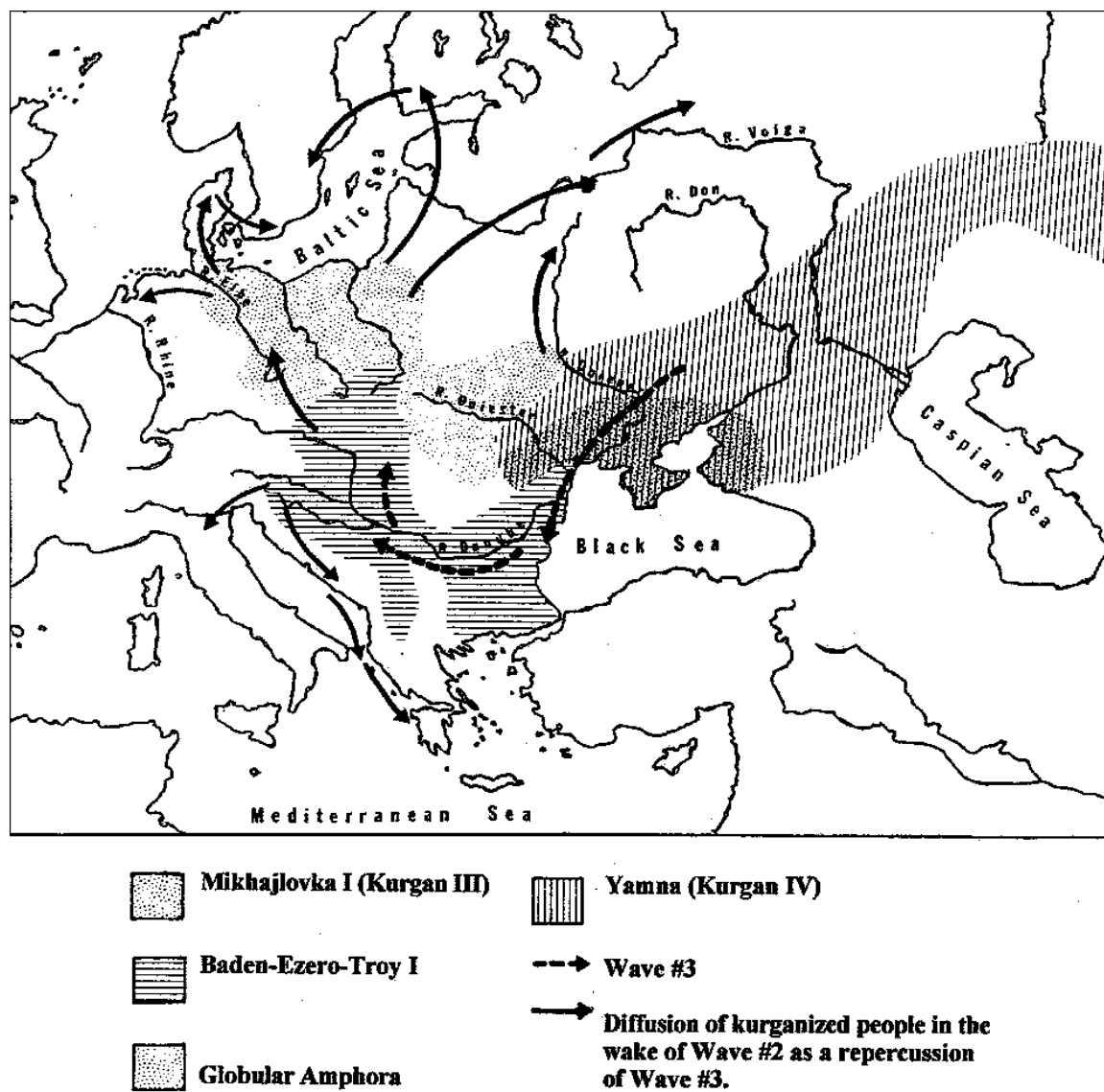


Figure 2. Gimbutas' Kurgan Model of Diffusion (Gimbutas 1997).



Figure 3. Renfrew's paradigm as presented by Jordan-Bychov and Jordan (2005).

