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## LANGUAGE CONTACT AND THE PHYLOGENY AND PHONOLOGY OF EARLY ENGLISH

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# Language Contact and the Phylogeny and Phonology of Early English

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**Abstract.** This paper aims to review Emonds and Faarlund’s work critically from a phonological perspective. Their work suggests that Modern English is a North Germanic language rather than a West Germanic language. After evaluating Emonds and Faarlund’s usage of the literature and theories of language contact and phylogenetic relationships, it is concluded that the only way Emonds and Faarlund’s theory could be reconciled with current linguistic theory, is to posit a set of mappings from the Old Norse phonology to the Old English phonology in order to allow for a simple continuation of the Old English phonology into Middle English. Using a series of etymological dictionaries, mappings are explored for gemination, Holtzman’s Law, cluster simplification, and palatalization. It is concluded that mappings are an impossibility due to the intricacies of the phonology, and that the notion of mappings themselves have no place in a theory of language contact or a phylogenetic framework.

**Plain English Abstract.** The fact that Modern English comes from Middle English and Old English seems to be an undisputed fact. Emonds and Faarlund’s book *English; The Language of the Vikings* suggests that Modern English is a North Germanic language, originating from Old Norse, rather than a West Germanic language originating from Old English. This article looks at their claim from the perspective of the phonologies, which entails their sound systems and sound changes. Looking at Emonds and Faarlund’s usage of the literature and theories of language contact and relationships between languages, it is concluded that the only way Emonds and Faarlund’s theory could be reconciled with current linguistic theory is to posit a set of mappings from the Old Norse phonology to the Old English phonology in order to allow for a simple continuation of the Old English phonology into Middle English. Using a series of etymological dictionaries, mappings are explored for gemination (consonant lengthening, Holtzman’s Law (medial /jj/ and /ww/ become /ggj/ and /ggv/ respectively), consonant cluster simplification, and palatalization (production of segments with tongue closer to the hard palate)), it was concluded that mappings are an impossibility due to the complexity of the phonology, and that the idea of mappings themselves have no place in a theory of language contact or relationships between languages.

**Keywords:** North Germanic; phonology; language contact; West Germanic; mappings; phylogeny

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## 1 Introduction

In Emonds and Faarlund (E&F)’s book *English: The language of the Vikings* (2014), radical claims are made about the linguistic origins of Middle English (ME), and yet phonological evidence is not sufficiently drawn upon to provide evidence for their argument. This work will focus on the phonological implications of their claim that ME is descended from North Germanic (NGmc) rather than West Germanic (WGmc), and the notion of a direct phonological continuation from Old English (OE) to ME despite its proposed origins.

### 1.1 A Linguistic Gap

After the Norman Conquest of 1066, exactly what happened to the Viking speakers of Old Norse (ON) and native speakers of OE is unknown. After spreading throughout England since 787, the ON speakers

had established the Danelaw, an area that covered the North and East of England, which was given up to the invading Norsemen and briefly ruled England before the Norman Conquest.

It is generally agreed that the ON speakers shifted to OE under Norman rule, bringing with them many lexical loans such as *bask*, *law*, *sky* and the pronouns *them* and *their* (Townend, 2006), and certain phonological phenomena, such as unpalatalized velars before front vowels. The extent of the influence and the exact features that can be associated with the Vikings are not agreed upon, but the idea of a shift from ON to OE is generally accepted, as is described in Townend’s influential work (Townend, 2005). There are, of course, other views. For example, Bailey and Maroldt (1977) and Poussa (1982) have argued for creolisation hypotheses of the origin of ME but these have not passed into mainstream acceptance.

## 1.2 Emonds and Faarlund: *English: The language of the Vikings*

In a relatively recent addition to the field of Germanic linguistics, E&F have made a bold claim regarding the origins of ME and therefore Modern English (ModE). In *English: The language of the Vikings* (2014), and in their later paper entitled *Anglicised Norse or anything goes* (2016), E&F claim that ME is descended from the NGmc branch of the linguistic family tree; the same branch that ON and modern languages such as Swedish, Norwegian, Icelandic, Faroese, and Danish are descended from. The traditional view that ME is descended from OE entails a WGmc origin, meaning E&F have changed the Stammbaum tree. What E&F claim is no minor change. The difference between the traditional Germanic tree and E&F’s revised version is illustrated in Figures 1 and 2 below:

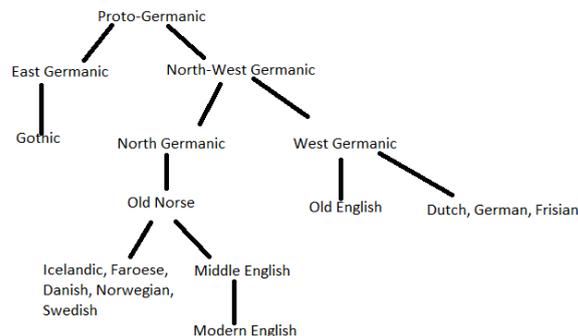


Figure 1: *The traditional Germanic family tree.*

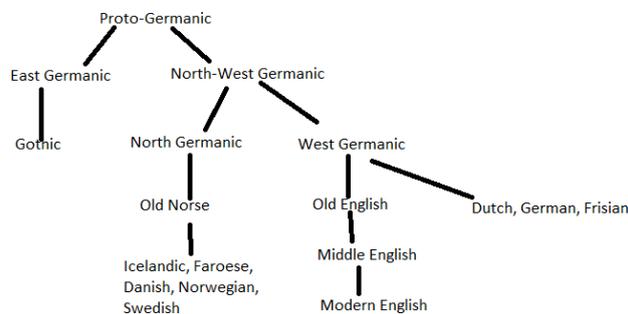


Figure 2: *E&F’s modified Germanic family tree (simplified).*

E&F contend that ON did not die during the period of Norman rule, and claim that it was in fact OE that underwent language death in the Danelaw. ME is therefore descended from ON rather than OE, thereby maintaining the common Germanic ancestor, but thus originates from the NGmc branch rather

than the WGmc. Rather than positing several changes to the OE grammar that resulted in the ME grammar, E&F point to a ‘seamless continuation’ (2014, p. 157) of the ON grammar, taking 20 different syntactic properties of ME, including word order, stranded prepositions, periphrastic auxiliaries, and split infinitives, and demonstrating their continuity from ON rather than OE. They conclude that ME shows no features that are not shared by ON.

In terms of the lexicon, E&F propose a lexical amalgam that formed through different origins, one of which is cultural borrowing. OE speakers would have had words for concepts that were foreign to the ON speakers, such as those that were a remainder of the Roman occupation, those related to crops and food production, and the written culture of the English. More importantly, there was a high rate of inter-ethnic marriage, with many ON-speaking men taking OE-speaking women as wives (Knoolhuizen, 2009). ON was thus already heavily Anglicised before the Norman Conquest, creating what E&F name Anglicised Norse (AN). After the conquest, E&F describe a fusion of the ON and OE ethnic groups due to the social, economic, and linguistic context of the East Midlands under the rule of the Norman conquerors (2014, p. 34). Within the new fused society, E&F conclude that the AN speakers enjoyed more prestige, and thus the children in this fused society eventually settled on a single model on the basis of the higher prestige that the Scandinavian ethnicity had, despite mixed AN and OE input (2014, p. 155). The vocabulary therefore remained similar to that of the lost OE language. Referring to this as relexification, they insist that the basic structural properties of the language are indicative of a NGmc origin.

