

หลักไวยากรณ์ในการกลั่นเสียงสัทศาสตร์ ในระดับประโยคภาษาอังกฤษ

Frederick Flynn

สาขาวิชาภาษาอังกฤษ คณะมนุษยศาสตร์และสังคมศาสตร์

มหาวิทยาลัยราชภัฏวไลยอลงกรณ์

บทคัดย่อ

ภาษาพูดและเขียนภาษาอังกฤษที่ต่างกันอย่างมากโดยเฉพาะจากการที่หยุดชะงักเสียงระหว่างวลีต่าง ๆ และลักษณะที่เกิดของเสียงกับเสียงที่ประสมกัน เพื่อที่จะกำหนดการเปล่งเสียงเดียวในคำต่าง ๆ เหล่านี้ได้กำหนดขึ้นมากับคำจำนวนมาก แต่อย่างไรก็ตามในการวิเคราะห์กฎการภาษาพูดภาษาอังกฤษทั้งที่พูดแบบอังกฤษและอเมริกันที่เป็นโครงสร้างภาษาพูดโดยได้ถูกค้นพบว่ามีส่วนทำให้การพูดมีความไหลลื่นและคล่องแคล่วตามที่มีกฎเกณฑ์เดียวกันการประสมคำจากสัทอักษรในระดับประโยค (ที่เปล่งเสียงพูด) ได้ถูกนำมาจัดคุณภาพให้เป็นกฎการออกเสียงเพื่อที่จะพัฒนาการสอนภาษาอังกฤษแก่ผู้เรียนต่างชาติโดยการใช้เครื่องมือที่เรียกว่าข้อควรระวังสัทอักษร ระดับประโยคนอกจากนี้กฎต่าง ๆ ที่ค้นพบยังสะท้อนให้เห็นถึงโครงสร้างภาษาพูดและอาจจะมีสาเหตุในส่วนที่มาจากข้อจำกัดทางกายภาพ เช่น ตำแหน่งของลิ้น ตำแหน่งของขากรรไกร และปัจจัยทางกายภาพอื่นที่เป็นสาเหตุกำหนดการเชื่อมต่อเสียงระหว่างสัทอักษรในขณะที่พูด

คำสำคัญ: ภาษาศาสตร์เชิงมานุษยวิทยา, ภาษาศาสตร์ประยุกต์, เสียงสัทศาสตร์, ภาษาศาสตร์คอมพิวเตอร์, ภาษา, การเรียนรู้, การรับรู้การออกเสียง, การรู้จำเสียง

Writing the Unwritten Grammar of Fluid English Pronunciation: Sentence-level Phonetic Blends in 2017 Spoken English

Frederick Flynn

English Program, Faculty of Social Sciences and Humanities

Ubon Ratchathani Rajabhat University, Thailand

Abstract

Spoken and written English diverge greatly, especially in regards to pauses between phrases and also in the manner in which words blend together to form single utterances, each of which can be composed of a great number of words. However, in analyzing English spoken in both the U.K. and U.S.A. a set of rules, a spoken grammar, were found to uniformly contribute to fluid and smooth speech. These sentence-level phonetic blends (utterances) are here quantified as Rules to enhance the teaching of English to foreign learners by using a tool called sentence-level phonetic awareness. Further, these rules reflect spoken grammar, and may be caused in part by physical constraints such as tongue position, jaw position and other physical factors that form transitions between phonemes while speaking.