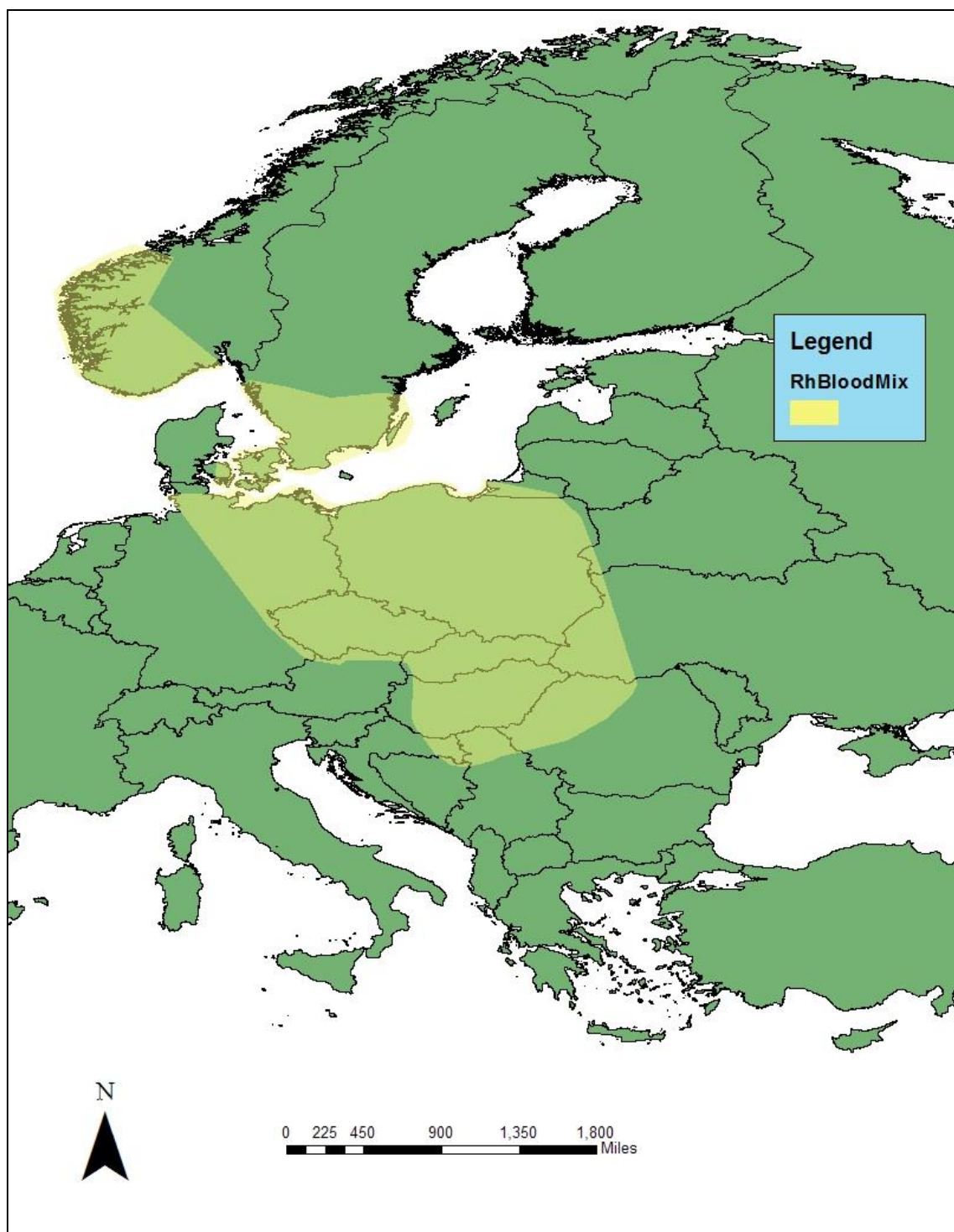


Figure 4. Areal distribution of where Rh- and Rh+ blood types mix.

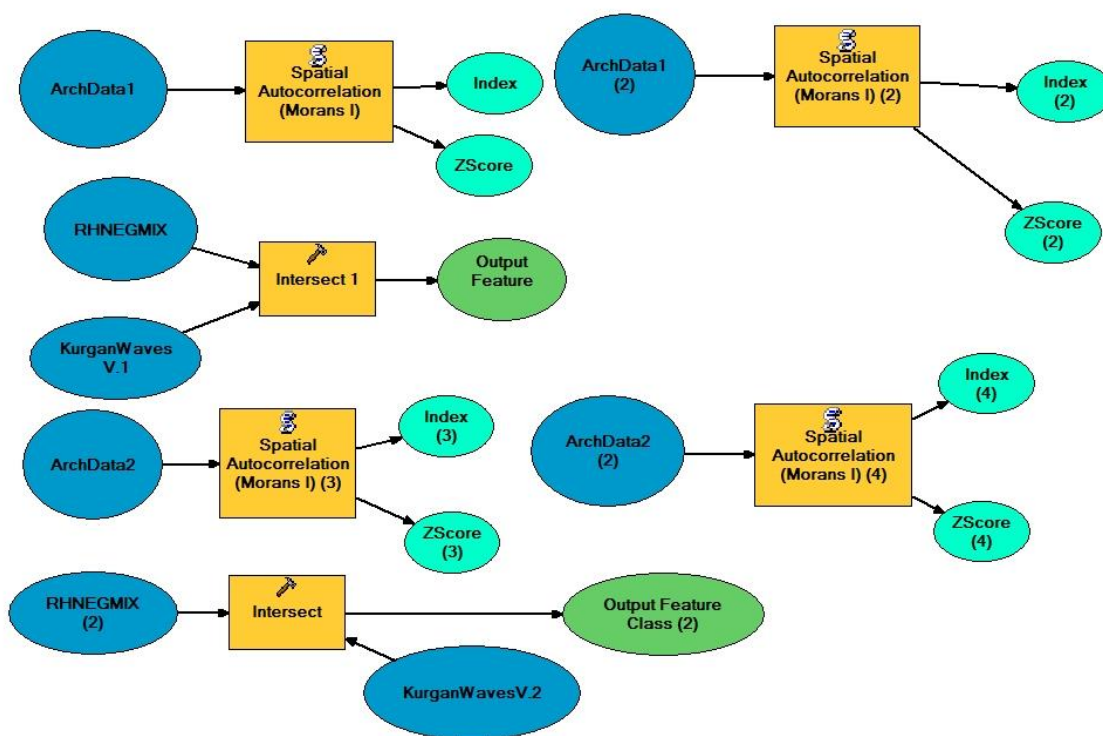


Figure 5. Model built in ArcGIS that was used for the procedure.