Despite the shift from OE to AN, and thus a continuation of the NGmc branch, E&F claim that the phonology of this ME is ‘very much a continuation of Old English phonology’ (2014, p. 157). The phonology of AN and the role of phonology in determining phylogenetic relations is only briefly discussed in E&F’s appendix, where they touch on pre-vocalic velars, loss of low offglides and the reduction of vowel length contrasts, but explain these changes almost like collateral damage in the development of AN. They explain them simply as children learning both the OE and ON lexical items and change through language drift. Typically, linguists use a variety of sources of information in identifying phylogenetic relationships, such as basic vocabulary, regular sound correspondences, and in recent years, syntactic evidence (which is more controversial due to the chance similarity among binary variables and transfer from language contact, which appear to be insurmountable problems, (Campbell & Poser, 2008)). E&F consider almost exclusively syntactic evidence, and in doing so seem to take as a given that syntax cannot be, or is considerably less likely to be, transferred. This stability is taken to be a reliable marker of genealogical descent, thereby side-lining phonological evidence.

### 1.3 Criticism and Response

When it comes to the reactions to this work, E&F faced criticism. The majority of historical linguists reject the claim, including Trudgill (2016), Pons-Sanz (2013) and Stenbrenden (2016), citing a variety of evidence to substantiate their argument, including the falsity of certain etymological evidence presented as fact, and the circularity of their argument. Such a consensus is succinctly summarised by Munch (1962, p. 28) who believes that some authors ‘feel themselves drawn to what causes a stir and seems stirring than to more painstaking endeavours that appear in a humbler guise’, and E&F appear to match these criteria.

Some, however, do appreciate the line of argument put forward, such as Holmberg (2016) and Lightfoot (2016), neither of whom see a way around the conclusion that E&F draw. Lightfoot goes on to comment that those who believe the ‘standard textbook view that English is a gradual and imperceptible changing object which moves through time and space’ (2016, p. 475) will find this outcome difficult to accept, since it would mean accepting that change can be radical and sudden rather

than gradual. Paradoxically, Lightfoot himself has argued for a gradual drift in frequencies for linguistic forms in previous work. He attributes this to children, who cause changes in frequencies due to sensitivity to their input. It must be noted that Lightfoot appears to be somewhat individual in his ideology here, since some of those that are the most critical of E&F's work are, like Lightfoot, generative in orientation, including Van Gelderen (2016) and Walkden (2016).

A fundamental reason for the discredit of the work is the authors' own linguistic background. As Bech and Walkden (2016) point out, neither has any background in OE. Faarlund is a leading Scandinavianist who has a background in the history of Norse, and Emonds is a distinguished theoretical syntactician. Simms (2014) builds on this, and believes that the book contains major methodical and minor factual errors, such as suggesting *kid* and *child* are doublets of the same source and suggesting that *kind* and *king* are forms with non-palatalized velars (Emonds & Faarlund, 2014, p. 158). This is claimed to be due to E&F's lack of knowledge the phonological conditions for palatalization, and that the preservation of the velar when adjacent to a front rounded vowel fronted by umlaut is common.

Furthermore, despite E&F's focus on syntactic evidence, thereby implying that syntactic items cannot be borrowed, they themselves appear to promote this at several different points. At times they seem to require the transfer of a structure, especially from OE into this new AN they have created (Thomason, 2012). They therefore do not strictly follow their own framework, creating a clear contradiction. The result of basing their claim mainly on syntax is that phonology is largely ignored, even though the very nature of neogrammarian sound change is that systematic correspondences can, in fact, not be explained by anything but genetic relationship.

## 1.4 Phonological Claims

Phonological continuity between OE and ME is agreed upon by many scholars, including Font-Santiago and Salmons (2016). E&F do not disagree with this idea, and yet still state that ME is descended from ON. How these ideas can be reunited is not made clear in their work; they do not specify how ME can be a continuation of OE phonologically when their syntax is entirely derived from the ON system. Barnes (2016) thus concludes they have a 'cavalier' attitude to phonology, which is evidenced several times in the book, as will be shown in this work. There must therefore be a point in time where the entire OE phonology was mapped onto the AN lexicon. This seems like an unusual claim, and the theories of language contact that will be touched on later in this work agree.

How would the continuation of OE phonology to ME work? It cannot simply happen of its own accord; there must be a concrete way in which this continuation occurs. In the lexical amalgam of the AN language, if the underlying phonological inventory and rules were those of OE, then this goes against what E&F are claiming. If the underlying form is OE phonologically, for example, *drinkan* 'to drink', then ME is genealogically descended from OE, contradicting E&F. The only other option is a set of mapping rules between the ON form and the OE forms that speakers used to map the OE phonology onto the ON phonology. For example, the underlying form is ON phonologically, such as *drekkja* 'to drink', to which some operation is applied to derive OE *drincan*. Since the former option contradicts E&F's argument, the latter option must be explored, which entails a pathway from ON to OE to ME phonology. While this is not directly mentioned by E&F in their book, it appears to be the only logical way in which the phonology can be a continuation of OE in their framework.

The rest of this work consists of three Sections, the first of which will aim to put forward a theory of phylogenetic relationship and contact induced change. The second Section will look at a number of sound changes in the Germanic languages and attempt to create mappings similar to the cognitive transformations the ON words must have undergone to constitute a continuation from OE phonology to ME. The final Section will conclude and summarise the findings.

## 2 Theoretical Frameworks of Language Contact and Phylogeny

The claims E&F make require a solid foundation of a framework of contact induced change. Terms such as borrowing, imposition, and transfer are not defined in the book, despite forming a crucial part of their hypothesis. An attempt will be made here to clarify some of the terminology used, and point out some of the flaws in E&F's approach.

### 2.1 A Psychologically-Based Approach

An appropriate framework for contact induced change is a psychological approach, as described in Van Coetsem's (1988) and Winford's works (2003). Their approach centres on the idea that the traditional classification into borrowing and interference has some inconsistencies, since they are used interchangeably for both the outcome and the process, and also do not indicate the direction of the influence nor the agent. In the past, 'interference' has been used to refer to any kind of crosslinguistic influence, some have used 'transfer' in the same way, confining 'interference' to changes brought about by second language learning. Instead, they draw upon source language (SL) agentivity versus recipient language (RL) agentivity as types of crosslinguistic influence, which embody shift and borrowing respectively. In a single contact situation, both SL and RL may be involved, and while the movement is always from source to recipient, the agent may vary. 'Transfer' is a neutral term for the movement of material from one language to another.