Keywords; Anthropological linguistics, Applied linguistics, Articulatory phonetics, Computational linguistics, ESL, language, Learning, Phonemic awareness, Phonetic awareness, TESOL

1. Introduction

This research began as a study to ascertain cues that may exist for coding and decoding utterances, to teach fluid speech to L2 learners by expanding on the word-level methods called phonemic and phonological awareness through extending such paradigms to utterance and sentence level pronunciation, and is qualitative. The effectiveness of phonemic and phonological awareness are well documented as tools to teach reading to young learners, (Bradley and Bryant, 1983), (Bryant, P.E, 1993), (Ehri, L.C., 1987), and to correct reading problems (Iversen, S., & Tunmer, W. E., 1993), and to correct speech impediments (Thompson, M., 1991). These techniques focus on the word-level awareness of each individual sound in words, phonemes, and either add or remove sounds to teach an awareness of the individual elements in a given word. For example, the word ‘tray’ becomes the word ‘ray’ after the initial /t/ sound is removed. If the resulting initial /r/ is subsequently removed, what is left is the name of the first letter of the alphabet. The original hypothesis of this research paper was this: if an awareness of how individual sounds compose words is beneficial in many ways, how could such a technique be extended to utterances, sentence level phonetic blends, to teach listening and speaking to L2 learners? Many researchers (Morais, J., & Kolinsky, R., 1995), (Read, C., Zhang, Y., Nie, H., & Ding, B., 1986) and (Olson, R. K., Wise, B., Ring, J., & Johnson, M., 1997) all strongly suggest this is the case. (Wood, 2003) stated in his research “students needed explicit instruction to develop their phonemic awareness before they could start segmenting and blending words successfully”. How might this then be important in speaking fluently, blending words at the utterance level?

An utterance is an uninterrupted flow of sounds at the phrasal and sentence level, as in the sentence “I am a man”. Each word phonetically blends with the next word to form a fluid encoded speech pattern. The listener then decodes the utterance to a comprehensible statement. It became necessary to find research that was

examining such ambiguations, called word boundaries, and is the focus of a great deal of current research in Computational Linguistics. There are three currently held theories of decoding such word boundaries. One is Segmentation, where the listener separates each word and then evaluates the complete utterance for comprehension (Morais, et al, 1986). The second theory is Prosodic, and examines how most key words in an utterance are emphasized with audio stresses and other prosodic elements (R. Delmont, 2000). The third theory can be called Decoding by Osmosis, and states that in the course of development that children simply observe and imitate the way such utterances are produced and perceived (Morais, J., Cary, L., Alegria, J., & Bertelson, P., 1979). This is a matter of heated debate among Computational Linguists, and many researchers remark that all three approaches are not mutually exclusive. All these Computational Linguistic approaches strictly are concerned with decoding, listening, whereas this research paper is concerned with both decoding, listening, and encoding, speaking. As Chomsky stated in his theory of Generative Grammar, all grammars must be rules-based (Chomsky, 1965). This research then evolved to ascertain a set of rules that differentiate the types of word boundary cues that may exist.

Defining and teaching word boundary recognition to L2 learners should be of great interest and concern to instructors. While students often ask native speakers to speak slowly, it is quite probably not the speed they desire, but better-defined word boundaries. They have not learned the decoding process in any high level cognitive processes and are impaired by having been taught single word pronunciations. For learners exposed to English through immersion or an English home environment, this process, slippery to grasp without definition, needs to be defined for teaching, an aspect of L2 instruction that has been largely minimized. Few institutions have a class in L2 pronunciation. Using this set of rules in a learning environment to ascertain if such instruction has value will be the second stage of research, and quantitative.

2. Methodology

Materials were deliberately chosen so that other researchers could access the data without encumbrances. As such, public speeches from prominent figures were analyzed. These speeches also were chosen because written transcripts of the speeches are also readily available, which is also important, so that the audio could be played back at variable speeds with a visual oscilloscope/meter and the written transcripts could be annotated with markings to show where such blends occurred. Then the instances were compared to each other find where identical instances occurred elsewhere in the material being examined. Then the characteristics of those of those individual instances were cross examined to determine a set of rules and numbered. The instances were then identified as rules, numbered in the sequence in which they were discovered, and noted in the data as superscript numeric markings between such blended words. Numbering is completely subjective, especially since the instances may occur anywhere in an utterance. Please note that audio freeware was used so that the results could be replicated by any other researcher, again without encumbrances.