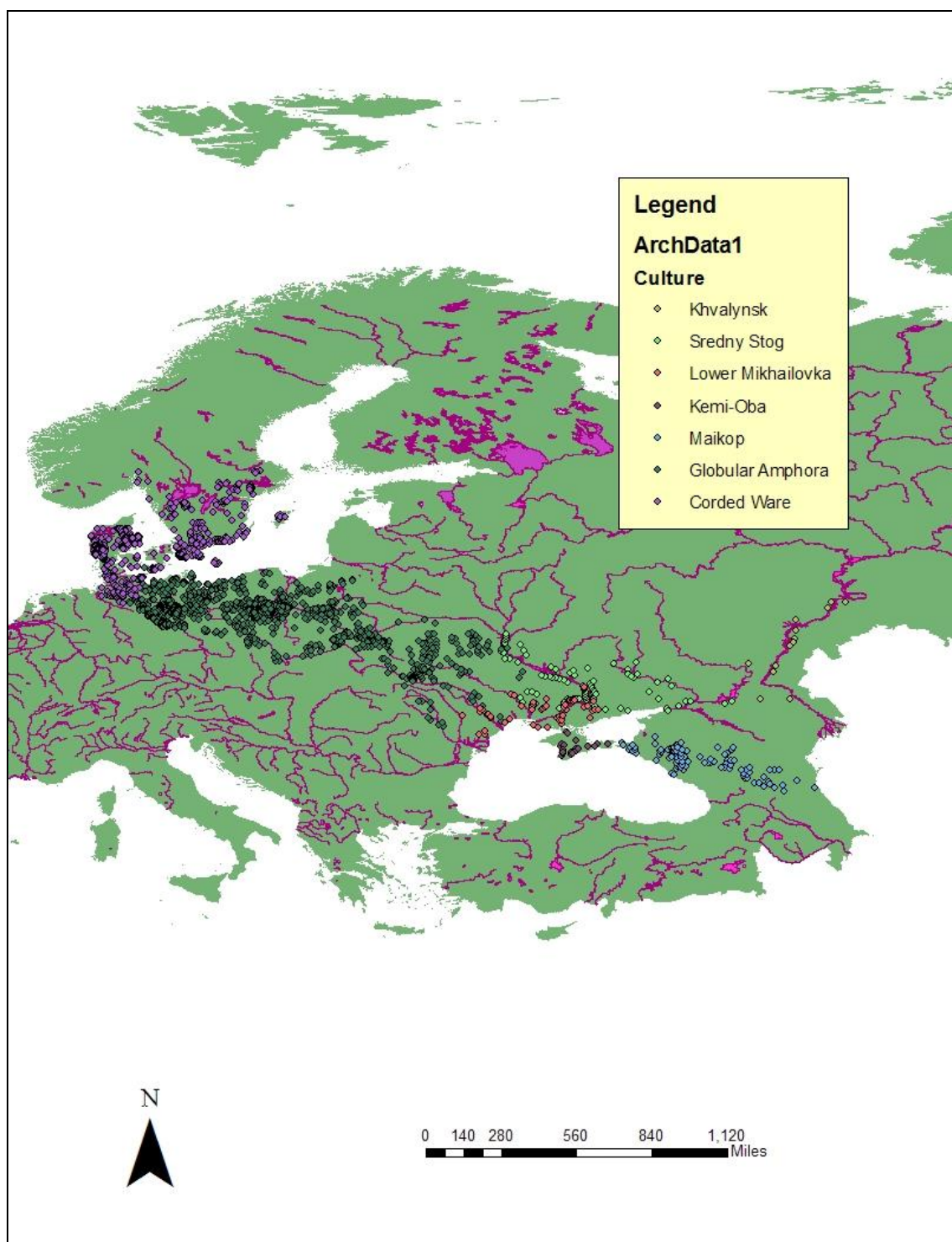


Figure 6. General distribution of the archaeological sites under Gimbutas' model.