The difference between the psychologically-based and traditional prestige-based approaches, such as that of Thomason and Kaufman (T&K) (1988), in which contact induced change is split into shift and borrowing, lies in the fact that there is a distinction in the psycholinguistic notion of speaker dominance (Winford, 2003). T&K concluded that in the ON/OE contact 'the influence is found in all parts of the language, but is not deep except in the lexicon' (1988, p. 302), and placed it at a level 2 out of 3 on their borrowing scale. A key point from T&K's work is the notion that interference cannot be compartmentalised, suggesting that even minor syntactic changes suggest the presence of minor phonological changes and vice versa. This approach did not consider the agents of the change, suggesting bilinguals and monolinguals were equally responsible.

In Van Coetsem's framework (1988), a bilingual is dominant not in their first language, but in the language that they are more proficient in, creating a dichotomy between linguistic dominance and social dominance. The latter includes the political and social position of the language, whereas the linguistic dominance is simply the language of highest proficiency and does not require the language to be dominant socially. This therefore makes bilinguals the main agents of the change. Since language is always in flux, bilinguals may be dominant in either of their languages at different times, creating differing directions of transfer.

In RL agentivity, material moves from the non-dominant language to the dominant, and in SL agentivity material moves from the dominant language into the non-dominant. Due to this, the potential of structural and radical modification is higher in SL agentivity, since the agents will be preserving the matrix structure of the language that they are dominant in and thus impose this material onto the RL. This is typical of second language acquisition, where speakers transfer aspects of their L1 to their L2 when their acquisition is incomplete. This is evidenced in arguably all linguistic domains.

Borrowing, or RL agentivity, is usually less radical, involving vocabulary transfer, which can consequently be integrated into the native vocabulary (Winford, 2003). Again, the language the agents are dominant in will provide the matrix for the change.

### 2.1.1 *E&F's Hypothesis in this Framework*

Traditionally, it is thought that the ON speakers shifted to OE, resulting in some SL agentivity in the form of shift, and some RL agentivity in the form of borrowing (Van Coetsem, 1988). The result appears to neatly fit the idea of RL agentivity in the cultural borrowings from ON, and SL agentivity in the minor phonological changes present. This is exemplified in unpalatalized ON stops contrasting the OE palatalized ones, causing doublets such as *shirt* and *skirt*, or the dialectal loss of the palatalized stops in favour of the unpalatalized stops, as is seen in Scottish and Northern *kirk* 'church'. E&F's approach does not fit so neatly into expectations. In the framework presented here, it is expected that there are some OE phonological features in ME due to SL agentivity in the shift of the population to AN. However, E&F do not suggest 'some' transfer, but complete transfer of the OE phonology.

In the creation of AN there is borrowing, and thus RL agentivity, in the cultural loans that entered ON from OE due to trade and intermarriage. The dominant language will have been ON, as the bilingual ON speakers are the agents of the change. This kind of contact can easily enable the transfer of lexical loans, and allows the creation of AN. Winford (2003) suggests that lexical borrowings often have little impact on the RL, and are usually adapted to native phonological and morphological patterns, as has been studied by Haugen for early and late borrowings from ON to OE and ME (Haugen, 1950). This means that this initial stage of borrowing from OE would have left minimal impact on the ON phonology, especially since the phonologies of the two languages were similar.

The second stage of the creation of ME is the shift of the OE speakers to the AN, where there would be SL agentivity. It would be expected to find L1 effects on many linguistic subdomains, and thus the transfer of some OE phonological features, structural features, and semantic features, as the OE speakers impose their matrix structure on the AN language. It can result in significant changes in the phonologies of the target language, as is seen in Irish English, Welsh English, Indian English and Singapore English, where the phonologies have been radically altered due to the SL agentivity (Kortmann & Schneider, 2008), but does not support the transfer of the entire SL phonology into the RL. Yet, this is what E&F require. Any OE structures E&F find in ME, they attribute to borrowing rather than imposition, despite structural transfer being more likely in SL agentivity than RL agentivity. Their claim therefore either requires that the frameworks of Winford, Van Coetsem, and T&K need to be widened to allow this kind of relexification, or requires them to posit extra mechanisms outside of the scope of the traditional frameworks. One such mechanism is tested in this paper, which is the use of transformation rules.

## 2.2 A Phylogenetic Framework

A 'genetic relationship' between languages refers to descent from a common ancestor, therefore a phylogenetic relationship (Campbell & Poser, 2008), the idea of which can be traced back to the Philologist Passage (Jones, 1786). The comparative method is often used to establish such genetic relationships, and consists of a systematic comparison of different languages or dialects in order to reconstruct the language from which they developed. It relies on basic vocabulary, grammatical and morphological evidence, and regular sound correspondences. While languages may have diversified through means such as war, trade, isolation, social and economic organisation, group identity, and technological advance (Campbell & Poser, 2008) creating radically different surface level structures, underlying systematic and patterned correspondences may still be used to identify the relations.

It is generally agreed that using the lexicon alone to determine phylogenetic relationships is dangerous, since as presented in our theory of language contact, vocabulary is commonly transferred. While core vocabulary is less susceptible, even this can be transferred. Furthermore, instances of

nursery forms, onomatopoeia, and sound symbolism make it unreliable for deterministic classification. Linguists have therefore mainly focussed on phonological and grammatical correspondences.

The need for regular sound correspondences in the comparative method was identified by Hübschmann (1875) long before the neogrammarian doctrine detailing the exceptionlessness of sound laws. It is now recognised that sound correspondences are necessary in determining phylogenetic relationships, and almost all consider them strong evidence (Campbell & Poser, 2008). While there are other sources for phonological similarity, if regular correspondences can be identified, then irregularities can be excluded. Similarities from other sources include analogy, borrowing through RL agentivity, and L1 effects through SL agentivity. Furthermore, false correspondences can be created if there are enough instances of accidental similarities involving the same sounds, and also if linguists are lax about the semantic meanings of the cognates discussed, since it is easier to find correspondences if meanings are relegated. As a result, there can be systematic correspondences between items that look different on the surface; resemblance simply is not enough, and regular correspondences are crucial. While there are certain aspects of using sound correspondences to determine genetic relationship that are problematic, they are still accepted as an integral part of the comparative method.

There is a longstanding ideology that structural features are less likely to have been transferred in a language contact situation, and this has led many to believe that structural evidence is superior in determining genetic relationships, including Sapir (1921), Meillet (1925), and E&F. They refer to the fact that syntax has been thought of as the deepest structure with the most cohesion, and thus hard to influence. They believed that borrowing of structural elements can only occur when the languages are typologically similar. This is most clearly seen in instances of dialect borrowing. An example would be the case of the Hvar dialect (spoken on the Croatian island of Hvar) which had a distinction of genitive/locative vs. dative/instrumental cases which was replaced with the Serbo-Croatian pattern of genitive vs. dative/instrumental/locative (Thomason, 2006).

This has since been argued against by linguists such as Thomason (1980), who showed that morphology is not as stable as thought; cognates vanishing but the morphology remaining unchanged is unlikely. Utmost care must therefore be taken to exclude borrowings from evidence. In the framework of language contact discussed, structural properties do transfer. Phonological and syntactic transfer are typically among the last to be transferred in RL agentivity, but they are still borrowed. In terms of SL agentivity, syntactic transfer is common and usually among the first features to be transferred in a contact scenario.