Initially a selection had to be made of what publically available material would be included in the study. The selections had to meet several criteria. One, it seemed highly important to be able to compare audio recordings and transcripts of material from both the United Kingdom and the United States, being the two most populous native speaking English countries. This also necessitated using recorded and written speech that was widely available, not only for peer review but also for further study by any concerned, and also be in the public record. Two, the recorded material needed to be sourced from speakers who were well-documented in the public domain, the final decision being made to use speeches from Her Royal Majesty the Queen of England and Northern Ireland, being Sections 3.1 and 3.2, and one interview and a speech from President Donald Trump, being sections 3.3 and 3.4, respectively. Another important part of the criteria was that word counts needed to be approximately

equal from both nationals for the samples compared, as there was likely to be a direct relationship between word counts and sentence-level phonetic blends, if such blends occurred. Please note that the sample size is not the number of speakers whose speech patterns were being analyzed, but the number of words spoken, especially in light of the findings that showed the same rules being applied in the speeches of both speakers. In this context the sample word count volume is 2,410.

Next, transcripts were obtained, and each small section or sentence was issued line numbers that are posted at the beginning of each section. Then each section of lines was marked with beginning and ending audio times, time-stamped, and which are marked in brackets at the end of each section, with all intervals rounded to the nearest second. These time-stamped sections were then analyzed for uninterrupted utterances. Please note that partial speeches from Section 3.1 and 3.2, both from Her Majesty, were combined to closely match the word count of the interview with President Trump in Section 3.3. Further, the word counts of Sections 3.1, 3.2 and 3.3, were also compared to Section 3.4, being President Trump's speech to the Arab American League, and which word count is close to the total word counts of Sections 3.1, 3.2 and 3.3.

Finally, open source audio software was used to identify utterances. The utterances were compared for end position phonemes, digraphs, trigraphs and diphthongs of a given word and the initial position of phonemes, digraphs, trigraphs and diphthongs of the next word in the utterance, and the rules emerged from the data, each instance being where two words were part of an uninterrupted utterance and shared characteristics with similar occurrences. Sections were marked with rule numbers in text boxes above the word pairs, and then instances were tallied using word processing software to obtain numeric counts. The rules were then compared, and tabulated, with the continuous independent variable being a pause in speech, where sound volume was at zero percent for a perceptible duration, and where no such blending could occur.

3. Results

3.1 Thirteen rules of Sentence-Level Phonetic blends

No instances were found where an utterance exhibited a rule in one speaker that did not exist in the speech patterns of the other, making the findings empirical rather than subjective, and so the term to used describe each similar sentence-level phonetic blend herein was designated a rule. These rules overlap and concatenate, which is to say many can be active in a single sentence, and can profoundly influence the divisions of phonemes that result in parts of some words being spoken with parts of other words as utterances. Please note that the six consonants with the greatest frequency in English, in consecutive order of appearance being d, h, n, r, s, and t each have been cursorily highlighted in the rules below, and are according to well-established tables of frequency of occurrence, one being (<https://en.oxforddictionaries.com/explore/which-letters-are-used-most>).

Rule 01

The first rule for utterance level phonetic blends occurs when the last phoneme in a word and the first phoneme in the next word, if joined, would create an established blend that already exists at the word level in English. Word-level phonetic blends separated by spaces between written words become un-bifurcated word joins when spoken. Examples of word level blends in the following utterances from the research include /tw/ as in *twitch*, *twice* and *twitter*, and /sw/ as in *swoon*, *switch* and *swell*. An example of rule 01 from the Queen's Speech to the New Government (/tw/): {Line 11} "My government⁰¹ will seek to maintain a deep and special partnership with European allies" {23:59-24:24}. An example of rule 01 in President Trump's speech to the Muslim World (/sw/): {Line 68} "the forces that terrorism | brings⁰¹ with it | every single time". {07:54-08:23}.