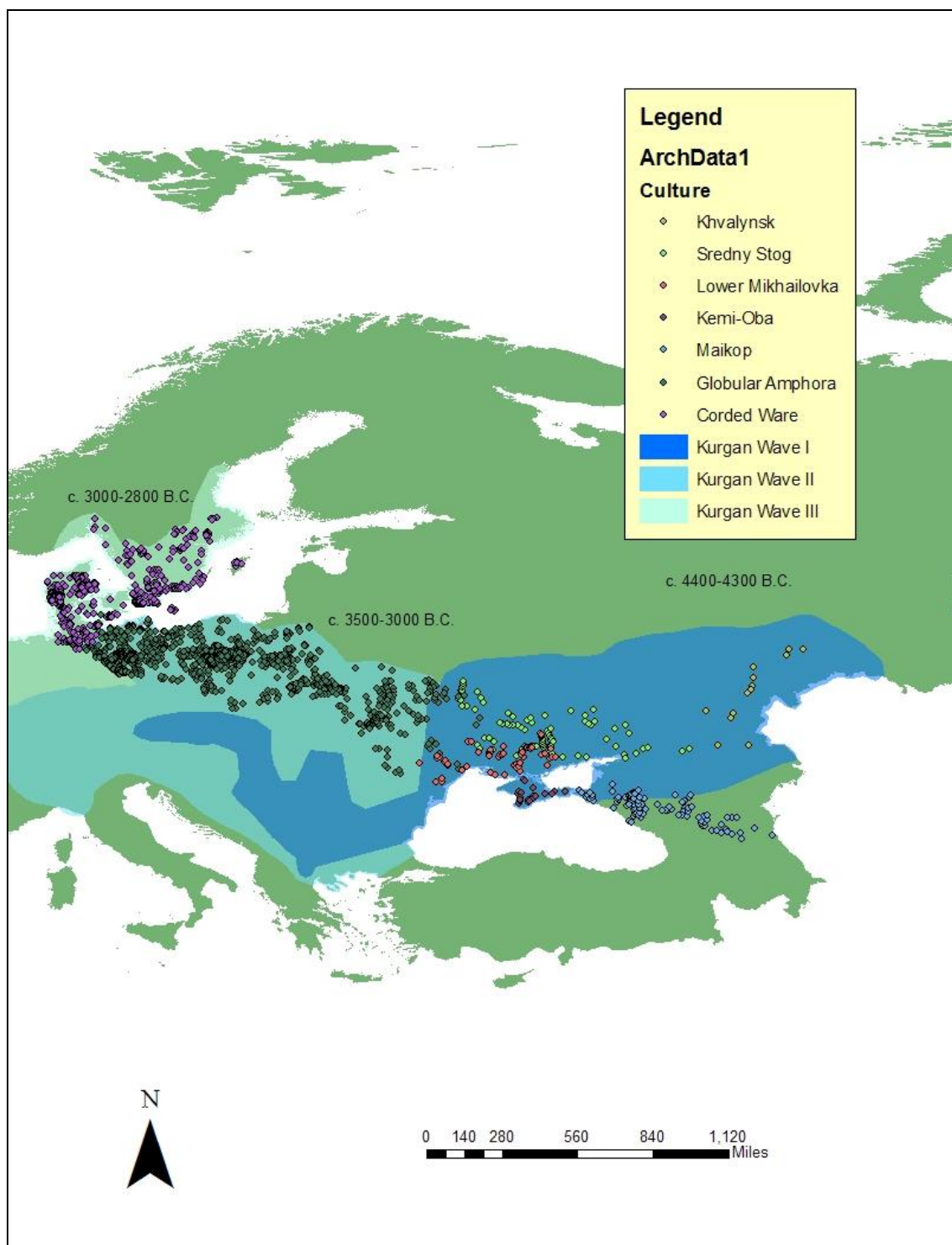


Figure 7. Temporal waves and archaeological cultures in accordance with Gimbutas' model.