Winford (2003) discusses the difference between direct and indirect structural transfer. Indirect structural transfer refers to structural changes mediated by lexical borrowing, in which large quantities of lexical borrowing could introduce new structural and phonological features into a language such as derivational affixes in ModE from French or Latin, or phonological fricative voicing due to French influence. In the rare cases where there is direct structural borrowing, it usually involves free morphemes such as prepositions or conjunctions where a simple replacement can occur with RL morphemes of a similar form or function; this naturally requires a high degree of bilingualism, thus being more associated with SL agentivity than with RL agentivity. It is clear that structural borrowing and transfer is subject to some strong constraints, but to say that structural transfer does not occur is therefore untrue, meaning that they must be mitigated against in our application of the comparative method.

### 2.2.1 *E&F's Treatment of the Comparative Method*

The crux of E&F's argument lies in their treatment of the comparative method; they work in a Labovian framework in which structural patterns are not subject to the same kind of conditioning as phonemes and morphology (Labov, 2001, pp. 28–9). E&F do not use phonological evidence in the traditional way

in which it is required to evidence phylogeny, focussing solely on a misinformed view that syntax does not change in contact scenarios. This misinformed view is well exemplified by Elderkin (1976, p. 296) who said, ‘classification of languages rests on the selection of one part of a language to typify that language, and this selection is arbitrary’. E&F have selected syntax, and their method is unconvincing. To create a stronger claim, the phonology and syntax need to be unified and a way to explain the transfer of the entire phonology needs to be found. If it is proven that a language can have a phonology that is entirely transferred from another language, leaving little or no trace of its own original phonology, this discovery would be catastrophic for the comparative method.

### 2.3 Learnability

The learnability of the rules proposed will form the central argument as to whether they are plausible in regard to E&F’s hypothesis. It has been pointed out that it is not possible to provide definitive proof that something is not learnable (Lai, 2015), since any experiments only prove that a pattern was not learnt by its set of participants. As a result, there is not a widely accepted definition of learnability (Lewis & Elman, 2001). This has not stopped learnability theories emerging, such as the possibility of data compression, or generalisation, as is explored in Gerken, Balcomb, and Minton (2011). This theory suggests that rules which are not generalisable, have too many exceptions, or are context dependent are unlikely to be learnable.

However, this is contested by the fact that speakers are able to learn non-regular patterns, as is shown by irregular verb morphology. Ringe and Yang (2015) looked at this phenomenon and created a tolerance principle consisting of a threshold which, if not exceeded, allows the rule to be extended and lead to the loss of exceptions. This is evidenced by the historical tendency of exceptions to become regular.

While creating mappings from an underlying ON form to a surface OE form may be radically different to other examples of learnability in the literature, it is comparable with generative phonology, or more specifically derivational phonology (Vaux, 2008), in the sense that generative phonology also involves underlying forms subject to a series of rewrite rules or transformations that create the surface forms (Dresher, 2015). Rules may take several forms, but one is in the style of *The Sound Pattern of English* (Chomsky & Halle, 1968) and takes the form  $A \rightarrow B/C\_D$ . This is the basic formula adopted in this study.

Kaplan and Kay (1994) suggested that all phonological patterns belong to the regular class within the Chomsky hierarchy, and as a result can be defined by finite state automata (Lai, 2015). This means that the transformations between underlying forms to surface forms can be considered regular, and that such rule-based grammars can describe all phonological patterns (Hyman & Plank, 2018), thus being universal.

Since there is no definitive way to define learnability in this context, it is important to generalise the ideas put forward from these different approaches. These phonological operations have been found to be regular, so this work hypothesises that the mappings created between OE and ON should be regular too. It is evident that these are the types of patterns which speakers are able to learn, though it does not disprove that speakers cannot learn others. Regardless, this view shall be taken into the creation of the mappings.

### 2.4 Intelligibility and Dialect Congruity

The idea of creating mapping rules between two closely related varieties has been utilised in intelligibility and second dialect acquisition studies. Hockett (1987) created a model for intelligibility

involving two modes, which are listening to word identity and listening to word shape. Word identity depends on implicit motor matching, gestalt perception and, most importantly, the switching-code. This code is a series of transformations from the foreign dialect to the hearer's own dialect, and once this code is established, words can be automatically coded and recognised through these transformations. Milliken and Milliken (1993) take a similar approach to dialect congruity and posit that intelligibility correlates with phonological correspondences between two varieties, thereby making intelligibility a property of phonological correspondence rather than phonetic similarity. Key to their theory is dialect congruity, which describes whether correspondences can be generalised and exceptionless. While Milliken and Milliken offer no quantifiable dimension to their proposal, the idea behind their theory resonates with the mappings posited in this dissertation. Townend (2005) used the above theories to explore intelligibility in Viking age England, looking in particular at place names and the systematic swaps made by ON speakers in their references to these places or people. Townend (2005) concluded that the level of intelligibility suggested that ON and OE should be treated as different dialects rather than different languages, and looked briefly at some phonological correspondences identified in these place names, including palatalization and assibilation.

The approach taken in this study will be broader and look at the language in general rather than at place names only, and also consider the two varieties as different languages rather than different dialects, making this a question of shift and contact induced change rather than intelligibility.

Furthermore, the mappings posited here will be in the opposite direction, from ON to OE rather than from OE to ON, to test E&F's theory of a NGmc origin for ME. Regardless, it is useful to see the same methods applied in other domains.

### 3 Hypothesis

Having now looked at why mappings are necessary to entertain E&F's hypothesis from a phonological perspective, it must be determined what these mappings look like and whether they are realistic or achievable. The hypothesis of this work is that the mappings required to transfer the OE phonology onto the ON phonology will be arbitrary, and therefore cannot be learnt by neither the children using it as primary linguistic data, nor adults who are in the process of shift.

#### 3.1 Methodology

This work aims to create a set of transformation rules to map the ON phonology to the OE phonology using gemination, Holtzman's Law, and palatalization, which are traditionally used as a diagnostic for NGmc and WGmc branch membership. Examples will be found in dictionaries of OE, ON and PGmc. The aim will be to create plausible, logical, and cognitively simple mappings, and most importantly, these rules must be learnable for L2 learners and native speakers alike. If they become too numerous, complicated, sporadic, or a word-for-word enterprise, then these mappings cannot be learnt and therefore cannot account for the continuation of the OE phonology.

Mappings will take the form of one segment or cluster becoming another in a collection of transformation rules. They do not need to be plausible sound changes, since this is not an instance of sound change, but an instance of cognitive mapping by the L2 learners of AN transferring their OE phonologies to the ON/AN words.

Take initial /v/ in ON. There is a rule between Proto-Norse and ON that all initial /w/ become /v/, whereas this rule did not apply in the WGmc branch, where it remained /w/. ON therefore has *verpa* 'to warp' where OE has *weorpan*. The mapping here is thus as simple as /v/ to /w/ word-initially. Other examples include ON *vika* 'week' compared to OE *wicu*, ON *vara* 'to warn' compared to OE

*war(e)nian*, ON *vapn* ‘weapon’ compared to OE *wāpen*, and ON *vif* ‘wife’ compared to OE *wīf* (Ross, 2002). This is a straightforward mapping and appears to pass the learnability test, and if the entire ON phonology could be mapped to the OE phonology in this way, E&F’s hypothesis may be plausible.

