

A Complementary Relation between Historical Data and Theory in Phonology

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Choi, Jaehyeok. "A Complementary Relation between Historical Data and Theory in Phonology" *Studies in English Language & Literature*. 44.2 (2018): 175-191. In this study, I have attempted to show that there is a strong relationship between theory and history. First of all, it is represented that phonological theories, which have been developed in synchronic linguistics, can contribute to the understanding of a historical sound change. To put it in another way, we can also argue that historical data can deliver us a crucial hint for deciding on which theory is more useful or not when understanding our language. The second goal of this research is to find out what 'Theoretical historical phonology' is. To answer this question, I have shown different types of theoretical approaches and historical data from Old and Middle English. Furthermore, I have tried to combine theory with historical data to see how phonological frameworks effectively deal with diachronic data. Ultimately, I have tried to figure out the role of diachronic phonology in the field of linguistics. (Mokpo National University)

Key Words: Diachrony, Rule-based phonology, Optimality Theory, Early English, Historical Phonology

I. Introduction

The main point of the current study is to explain how a theory can work with diachronic data effectively. To do this job, there are two relevant questions to be examined. The first one is "What is the locus of phonological change?", and the other "What is theoretical historical phonology?" These issues are closely related

with each other from a (diachronically) linguistic point of view. In this paper, I aim to represent some recent argumentations surrounding the latter question: “What is theoretical historical phonology?” As far as I know, this kind of research question has not yet been considered in detail so far. In conjunction with the research topic in this paper, the issue of ‘what is the locus of phonological change’ is also need to be investigated because this theme can possibly give us a partial answer for ‘What is ‘Theoretical Historical Phonology’’. This will be done in a consecutive research in the future.

II. Theoretical Historical Phonology: What is it?

In this section, a complementary relation between theory and (synchronic and diachronic) data is illustrated, by showing a relatively recent argumentation surrounding the question, ‘What is Theoretical Historical Phonology?’. Basically, linguistic theory has been developed in order to offer a better understanding of both linguistic changes (diachronically) and alternations (synchronically). A number of phonological theories have emerged as a tool to deal with sound system and change of human languages for the last few decades. In this regard, the next subsection titled ‘Theory of Phonology’ will serves as a starting point for a discussion of phonological theory and its essential role of data analysis.

2.1 Theory of Phonology

It has generally been presented that two different types of theoretical approaches are addressed when we deal with phonological processes: rule-based approach and constraint-based approach. Many phonologists have touched on this issue in the previous literature, but here I take this topic again since it helps us understand

topics of this current section. As seen in previous studies, each theoretical approach has its own unique system handling various phonological processes. In this subsection, these theoretical mechanisms are partly illustrated below, and by doing this, we can see how theories work with data. What is more, we try to understand how they differently deal with data and what theoretical analysis mean in terms of language change.

Rule-based theoretical approaches have been developed since Chomsky & Halle (1968) launched the early generative phonology. Since then, many linguists have proposed different versions of generative phonological theories on the basis of *The Sound Pattern of English* (1968). In general, rule-based analyses build a set of rules and rule ordering, and derive a surface form from an underlying form by applying it to a (rule-based) derivational modelling. In this section, Lexical Phonology (Kiparsky, 1982; Mohanan, 1982) is exemplified in order to show how a rule-based model works well on linguistic data. In Lexical Phonology (henceforth, LP), some phonological rules are inviolable and can be applied either cyclically or non-cyclically depending on their cyclic domains. In this way, derivational mechanism and cyclic/non-cyclic rules in LP can give us a hint for how a certain set of rules can act as a decisive role in phonological processes. A relevant example is given below in (1).

(1) An example of LP with English word ‘divinity’ (Mohanani 1986)

Lexical module

[dri:ni]	[tri]	Underlying Representation
[dri:ni]	—	Stress Assignment
[[dri:ni] [tri]]		Affixation
[[dri:ni] [tri]]		Trisyllabic Shortening
[dri:ni:tri]		Lexical Representation

Postlexical module

[dri:ni:tri]	Flapping
[dri:ni:tri]	Phonetic Representation

In (1) above, a set of rules appear and are ordered, and applied to data in consecutive order. Interestingly, there are two cycles in this derivation: the lexical module and the postlexical module in (1). It simply shows that phonological rules in LP are divided into two levels, namely one only available in lexical level and the other can be active after the end of derivation in lexical level (postlexical division). As shown in (1) above, flapping that always occurs in intervocalic position can only affects words when all lexical rules are applied to these items. At this point, we will consider no further details of lexical and postlexical levels of derivation in LP because this is beyond the goal of current thesis, and we thus leave this LP-related matter in this subsection although it certainly demonstrates how rules work on linguistic data through derivation.¹