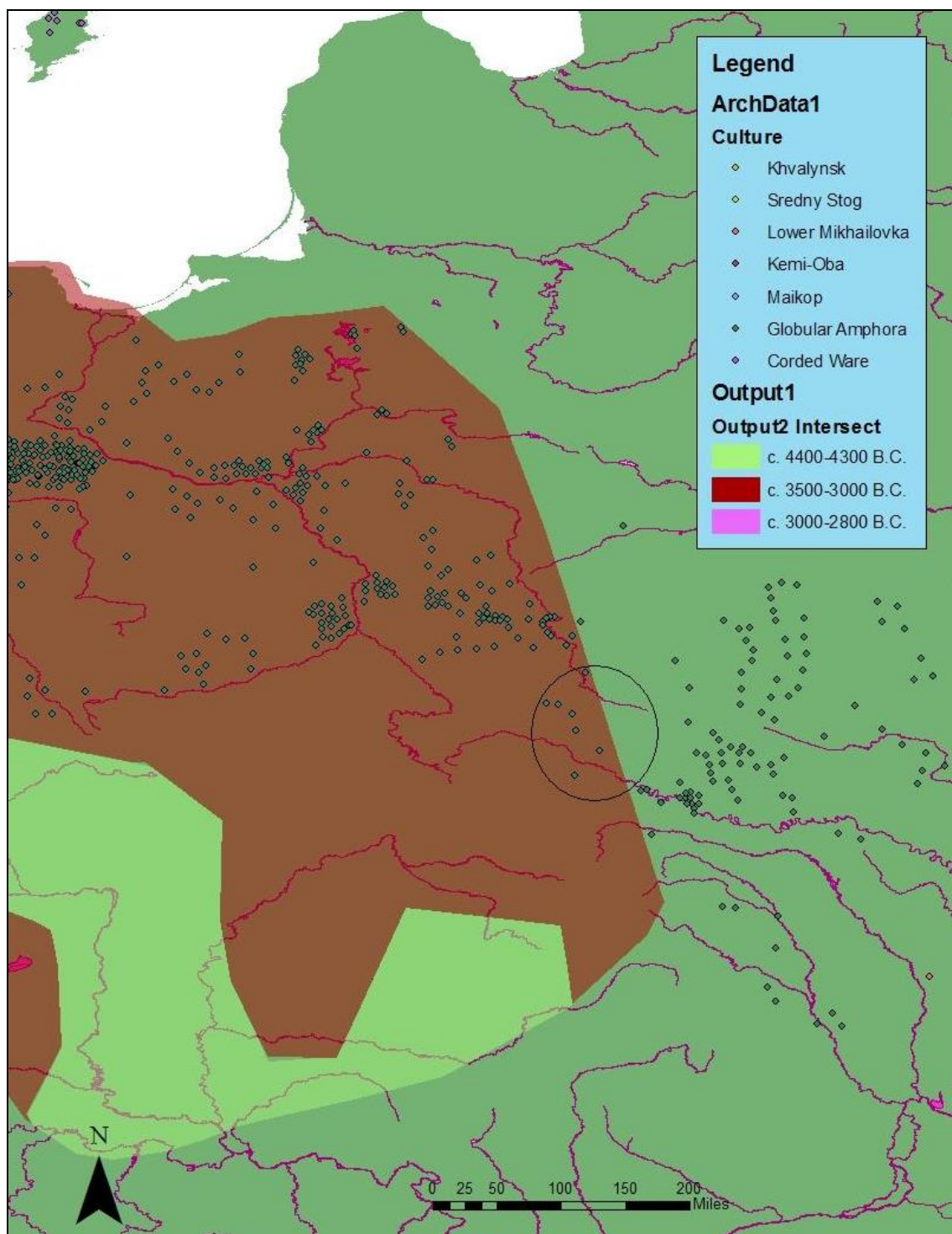


Figure 8. Circled area of where IE and non-IE tribes first met under Gimbutas' model.