### 3.2 Resources and Data

The resources that will be used for the present study are the *Bosworth-Toller Anglo-Saxon Dictionary* (Bosworth, 2010), the *Oxford English Dictionary* (The Oxford English Dictionary Online), the *English-Old Norse Dictionary* (Ross, 2002) and the *Etymological Dictionary of Proto-Germanic* edited by Guus Kroonen, which is part of the Leiden Indo-European Etymological Dictionary Series edited by Alexander Lubotsky (Kroonen, 2009). This work will be taking examples of words exemplifying gemination, Holtzman’s Law, cluster simplification, and palatalization to demonstrate that the mappings required by E&F are not only difficult, but impossible.

## 4 Gemination, Holtzman’s Law and Cluster Simplification

The way that NGmc and WGmc treat Gemination, Holtzman’s Law, and cluster simplification highlight the impossibility of such mappings. PIE had no length contrasts in consonants, only in vowels, meaning that the development of gemination occurred in the Gmc branch separately.

### 4.1 Divergences between West Germanic and North Germanic

In OE, all consonants except /r/ double between a vowel and a /j/ (Townend, 2005). This resulted in forms such as *\*bedjan* (Kroonen 2009, s.v. *bedjan-*) ‘to request’ in PGmc to OE *biddan* (OED Online, s.v. *bid* v1-). This can be compared to Gothic (Go) *bidjan*, whereas ON *biðja* underwent different processes to gemination. In a second round of gemination, voiced stops geminated before /r/, as in *blæddre* ‘bladder’. In terms of the treatment of Holtzman’s Law, also known as sharpening, medial /jj/ and /ww/ become /ggj/ and /ggv/ respectively (Townend, 2005). Intervocalic glides in strong position geminate, then the first semivowel is vocalised, thus becoming a diphthong. The vowels are then separated, creating for instance OE *trēowe* from PGmc *\*trewwu* ‘true’ (Kroonen 2009, s.v. *trewwu-*). When not in these contexts, consonants remain single.

In ON, there is a different outcome. Widespread syncope caused consonant clusters to simplify and assimilate, involving mainly /r/, /h/ and /n/, creating large scale gemination that is not present in WGmc. These lost vowels can be considered to be due to ‘the strong stress accent on the first syllable’, which ‘caused in Germanic a progressive weakening of unaccented syllable, which is particularly marked in the case of final syllables’ (Prokosch, 1939, p. 133). Phonemes bearing secondary stress were still weakened, causing medial loss of short vowels which has been considered as one of the most distinctive ON sound changes. Holtzman’s Law in the NGmc family geminates intervocalic glides in strong position, which then sharpen and form occlusive onsets, causing PGmc *\*trewwu* ‘true’ to become ON *tryggr*. This ON sharpening is regularly attested in ON and Gothic, despite only being visible in a small number of words (Dance, 2019). While Dance notes that the operation remains obscure, it is a definitive marker separating OE from ON and Gothic (despite ON and OE forming a NWGmc family excluding Go). As a result, there are instances such as ON *tveggja* and Go *twaddje* compared to OHG *zweiiō* and OE *twēga*, meaning ‘two’ (Dance, 2019).

### 4.2 Consonant Clusters

The geminated consonants caused by syncope in ON must be mapped onto the consonant clusters that are maintained in OE. It could be hypothesised that this occurs through dissimilation of the two consonants to restore an arbitrary consonant that was there before, but without there being a particular conditioning environment for it. It would therefore be necessary to posit spontaneous arbitrary dissimilation. However, there were numerous consonants involved in the ON syncope gemination resulting from both progressive and regressive assimilation, such as /mp/ → /pp/, /nk/ → /kk/, /nt/ → /tt/, /rd/ → /dd/, /rn/ → /nn/, /ht/ → /tt/, /ðl/ → /ll/ /dt/ → /tt/, /lð/ → /ll/, and /nð/ → /nn/ (Townend, 2005). Many of these processes have precisely the same outcome despite involving different consonants. Without some teleological knowledge of the PGmc form, how would learners know which mapping to opt for? There will be consonant clusters in OE in cognate words, which would aid in the mapping, but it would still remain arbitrary and spontaneous, and on a case-by-case basis.

For example, a /tt/ in ON could be traced back to /ht/ /nt/ or /dt/ in PGmc and WGmc, but since the OE word shows a /nt/, a /tt/ → /nt/ mapping will be chosen. Another word with /tt/ could be cognate to another OE word with /ht/, and so a /tt/ → /ht/ mapping would be chosen. There is no regularity here, no rule that can be applied; it is a case-by-case basis. Taking the /tt/ cluster in ON, words such as *brattr* ‘sheer’ equate to the OE cognate *brant* (Kroonen 2009, s.v. *branta-*) (Townend, 2005). The /tt/ cluster in *brattr* would need to map to /nt/ to create the correct correspondence, meaning this can be posited as a mapping rule. However, this does not hold when looking at other words. ON *rétrr* ‘right’ would by this logic map to OE *\*rent*, but in reality, it corresponds to OE *riht* (Kroonen 2009, s.v. *rehta*).

There would also need to be a mapping from /tt/ to /ht/. This is also found in other lexical items, such as OE *drihten* ‘lord’ compared to ON *dróttinn* (Kroonen 2009, s.v. *druhti-*), as well as OE *neahtr* ‘night’ compared to ON *nótt* (Kroonen 2009, s.v. *nahti-*). Whether /tt/ maps to a /ht/ or /nt/ is not evident from the surface realisation, again thereby invoking either comparison with the OE form or teleology to explain how the correct mapping occurred. Since the contexts presented here are close phonologically, both involving word final clusters in OE following vowels, it must be more than a game of chance as to whether the correct mapping is chosen.

Another way of making a mapping would be to posit that the geminate falls into a singleton, but then spontaneous and unconditioned epenthesis of a consonant adjacent to it would have to occur. ON *brattr* ‘sheer’ would become *\*bratr* followed by epenthesis of the /n/ (along with loss of the /r/ suffix) to form OE *brant*. ON *dróttinn* would become *\*drotinn* followed by epenthesis of /h/ (along with a change in the vowel) to form OE *drihten*. Similarly, this leads to the problem of how speakers would know which consonant to insert, since there are once again have examples of an /n/ and /h/ being inserted without a specific conditioning environment. Languages do not have memories, so inserting a consonant to match a historical form that arose via simplification is a counterintuitive explanation.