Let me consider constraint-based approach. It is Optimality Theory(Prince and Smolensky 1993/2004) that represents a typical constraint-based framework in phonological literature. In short, Optimality Theory(henceforth, OT) is composed of a set of universal and violable constraints. Constraints make a specific hierarchical ranking depending on languages and show conflicting nature each other. Ultimately, this mechanism is essential to select an optimal output among possible input candidates. For instance, we can compare examples of voicing contrast in Dutch and English(Kager 1999:14-17). Dutch does not have voicing contrast in final obstruents while English does. Let me illustrate how OT deals with two opposing phenomena by employing relevant constraints which are presented in (2).

- (2) Voice contrast in final position in Dutch and English (Kager 1999: 14)
- a. *VOICED-CODA: Obstruents must not be voiced in coda position
 - b. IDENT-IO[voice]: The specification for the feature [voice] of an input segment must be preserved in its output correspondent.

¹ See Mohanan (1986) and Kiparsky (1982) for more details in LP.

With these two constraints, voice contrast in final position in Dutch and English is phonologically expressed below in terms of different constraint rankings.

(3) Voicing contrast in Dutch and English within OT framework

a. Neutralization of voice contrast of final position in Dutch

/bed/	*VOICED-CODA	IDENT-IO[voice]
a. [bet]		*
b. [bed]	*!	

b. Preservation of voice contrast of final position in English

/bed/	IDENT-IO[voice]	*VOICED-CODA
a. [bet]	*!	
b. [bed]		*

The essential point we need to draw from those tableaux shown in (3) is that languages differ in their ranking of constraints as indicated above. Therefore, in Dutch, the output form [bet] is selected with respect to its constraint ranking (*VOICED-CODA IDENT-IO[voice]) among potential candidates. On the other hand, in English, voicing contrast in final obstruents is preserved by the reverse ranking against Dutch one. In fact, *VOICED-CODA ranks lower than IDENT-IO[voice] in this language. Thus, the candidate [bed] is chosen as the optimal form of the input /bed/. Consequently, Dutch and English have separate segment types in final consonant position by different constraint ranking and interaction respectively.

Two different theoretical models such as a rule-based approach and a constraint-based one were illustrated in this subsection in order to show how a theory deal with phonological processes in their own ways. The following is the discussion of the role of diachronic data in phonological theory. After considering a theory and data in 2.1 and 2.2 respectively, we then discuss the issue of how theoretical phonology can inform historical data. This will be touched on in section 3 below.

2.2 Historical data in Phonological change

On the whole, there have been two traditions regarding linguistic fields: synchronic approach vs. diachronic approach. In this subsection, I mainly focus on what evidence there is for the diachronic approach and how diachronic data can be linked with synchronic phonological theories. A fundamental question arises when diachrony is concerned in terms of linguistic discussion: how do linguists take advantage of historical data? According to McMahon (1994: 10), “if we want to understand a language better, we need to understand the change of that language.” This statement entails some critical points to all subcategories of linguistics. For instance, in phonology, diachronic sound change and theoretical linguistic frameworks are subject to cooperation with each other in order to capture the nature of language. The development of /h/ in the history of English is briefly demonstrated as one example supporting McMahon's statement above.

2.2.1 /h/-deletion in Old English

Old English(henceforth, OE) data in (4) which often yield important changes in OE phonemic system are demonstrated here.

- (4) Allophonic distribution of /h/ in OE (Hogg 1992: §5)
- a. [h]: *heard* ‘hard’, *behindan* ‘behind’
 - b. [x]: *seah* ‘he saw’, *feohtan* ‘to fight’
 - c. [ç]: *miht* ‘might’, *ehta* ‘eight’

In (4) above, the three phonetic sounds of /h/ in OE have undergone different phonological changes throughout the history of English. In addition, the deletion pattern at each period differs in terms of their phonological environments. For instance, the /h/ has underwent deletion in its history. The study of deletion patterns gives an idea of phonological structure in the history of English, and in present-day

English as well.

With respect to /h/-deletion in the history of English, Wright & Wright (1925) show different phonological environments for deletion pattern in OE as shown in (5).