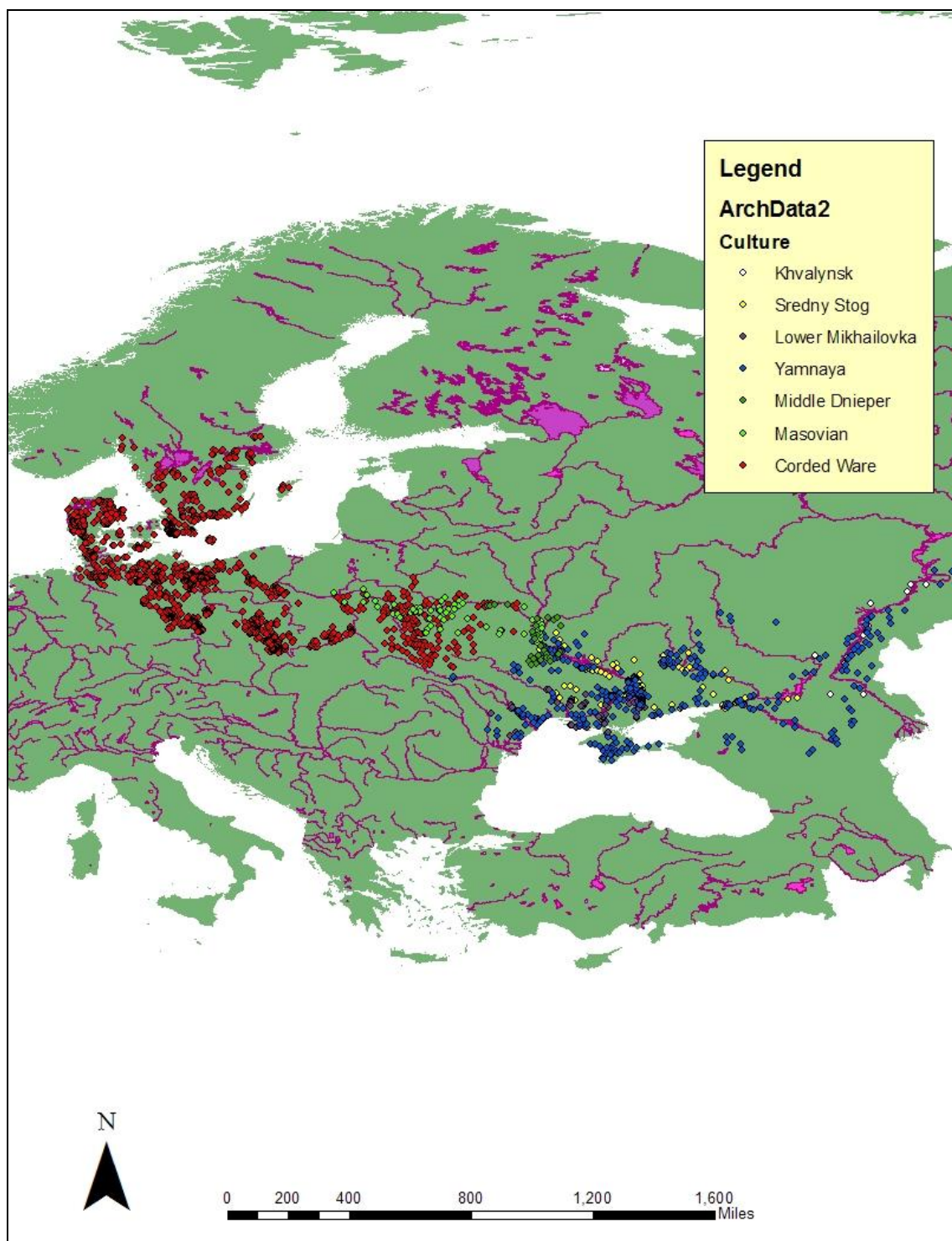


Figure 9. General distribution of the archaeological cultures of the Alternate Model.

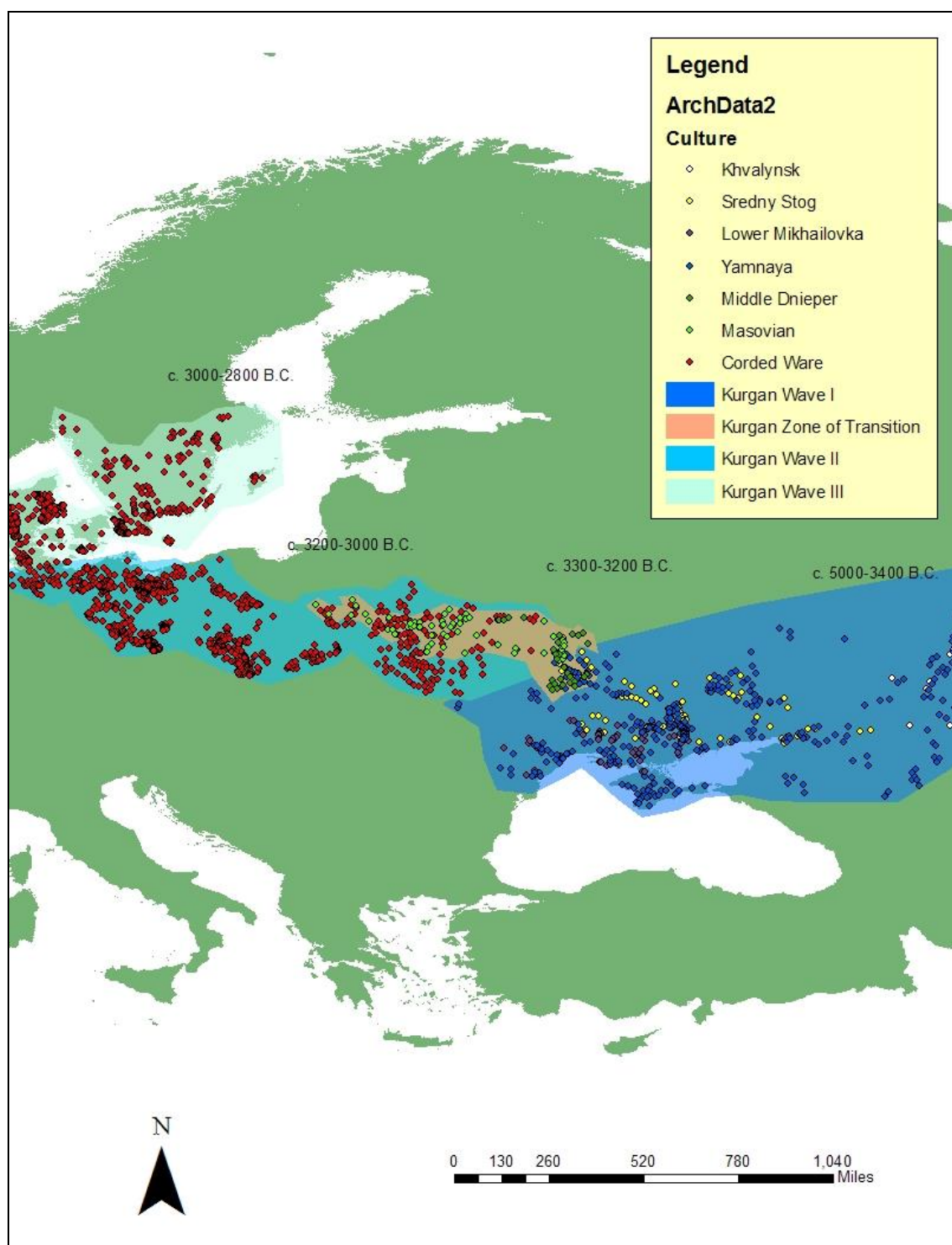


Figure 10. Temporal waves and archaeological cultures according to the Alternate model.