To exemplify this, the development of PGmc *\*drinkana* ‘to drink’ shows the difficulty of this mapping. *\*drinkana* comes from PIE *\*dhréngē* (Kroonen 2009, s.v. *drinkan-*) The ON form is *drekka*, therefore showing the consonant cluster simplification from /nk/ to /kk/, as well as the loss of final /n/ which is common and advanced in ON compared to OE (Townend, 2005). The vowel is lowered from /i/ to /e/ through a-mutation of the following /a/. On the other hand, there is OE *drincan* (OED Online, s.v. *drink* v1-), where the <c> represents a /k/, meaning that the form has undergone little or no change from the PGmc form. To map from *drekka* to *drincan*, the onset cluster would have to be maintained, and the vowel would have to raise back up to /i/. However, the consonants pose a larger problem. /kk/ needs to dissimilate back to /nk/, and thus reinsert a segment after an assimilatory sound change got rid of it. As discussed, an ON cluster could stem from multiple origins, meaning that only teleology or the OE version contributing to arbitrary decisions could cause the correct reinsertion of the /nk/ cluster.

### 4.3 Holtzman's Law

Moving on to the treatment of Holtzman's law in the two languages, it becomes evident this is equally complicated. Both involve semivowels geminating in strong prosodic position, but those in ON would have to lenite the onsets back to glides. The problem occurs when considering the fact that these then have to diphthongize and turn into separate vowels. What is needed is a direct mapping from /ggj/ to the diphthongs or vowels created by Holtzman's law in OE. The same problem as with the assimilations thus arises; what segments would /ggj/ need to map to in certain situations?

Looking at some instances of Holtzman's law in NGmc and WGmc, it appears as if there is not a simple correspondence between the words in question. Holtzman's law is often not as uniform as we would like to believe, and the words displaying the NGmc outcome of Holtzman's law in ON have several different consonant/vowel clusters, rather than the simple /ggj/ and /ggv/ expected.

To start, some words do show the typical /ggj/, such as ON *tveggja* 'two', which corresponds to OE *twēga* (genitive singular of *twēgen*) (Smith, 1998). Due to OE orthographical practice, *twēga* is pronounced /twe:ja/, meaning that the correspondence here is /ggj/ to /e:j/. If this rule could be applied to all instances of /ggj/ then mappings may be possible. There are also several instances where the outcome in NGmc is /ggr/, as is the case in ON *tryggr* 'true' and ON *gloggr* 'sharp minded'. The OE cognate for *tryggr* is *trēowe*, while the OE cognate for *gloggr* is *glēaw* (Smith, 1998). This would mean that positing the mappings /ggr/ to /ēow/ as well as /ggr/ to /ēaw/. While these are close, multiple mappings are still required.

There may also be a vowel following the geminated /g/ in NGmc, and these again need different mappings onto OE words. ON *skuggi* 'shadow' corresponds to OE *scūa* (Smith, 1998). This would require a /ggi/ mapping to a complete diphthong /ua/. ON *bryggia* 'bridge', corresponding to OE *brycg*, is different from any of the others discussed (Smith, 1998), since the outcome is not a diphthong or semi-vowel, but a voiced affricate /yǰ̥/. Finally, there is ON *tryggua* to OE *trūwian/trugian* (Smith, 1998), where there would need to be a mapping of /yggua/ to /ūwia/ or /ujia/. This serves to highlight that there is not only the problem of many OE outcomes for a single ON feature, but also many OE outcomes for many ON features. There does not seem to be a single cohesive unit that would make the comparison straightforward, neither to linguists nor to speakers.

PGmc *\*trewwu* (Kroonen 2009, s.v. *trewwu-*) 'true' derived from from PIE *\*dreuHu* developed to *\*triwwjaz* in the proto-ON branch. Then *i*-umlaut changed /e/ to /i/ and, most importantly, there was gemination of /w/ in strong prosodic position to /ww/ which then hardened to /ggw/. Finally, the ON form gained an /r/ ending from /iz/ *i*-stem nominative singular ending in PGmc. This then formed ON *tryggr*. To get to the OE version, *\*trewwu* becomes *\*triuwjaz*, which already shows the vocalisation of the first semi-vowel which is characteristic of the WGmc branch. The diphthong formed then separates the segments, so there is OE *trēowe* (OED Online, s.v. *true*, adj., n., adv., and int), and later ME *treu* (Middle English Compendium Online, s.v. *treu*, adj.). As previously mentioned, going from /ygg/ to /yww/ to /iuw/ to /ēow/ is plausible since it involved lenition and assimilation processes, but going from /ygg/ to /ēow/ will be difficult. Not every /ygg/ will map onto /ēow/ as is exemplified by the above discussion, and thus we also need to consider /e:j/, /ēow/, /ēaw/, /ua/, /yǰ̥/, /ūwia/, and /ujia/.

### 4.4 Old English Gemination

Moving on to mappings involving consonants that geminate in OE but not in ON, even more mappings must be posited. ON gemination only occurred in Holtzman's Law due to the syncope and resulting assimilation, whereas OE had many more contexts, such as all consonants except /r/ doubling between

a short vowel and /j/, and voiced stops geminating before /r/. The remaining OE geminate consonants would have to be derived from those that remain singletons in ON.

Concerning the consonants doubled between a short vowel and /j/, a mapping would consist of all single consonants except /r/ geminating between a short vowel and a /j/. It is not as simple a case as this; instead, there is a change from ON /ð/ to OE /dd/ in some instances. An example is PGmc \**medja* ‘middle’ which becomes ON *miðr* compared to OE *middel* (Kroonen 2009, s.v. *medja*-1). Another is PGmc \**bedjan* which became ON *biðja* compared to OE *biddan* (Kroonen 2009, s.v. *bedjan*-). This therefore suggests that a ON /ð/ to OE /dd/ mapping is required rather than only a rule positing doubling between a short vowel and a /j/. This requirement is mirrored in the outcome of second gemination, which involves voiced stops doubling before /r/. Rather than simply geminating voiced stops before /r/, ON /ð/ to OE /dd/ is evidenced. This is seen in ON *bláðra* ‘bladder’, which would thus need to map to OE *blaeddre* (OED Online, s.v. *bladder*, n), and the same is seen with ON *naðra* ‘snake’ compared to OE *næddre* (OED Online, s.v. *adder*, n). Mappings are therefore needed from ON /ð/ to OE /dd/.

This rule is very deterministic, since not all ON /ð/ can go to OE /dd/. Indeed, there are several words where ON /ð/ is not equivalent to OE /dd/, such as in ON *garðr* ‘garden’ for OE *geard* (Kroonen 2009, s.v. *garda*-) or in ON *maðr* ‘man’ for OE *mann* (Kroonen 2009, s.v. *mannan*-). The change must therefore only happen in words and contexts where the PGmc form had either a consonant between a short vowel and a /j/, or had a voiced stop followed by an /r/. As has been previously discussed, the speakers would not have had any knowledge of the proto forms, again creating a mapping that is idiosyncratic. On surface level, there is no reason why ON *miðr* ‘middle’ becomes OE *middel* but ON *garðr* becomes OE *geard* and ON *maðr* becomes OE *mann*. The environments are almost identical in the ON words, and differences can only be seen in the proto-forms and the changes they have undergone to become the ON words. Speakers do not have this knowledge, therefore mappings become unlearnable.