(5) OE /h/-deletion (Wright & Wright 1925: §329)

- a. Between a vowel and a following liquid or nasal

ēorod < **ēohrād* ‘troop’

hēla < **hōhila* ‘heel’

wōne < *wōhne* ‘perverse’ (masculine, accusative, singular) / compare *wōh* (nominative)

- b. Between a liquid and a following vowel

ēoles ‘elk’ (singular, genitive) / compare *eolh* ‘elk’

wēales ‘foreigner’ (singular, genitive) / compare *wealh* ‘foreigner’

- c. Between vowels

flēan < **fleahan* ‘to flay’

sēon < **sehan* ‘to strain’

- d. Between sonorant consonants

furlang furlong < *furh* ‘furrow’ + *lang* ‘long’

As shown in (5), /h/-deletion takes place in four different environments where these appear to be the site between sonorant sounds. However, the deletion of /h/ does not occur in the following positions as described in (6) below.

(6) No /h/-deletion in OE (Wright & Wright 1925: §325-328, Campbell 1959: §465)

- a. Word-initial position

hūs ‘house’, *habban* ‘to have’, *hamor* ‘hammer’, *hēafod* ‘head’, *heard* ‘hard’, *heorte* ‘heart’, *hīeran* ‘to hear’, *hungor* ‘hunger’, *hlaf* ‘loaf’, *hnīgan* ‘to bend down’

b. Word-final position

hēah ‘high’, *nēah* ‘near’, *seah* ‘he saw’, *Þurh* ‘through’, *feoh* ‘cattle, property’,
rūh ‘rough’, *scōh* ‘shoe’, *tōh* ‘tough’, *wōh* ‘preserve, bad’, *wealh* ‘foreigner’

c. Before voiceless consonants

brōhte ‘he brought’, *dohtor* ‘daughter’, *eahta* ‘eight’, *bohte* ‘he bought’, *cniht*
‘boy’, *feohtan* ‘to fight’, *hleahtr* ‘laughter’, *lēoht* ‘a light’, *meahte* ‘he might’,
sōhte ‘he sought’

d. In gemination

crohha ‘crock’, *heneahhe* ‘sufficiently’, *pohha* ‘pocket’, *tiohhian* ‘to think,
consider’

e. Root-initial stressed syllables

behindan ‘behind’, *behéaldan* ‘hold’, *gehélpán* ‘help’, *tohéald* ‘leaning’, *tohrēosan*
‘fall’, *tohwéorfan* ‘separate’

As shown in (6), /h/ is not deleted in those environments. When comparing data in (5) to those in (6), the phonological environments of both are clearly distinct. Namely, /h/-deletion phenomenon can only take place when it resides in between sonorant sounds. However, this is not the end of story regarding /h/-deletion in OE when OE compounds are considered. In other words, OE compounds do not undergo deletion in the following environments where /h/ deletion is however expected.

(7) No /h/-deletion in compounds

a. Between vowels

hēah-ealdor ‘a chief ruler’, *nēah-ēaland* ‘a neighbouring island’, *hēah-engel* ‘an
archangel’

b. Between a sonorant consonant and a vowel

Þurh-etan ‘to eat through’, *Þurh-irnan* ‘to run through’, *dur-here* ‘folding door’

c. Between a vowel and a sonorant consonant

hēah-rodor ‘the loft sky’, *nēah-munt* ‘a neighbouring mountain’, *nēah-weat* ‘a piece of water that is near’

d. Between two sonorant consonants

Durh-ræsan ‘to run through’, *furh-wudu* ‘a fir-tree’

At this point, I briefly consider the interaction between phonological theory and historical data in OE. The presence of /h/ in (7) cannot be accounted for by environmental motivations (e.g. between sonorant sounds) in that /h/ acts differently in (5) and (7) respectively even though it seemingly appears at the same position. We can notice that some (morpho)-phonological effect (e.g. blocking effect at morpheme boundary) plays a role in the case of (7) and this inconsistency between two examples shown in (5) and (7) is accounted for within a phonological theory. For example, Kim (2005) provides a prosodic template analysis of /h/-deletion phenomenon. According to him, /h/-deletion can be regarded as a phenomenon controlled by phonological conditions as well as morphological ones. Kim (2005) argues that /h/ is only deleted outside the template composed of the two-mora trochaic foot and subsequently makes a distinction between compounds and non-compounds in terms of this template framework. For instance, this framework accounts for the presence of /h/ in the second element of compounds such as *nē ahēaland* shown in (8).

(8) Template-based analysis of /h/-deletion in OE (Kim 2005: 433)

nēahēaland ‘a neighbouring island’

↓

[nēa].[heal]and

In Kim's (2005) analysis, /h/ is not deleted since compounds in (8) consist of two templates and /h/ is within the second template. In this example, historical data is theoretically expressed in phonology. More importantly, this kind of collaboration between theory and history gives us a better understanding of our language and even

its various aspects in present time. Further data will be followed with respect to /h/-deletion in the history of English.