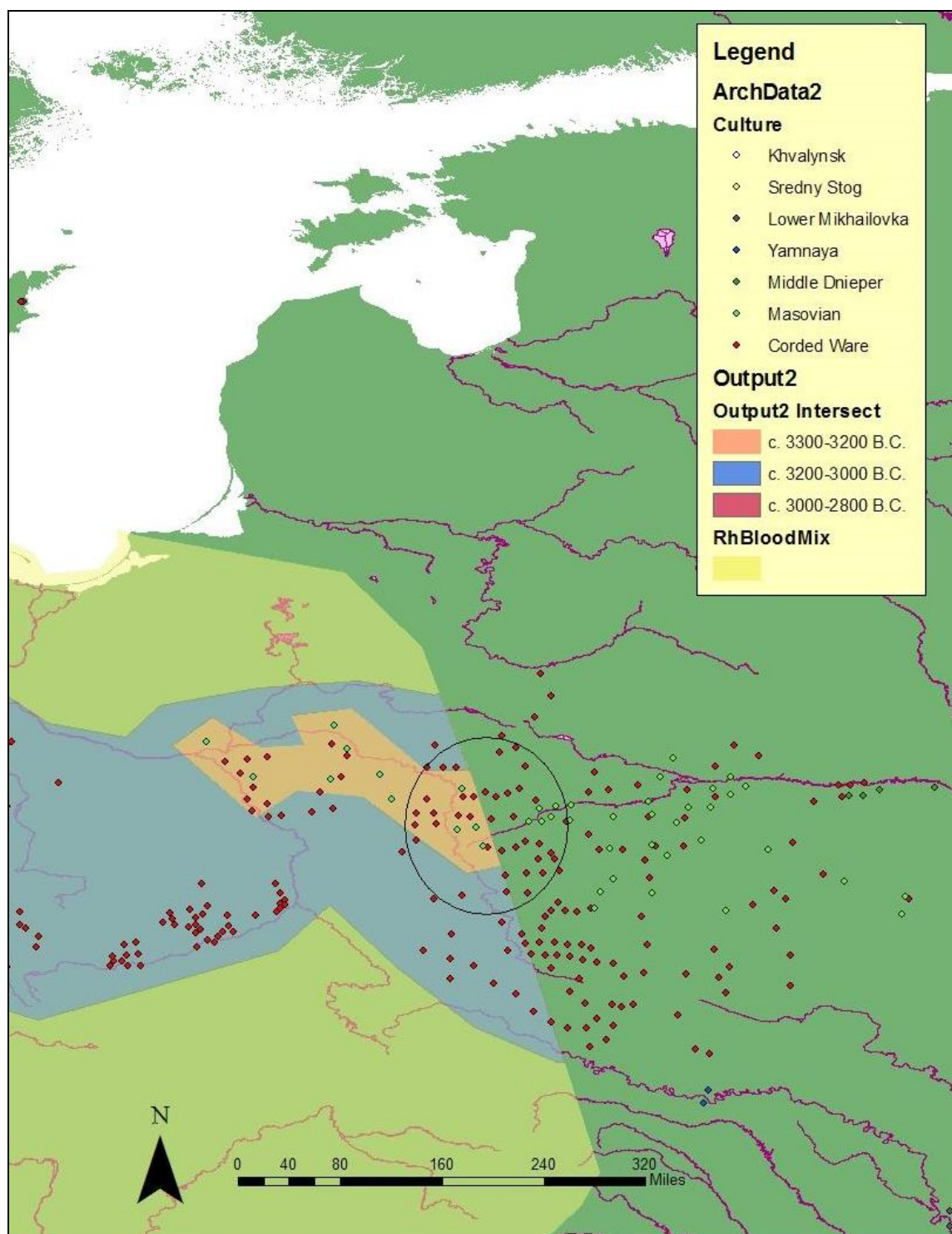
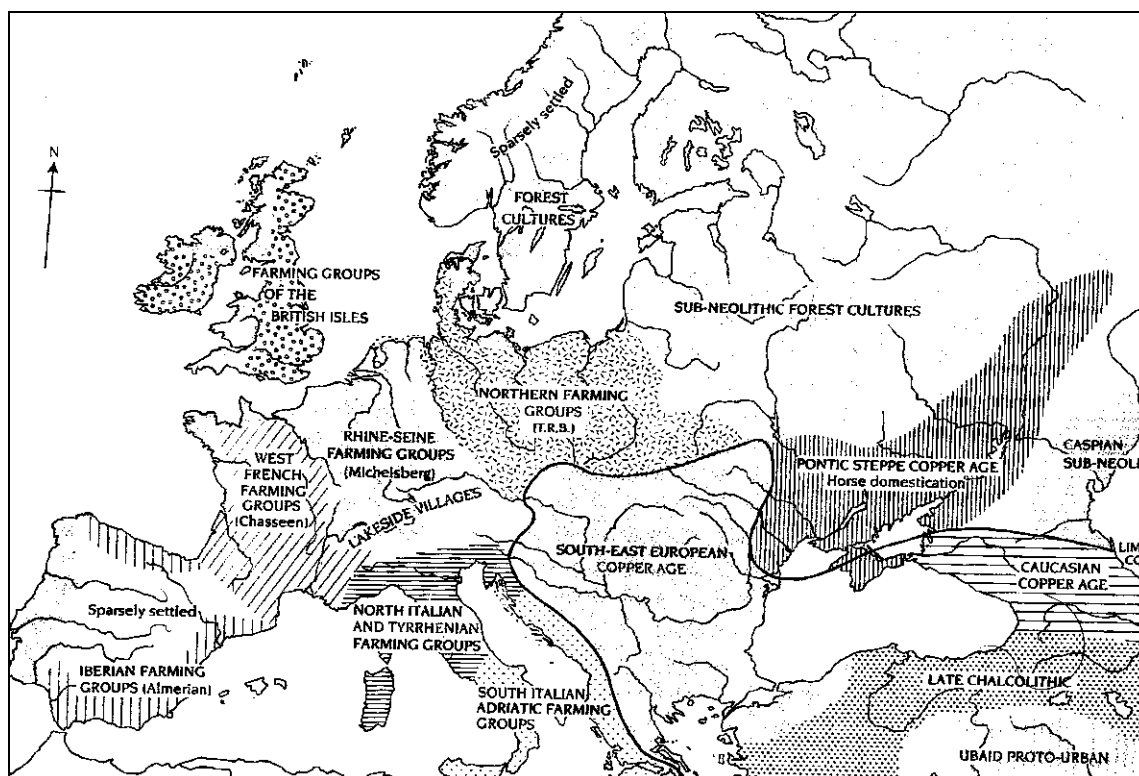