#### 4.5 Summary of Gemination, Holtzman’s Law and Cluster Simplification

This goes to show that mappings which are created by the processes of gemination in English appear to be significantly easier to map onto their ON counterparts than the outcome of cluster simplification and Holtzman’s Law, where the variable outcomes make mappings impossible due to the sheer number of exceptions. The learnability is thus compromised, making them cognitively unlikely in the language learners; if they become individualistic then they cannot be learned, neither by L2 learners nor L1 speakers.

### 5 Palatalization

One of the most problematic areas for mappings is palatalized consonants, but not due to the complexity of the mappings. The Gmc velar consonants /k/, /g/, and /ɣ/ remained as such in ON in all positions (Dance, 2019). However, in OE these have palatalized allophones /tʃ/, /dʒ/, and /j/ before front vowels, and the unpalatalized variants in other positions, which led to the development of these as independent phonemes, still represented orthographically by /k/ and /g/. In terms of clusters, ON retains the Gmc /sk/ cluster, but the same cluster was palatalized to /ʃ/ in nearly all contexts in OE, except where it was preserved across boundaries and with /r/. Another condition can be placed on the palatalization process in OE, which is that preservation of the velar stop when adjacent to a front rounded vowel fronted by umlaut is common, meaning this will have to be accounted for in the mappings posited for the palatalization process (Simms, 2014).

One important thing to note is the fate of these consonants and clusters in ME and ModE. In ME, according to the traditional viewpoint, there are loans from ON with the unpalatalized velars and clusters rather than the palatalized ones. These replace the palatalized English words in words such as *give*, exist as doublets with English words such as *shirt* and *skirt*, or remain as dialectal variants for palatalized words, such as *kist* for ‘chest’ (OED Online, s.v. *kist* n.1-) in some Northern dialects, specifically in Scottish English.

## 5.1 Palatalized Versus Unpalatalized

Within the palatalized versus unpalatalized singleton consonants, there should be a mapping which mirrors the process that happens in OE. /k/, /g/, /sk/, and /ɣ/ would be mapped onto their palatalized counterparts when adjacent to front vowels. This would be simple, and also mirrors processes that are later seen in daughter languages of ON, for example the palatalized velar in Icelandic *gefa* [gʲi] ‘to give’. Norwegian and Swedish /g/ did develop into a glide, and Faroese /g/ affricated with sibilant release (Harbert, 2007). While the mappings do not have to mirror realistic phonological changes, it is interesting to see the same pattern in NGmc language later in their development.

Considering that preservation of the velar stop when adjacent to a front rounded vowel fronted by umlaut is common in OE, the mappings become more complicated, since the source of these front vowels must be considered. For example, OE *cysan* ‘to kiss’ has an unpalatalized /k/ in initial position despite being followed by front vowel /y/. It derives from PGmnc \**kussjan-*, where the /j/ in the next syllable caused umlaut of /u/ to /y/ (Kroonen 2009, s.v. *kussjan*). In this case, the ON *kyssa* ‘kiss’ would need to maintain the velar stop rather than palatalising it after the front vowel. The rule must therefore be refined to state that /k/, /g/, and /ɣ/ palatalise before all front vowels except /y/, since this phoneme was not present in the proto-language.

So, at surface level, this would be an instance that would provide evidence to E&F’s proposal, which would require mappings between the ON and OE versions. However, this is not the case.

## 5.2 Loanwords

According to the traditional approach, in which OE survived and was simply influenced by ON, palatalized variants of words are native and unpalatalized variants are loans, leading to doublets like *shirt* and *skirt*, *ditch* and *dyke*, *witch* and *wicca*, and *church* and *kirk*. In this approach, this would be a simple case of both SL agentivity and RL agentivity; RL agentivity in lexical borrowings from ON that were not adapted fully to the OE phonology, and SL agentivity in phonological transfer from the ON speakers shifting to OE.

Posing mappings to account for these palatalized and unpalatalized variants in E&F’s framework becomes problematic. If a conditioned rule is posited such as ‘palatalize /k/ before front vowels’, then ON *skyrta* ‘shirt’ would indeed become OE *scyrte*, in which the first sound is palatalized (OED Online, s.v. *shirt*, n; OED Online, s.v. *skirt*, n). However, if this happens then the problem arises of how to account for the lexical doublet in ME *skirte*. The phonological environment is the same, since they both stem from the same cognate, and yet one undergoes palatalization whereas the other does not. The same can be shown for every palatalized-unpalatalized doublet. In cases such as this, the mappings appear incomplete, leaving both the palatalized and unpalatalized variants in the amalgam lexicon.

Even more problematic are cases where only the ON unpalatalized consonant survives, such as in *give*, since that would mean that the transformation rules simply did not apply to this word, even though there was the correct phonological environment for them. Not only do the mappings seem sporadic, but they also seem word specific. This would heavily impact the learnability of the mappings

proposed. Another option would be that the rules were indeed regular, and these unpalatalized variants were borrowed into ME by RL agentivity due to later contact with NGmc speakers, whether that be through remnants of Norse in England, or through relations across the North Sea.

### 5.3 How to Account for Variation

Suggesting that the mappings are sporadic or word specific would go against the nature of the mappings in being regular and learnable. This means that to account for the variation found in ME and ModE, extra mechanisms would need to be posited. However, these mechanisms through which they were introduced are unknown. RL agentivity as the source for these stops is a similar proposal to what is traditionally thought to have happened through ON influence on OE. ON speakers shifting to OE brought with them some unpalatalized stops, and loanwords containing unpalatalized stops were welcomed into the OE language through both SL and RL agentivity. Two ways in which ME could have gained unpalatalized stops in E&F's proposal would be through either SL agentivity or through RL agentivity.

SL agentivity has a higher likelihood of impacting the phonology of a language, and yet when this transfer should have occurred, the OE population would have already switched to AN. The OE speakers could not have brought with them these unpalatalized stops since their own phonology did not have them. Since ME under this proposal is a form of relexified Norse, it could be posited that the Norse speakers imposed their L1 habits onto the newly formed ME as they learnt the new phonology transferred by the OE speakers. This would not go against the idea that ME phonology is a continuation of OE, since languages can be genetically related and still incorporate borrowed features (Campbell & Poser, 2008). However, this seems like a specific part of the language to impose L1 habits onto. Phonological transfer is most common in SL agentivity, but one would expect an influence over more aspects of the phonology. What is seen is phonological transfer limited to unpalatalized stops in some contexts but not in other contexts, leaving doublets, some unpalatalized stops, and some palatalized stops. While transfer is not particularly regular in its outcome, to restrict it to such a domain appears to postulate some modularity in transfer that is unlikely.

As a result of these problems, the most likely proposal is that the unpalatalized forms were borrowed through RL agentivity from NGmc after the mappings were complete, rather than in the creation of AN. This would explain the apparent sporadic nature of the remaining words, in the sense that there are both doublets and single surviving variants without a particular pattern under which to accumulate them. The question is therefore when, and why.