2.2.2 /h/-deletion in Middle English

/h/-deletion in Middle English(henceforth, ME) has taken place several times at different stages. First of all, /h/ is deleted in the onset of stressed syllables when followed by another consonant (e.g. /hn-/ , /hl-/ , /hr-/ , and /hw-/) in late OE and early ME. Before this happens, /h/ became weak phonologically in preconsonantal position where those clusters such as /hn-/ , /hl-/ , /hr-/ , and /hw-/ no longer alliterate with each other in late OE (Brunner 1965: §217). Secondly, about 12th century, /h/ is lost in prevocalic position in unstressed monosyllabic words. In particular, this affects forms of the personal pronoun and the neutral form *hit* which is attested without <h> as early as the Ormmulum(Luick, 1921-40:§716.1; Jordan, 1974:§195). Finally, in the 14th and 15th centuries, /h/ is deleted in the coda of stressed syllables. Lutz(1985) states that this development is by no means consistent because different motivations take part in /h/-deletion in these periods. For instance, the influence of the phonological environment(e.g. coda as a weak position) plays a role in /h/-deletion, and analogical change and perhaps interference between dialects are also thought of as possible conditions. For instance, it is often observed(Luick, 1921-40:§704; Brunner, 1960:§378; Wells, 1982:228-230) that /h/ is lost to a much greater extent in the southern dialects and in the standard language than it did in the northern dialects from a dialectal point of view.

Taking /h/-deletion from OE and ME into consideration, the phonological history of /h/ has attracted attention in the field of historical phonology (e.g. Lass & Anderson, 1975; Suzuki, 1994; and among others). In other words, the study of deletion patterns within the framework of current phonological theories gives an idea of phonological structure in both early stages of English and in Present-day English. In the next section, relevant issues regarding this cooperation between theory and historical data in phonology will be discussed more in detail.

III. The Consequences of Bringing Theory and History Together

There are a number of relevant issues regarding the consequences of bringing together theory and history. One issue, for example, is to characterize what it is that theoretical historical phonologists do. The discussions in 2.2 give us a partial answer to that question and more details follow here. As presented in 2.1 above, there exist two different approaches (rule-based and constraint-based approaches) available to phonological processes, and these can also be applied to diachronic sound changes. In doing so, it would provide us one way of answering the question, 'how theoretical phonology can inform historical studies?'²

When diachronic change is considered in the field of linguistics, the question like 'how are diachronic changes characterized by theoretical linguistics?' may have often been followed. Generative frameworks suggest that language change can be treated as a relationship between different grammars. For example, Postal (1968) claims that it is not a sound itself but a grammar that undergoes certain kinds of changes. In line with this, one may argue that language change should be excluded from the aim of linguistic theory. However, there are good reasons to believe that sound change should be dealt with by phonological theory. For example, McMahon (2000a: 232) asserts that 'sound change' and 'synchronic phonological process' widely share their spectrum of interests, such as vowel shifts, metathesis, and insertion and deletion of segmental material. In addition, she also states that 'there is a practical problem of distinguishing of language change in progress' (McMahon 2000a: 232).

The discussion between the application of phonological theory and the explanation of historical sound change will give us a better understanding of the phenomena involved, and it also suggests that this is an area for further fruitful investigation to phonology in general (Holt 2003: 2). In relation to this point mentioned above,

² This question may be transferred to 'how historical studies can inform phonological theory.' The crucial point from both questions is probably the same when these are considered within the framework of phonological theory.

Hartman (1974: 123) gives us an important summary regarding the issue of historical change and phonological theory.

Kiparsky (1965) and King (1969) - with the impetus of Halle (1962) - have given us a theory of language change that differs from earlier theories in that it implies that language history is two-dimensional: that is, a historical grammar is not simply a list of sound-change laws in chronological order, but a diachronic series of synchronic grammars. Each synchronic grammar consists of a list of ordered rules, and historical changes include not only rule addition, but also rule loss, rule reordering, rule simplification, and restructuring of underlying forms. It is these additional types of change - principally rule reordering and simplification - that make phonological history different from synchronic phonology and thus interesting in its own right. (Hartman 1974: 123)

In rule-based theories, language change can be defined as a set of modifications of rule system which are described as rule addition, rule loss, reordering, inversion, and restructuring. There are attested examples for individual cases, but one instance of restructuring which I am most interested in is illustrated in the following.