Figure 11. Circled area of where IE and non-IE tribes first met within the Alternate model.

Appendices

Appendix A: General distribution of cultures during the Neolithic in Europe c. 3500 B.C.



(Sherratt 1994)

Appendix B: Definitions

Term	Date	Description
Corded Ware-Battle Axe Culture	c. 3200-2300 B.C.	earliest pan Indo-European horizon of north and central Europe
Funnel-necked Beaker Culture	c. 4500-2700 B.C.	first pan agricultural horizon of the North European Plain
Globular Amphora Culture	c. 3400-2800 B.C.	represents the shift from agriculture to pastoralism among eastern FBC tribes
Indo-European		primary language family of Europe and parts of Asia
Indo-Europeanization		process of hybridization between an Indo-European language and one that is non-Indo-European
Khvalynsk Culture	c. 5000-4000 B.C.	located around the Volga river, earliest sub-culture of the Kurgan culture
Kurgan Culture		blanket term for cultures defined by the presence of single barrow graves and horse related artifacts and remains; essentially all that is early IE culture
Lower-Mikhailovka Group	c. 3600-3000 B.C.	located in southern Ukraine, derives from Sredny Stog culture
Maykop Culture	c. 3500-2500 B.C.	northern Caucasus culture with Kurgan, Sumerian, and local cultural elements
Mesolithic	c. 10,000-4500 B.C. (in Europe)	period when agriculture begins to develop and spread
Neolithic	c. 4000-700 B.C. (in Europe)	period characterized by cultivation of crops, domestication of animals and making of pottery from ground stone
North Pontic Steppes		area extending from west of the Dniester river to the eastern most fringes of the Caspian Sea

Old Europe		pre-Indo-European Europe during the Neolithic, Chalcolithic and Copper age.
Proto-Germanic		parent language to all Germanic languages
Proto-Indo-European		language from which all present day IE languages derive from
Sredny Stog Culture	c. 4500-3500 B.C.	located around the Dnieper River, considered classical PIE culture
Tripolye Culture	c. 4500-3000 B.C.	agricultural culture located in western Ukraine
Yamnaya Culture	c. 3600-2300 B.C.	pan NPS cultural horizon and first nomadic pastoral society, represents the time when distinct IE dialects begin to emerge and the spread NPS tribes to the east, west, and south

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CURRICULUM VITA

NAME: Matthew J. Rifkin

[REDACTED]

PROGRAM OF STUDY: Geography and Environmental Planning

DEGREE AND DATE TO BE CONFERRED: Masters of Arts, May, 2006

Secondary Education: Calvert Hall College High School, Towson, Maryland , 1999.

<u>Collegiate institutions attended</u>	<u>Dates</u>	<u>Degrees</u>	<u>Date of Degree</u>
<i>Towson University</i>	2004-2006	Masters of Arts	2006
Major: Geography and Environmental Planning			

<i>Towson University</i>	1999-2000	Bachelors of Arts	2004
Majors: Political Science and International Studies			

Papers Published

Rifkin, M. 2005. The Mongolian Nomad: Socio-Economic Changes Since 1921.
Papers in Geography: A Discussion Series 10 (1)

Professional positions held:

Present

GIS Student Hire, CGIS
 7800 York Road, Towson Univerisity
 Towson, Maryland 21252

2000-2003

Office Technician, U.S. Army Corps of Engineers Baltimore District
 10 South Howard Street
 Baltimore, Maryland 21201