ON did not survive in England, as is evidenced by the lack of written texts in ON after the written tradition restarted in 1150. The chance of borrowing from remaining ON in England after ME had been created though the relexification of ON is therefore small. The other option is that this variant was transferred through language contact across the Norse Sea. This is possible, but it is unknown when the borrowing happened, which groups initiated it, and how the contact occurred. Trade would have put the new ME language in contact with NGmc, but was this contact frequent enough and did it involve enough bilinguals to propose RL agentivity?

Regardless, E&F cannot simply invoke borrowing as an explanation whenever their mappings do not produce the intended outcome, thereby weakening their theory. Borrowing is not a magical process that solves any anomalies. Their proposal appears to violate Occam's Razor (unnecessary multiplication of rules or entities is to be avoided) due to the operation of the mappings, and then sporadic borrowing via some unspecified mechanism rather than only borrowing and transfer through SL and RL agentivity.

An example of palatalization is from the *ditch/dyke* alternation in modern English. Both words come from PIE *\*dheighno*, which gave rise to PGmc *\*dika* (Kroonen 2009, s.v. *dika*-). This *\*dika* then becomes ON *diki*, where the velar stop is maintained as expected. In OE it becomes *dic*, with a palatalized consonant and loss the final vowel, whereas the rest remains unchanged. To map between the ON and OE forms is simple; /k/ becomes /tʃ/ due to the front vowel. This leaves the question of how to account for the variance in the palatalized versus non-palatalized consonants in the modern doublets *ditch* and *dyke*. The difference is typically associated with loans, where *dyke* is a loan from ON, in order to explain the maintained velar. In E&F's hypothesis, the only options are to posit a rule that applied the mappings sporadically, leaving some words changed and some untouched, but also some words changed and unchanged simultaneously in order to cause the lexical split, or to say that these words are borrowed. To say that all words with an unpalatalized /k/ are borrowed is plausible, since this is the approach taken in the traditional framework. The difference is that the traditional framework offers a scenario in which this would happen and offers the agentivity and directionality needed to establish the doublets. E&F offer no such explanation. All words with a /k/ before a front vowel in ModE cannot be borrowed in their framework. E&F are unable to account for who it was borrowed from, when it was borrowed, why it was borrowed, or where it was borrowed.

## 5.4 Summary of Palatalization

To summarise, the mappings viewed in isolation are deceptively simple, but when faced with the complicated reality of the ME and ModE phonologies, mappings do not work without positing some extra mechanisms through which the unpalatalized variants were restored or transferred in some contexts but not others.

## 6 Conclusion

Now that the complexity of potential mappings has been made clear, it is necessary to evaluate the results of the transformation rules and return to the notion of mappings within our framework of language contact and phylogenetic relation. Then, the notion of mappings generally will be looked at, and finally the problems associated with implementing the mappings in a second language acquisition context will be evaluated.

Looking at the mappings from the study of gemination, Holtzman's Law and cluster simplification, the idea of spontaneous unconditioned epenthesis or dissimilation, complicates E&F's proposal. Singletons do not become geminates in a single definable context, and the idea of teleology and forms returning to their historical states without a conditioning environment is unlikely at best. At first sight, the mappings between the palatalized OE variants and the unpalatalized ON variants was straightforward, but when considering lexical doublets and the large amount of ModE words which have the unpalatalized variants, mappings do not seem sufficient. Extra transfer must have occurred and yet the time, location, and reason of these borrowings are not explained. Mappings cannot be executed and then undone selectively, also causing this mapping to fall apart. Even the small selection of words and sound changes investigated provide evidence that mappings are not a plausible reparation strategy to make up for E&F's shortcomings in not abiding to a theory of language contact or phylogenetic relationship.

The exploration of the theory of language contact of Van Coetsem (1988) and Winford (2003) concluded that a shift from OE to AN should have resulted in features transferring in different domains, since contact induced change is unlikely to be modular, meaning that there should be phonological, lexical, and syntactic transfer of OE into AN to create ME. However, what E&F propose is an entirely

maintained ON syntax, and an entirely maintained OE phonology, leading them to conclude that ME is of NGmc origin due to the superior diagnostic powers of syntax, and also seemingly creating modular aspects of the ME language. How this entirely OE phonology was transferred to AN is unclear, since even under SL agentivity, where the most radical transfer of syntax and phonology occur, the theories do not predict transfer of the entire phonology. No clues can be found in Van Coetsem's theory of language contact to explain how these mappings should function. This led to the development of the mappings as a possible solution to this problem which, as has been demonstrated, is implausible and cognitively demanding at best, impossible at worst.

The traditional approach, in stark contrast, does fit well with knowledge of language contact scenarios. With OE as the RL and ON as the SL, there is no requirement of such mapping, and fits with what is known in terms of SL agentivity in lexical loans and RL agentivity in shift. There is influence in the lexicon, the phonology, and the syntax, all to a reasonably minor level, and OE is maintained while ME is recognisable as descended from it. The phonological evidence fits the traditional approach more closely.

Similarly, in failing to use regular sound correspondences and phonology in their application of the comparative method, E&F reject the accepted way of creating the most likely genetic relationships. It is important to their argument that they do this, because using regular sound laws would yield only one conclusion; ME is definitely descended from OE. By introducing the idea of sound correspondences into their hypothesis, the only way that it could still be considered is through mappings. These mappings would devastate the assumptions of the comparative method, since an entirely borrowed phonology could result in altogether different phylogenetic relationships.

The mappings were necessary to make E&F's claim line up with a theoretical foundation, but their lack of success only goes to show that E&F have no phonological basis for what they are claiming. The problems extend not only to the failure of the mappings themselves, but to the failure of mappings altogether. There is no indication as to when these rules developed. This leaves the question of whether they formed when the first loanwords from OE transferred to ON, or later, when the OE speaking population shifted to the new AN. The latter seems more likely due to the greater power of SL agentivity in contact induced change.

Finally, the question of what kind of cognitive mechanisms would account for these rules cannot be answered. Whether they have any kind of psychological reality, or form a more abstract knowledge, the sheer quantity of rules and their exceptions must not be simple cognitively, and so would be difficult to account for via psycholinguistic mechanisms. Theories of second language phonological acquisition, or second dialect acquisition, may be able to shed some more light on the topic in terms of how second language learners map their L1 phonemes onto their new L2, but even mappings like this are unlikely to account for the replacement of an entire phonological system. It would also be interesting to see a large-scale corpora study of the application of the mappings proposed in this dissertation, to quantitatively determine the proportion of the lexicon correctly rendered by the transformation rules.

E&F's solution brings up a lot more questions than it answers, and their hypothesis is weakened, or disproven, by deeper consideration of the phonological evidence available. While it is always interesting to see linguists challenging the traditional assumptions of historical linguistics, in this case significantly more evidence and research would be needed to justify diverging from the norms established.

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Nina Haket graduated from the University of Cambridge in 2020. She is currently studying at Universiteit Leiden for her Research Master's in Linguistics. In addition to this, she is participating in the project *When Philosophers Meet Linguists: The Conceptual Engineering Project*, working on collaborating with philosophy to bring a linguistic insight into the issues surrounding conceptual engineering. Her research interests continue to lie in historical phonology, especially in Germanic languages, as well as contact linguistics, and hopes to continue in these areas in the future.