In the process of language acquisition, misformulation of adult's grammar can occur in a child's grammar. In fact, children might not recognise a rule at an earlier age. For instance, adults could contrast with /hw/ and /w/ in *whales* and *Wales* respectively in English, and this is consistent in Modern English such as Scottish English. On the contrary, in other dialects of English such as Southern British English, there is a gradual merge between /hw/ and /w/, creating new rule (e.g. /hw/ → /w/ in onset position) in their adult grammar (McMahon 1994: 42). Therefore, children in this dialect primarily hear /w/ in language development process. In other words, they learn language without previous history. Consequently, it leads children to a change of underlying representation between generations and further simplification of rule systems. This is one example of language change by restructuring in rule-based approach.

On the other hand, constraint-based theory has built a different mechanism from

rule-based approach when diachronic data are analysed. For example, OT requires only surface evidence to meet the need for the proper grammar. Returning to the main issue, OT also deals with historical data to offer a better understanding of language change, even though its application to them may be rather different from rule-based approaches. According to Holt (2003), among various strategies in the OT framework, lexicon optimization is a one good example to illustrate how OT handles historical change. Under lexicon optimization, the least violated candidate among underlying forms might be selected by the learner in terms of constraint violations because this mechanism can urge the learner to minimize the violation of constraint, especially faithfulness at this point. In other words, the input which is the closest to the output form should be selected in OT.³ Some relevant examples are shown below.

Especially in child language acquisition, children hear an output form that differs from the underlying representation which they have already made. Subsequently, he/she will store that phonetic information in their mental representation. If it is persistently repeated, a hearer treats this new form as a lexicalizing form since it can play the least violated form selected by the learner in their lexicon. This process can be described as lexical optimization in respect of historical change. It actually violates the faithfulness constraint, but it is the way how children maximize the harmony of the grammar. Let me provide an example in German provided by Kiparsky (1965) regarding lexicon optimization. Final devoicing of obstruents in German is very well-known phonological process. In terms of language acquisition process, this rule is learned via observation of alternations of the type *bun[t]:bun[d]e*; however, words like *ab*, *ob*, *weg* (i.e., a[p], o[p], we[k]) never alternate, so their final segments will always surface as voiceless via devoicing rule in German. In the end, when children acquire their language, they may eliminate the

³ Inkelas (1995) presents that "Of all the possible underlying representations that could generate the attested phonetic form of a given morpheme, that particular underlying representation is chosen whose mapping to phonetic form incurs the fewest violations of highly ranked grammatical constraints."

specification [+voice] from the underlying representation of the final segment of these forms, causing restructuring in the lexicon (Kiparsky 1965: 17).

Another significant issue regarding OT and diachronic change is the reranking of constraints. What OT basically assumes is that an acquirer's phonetic input may lead to both reranking of constraints as well as to lexical restructuring via a principle of lexicon optimization discussed above. OT is composed of a set of constraints which are violable and inherent conflicting mechanism between them. In this environment, if a hearer gets an output from a speaker which does not match with ranked constraints, s/he has a tendency to change the ranking of them. This is because a hearer wants to maintain the grammaticality of what he/she has heard. In this way, constraint reranking can cause language change between generations.⁴

IV. Conclusion

I have considered various interesting topics in this paper. For example, I have discussed the close relation between theory and data, and considered what kind of role diachronic phonology can do. In addition, the opposite question was also raised: how can contemporary theories deal with historical data?

In this study, I have attempted to show that there is a strong relationship between theory and history. First of all, it is represented that phonological theories, which have been developed in synchronic linguistics, can contribute to the understanding of a historical sound change. To put it in another way, we can also argue that historical data can deliver us a crucial hint for deciding on which theory is more useful or not when understanding our language. In addition, I have discussed the basic issue of the field of theoretical historical phonology, by comparing two

⁴ In constraint-based approaches, historical changes can be handled with the reranking of constraints. Namely, language change can be interpreted as grammar change over time, so grammar change can also be explained by the reranking of constraints.

different arguments of sound change. Indeed, it gives us a comprehensive way of seeing what the problems are in the area of theoretical historical phonology, even while acknowledging that there are a number of substantial problems to be investigated in future studies.

The second goal of this research is to find out what ‘Theoretical historical phonology’ is. To answer this question, I have shown different types of theoretical approaches and historical data from Old and Middle English. Furthermore, I have tried to combine theory with historical data to see how phonological frameworks effectively deal with diachronic data. Ultimately, I have tried to figure out the role of diachronic phonology in the field of linguistics.

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