A list of consonant blends is quite lengthy; however, here is a short list of common consonant blends, herein referred to as word-level blends for differentiation: /bl/, /dw/, /tw/, /cl/, /fl/, /gl/, /pl/, /sl/, /br/, /cr/, /dr/, /fr/, /gr/, /pr/, /tr/, /sc/, /sk/, /sm/, /sn/, /sp/, /st/, and /sw/. Please note in Her Majesty's speech to the New Government, she repeats the phrase "My government will" (a/tw/ sentence-level phonetic blend) thirteen times.

Rule 02

Rule for duplicate consonants at the final position of a first word and the first position of a second word. The second rule for phonetic blends is this: if a word ends with a consonant sound, and the next word begins with the same consonant sound, then the consonant sound is only pronounced once, and is sometimes pronounced as an elongated phoneme that has a longer than normal duration. An example of rule 02 from the Queen's Speech to the New Government: {Line 13} "implement a|n independent⁰² trade policy, and support will be given to help British businesses export⁰² to" {23:59-24:24}. An example of rule 02 in President Trump's speech to the Muslim World: {Line 02} "magnificent Kingdom | of Saudi Arabia | for hosting | today's⁰² summit. I am honored |" {00:01-00:48}.

Some consonants are uttered in the short singular, as are all plosives (being unvoiced /p/, /t/, and /k/, or voiced, like /b/, /d/, and /g/. Two exceptions are /r/ and /s/. An example of the /r/ elongated phoneme from the Queen's speech is {Line 27} "the skills they need for the high-skilled, high-wage jobs of the future, including through a major⁰² reform of " {25:25-25:48}. The letter /s/ also becomes elongated, as in Trump's speech to the Muslim world: {Line 43} "that's⁰² standard political stuff. {03:10-03:23}.

One relevant transitional phoneme here, where one word ends with a sound and the first sound of the next word is blended with it, is if a word ends with /v/ and the next word begins with /f/ (or vice versa) then the words, blend (/v/ being a voiced /f/). One example from Trump’s speech to the Muslim world is: {Line 09} “to deliver a message | of⁰² friendship | and hope | and love. | That is why I chose to make | my first,” {02:23–02:52}.

Rule 03

The third rule is for unreleased consonants, here focused on /d/. If a word ends with a consonant and the next word begins with a plosive consonant, the second consonant dominates and the first consonant is subordinate and unreleased, and spoken very softly. An example of rule 03 from the Queen’s Speech to the New Government: {Line 16} “generates the tax revenues needed⁰³ to invest in the National Health Service, schools, and other public” {24:25–24:59}. An example of rule 03 in President Trump’s speech to the Muslim World: {Line 14} “Let me now also extend⁰³ my deep and heartfelt | gratitude | to each and every,” {01:51–02:23}.

Rule 04

The fourth rule of utterance level pronunciation is that words that begin with the /h/ phoneme are usually pronounced with the /h/ spoken very softly when the word occurs after a word that ends in a consonant sound, and the two words blend. An example of rule 04 from the Queen’s Speech to the New Government: {Line 24} “deliver the next phase of⁰⁴ high-speed rail.” {24:58–25}. An example of rule 04 in President Trump’s speech to the Muslim World: {Line 14} “Let me now also extend my deep and⁰⁴ heartfelt | gratitude | to each and every “{01:51–02:23}.

Rule 05

Rule for /t/ and other consonants preceding /th/. If a word ends with the consonant /t/ and the next word begins with the voiced or unvoiced /th/ phonemes, the words also blend. The /t/ phoneme at the end of a sentence is a hard or released /t/. When preceding a word that begins with /th/, /t/ is partially released and blends into the /th/. An example of rule 05 from the Queen's Speech to the New Government: {Line 34} "Legislation will be brought forward to protect⁰⁵ the victims of domestic violence and "{26:23-26:29}. An example of rule 05 in President Trump's speech to the Muslim World: {Line 04} "I have always heard about⁰⁵ the splendor | of your country | and the kindness of your citizens," {00:01-00:48}.

Rule 06

Rules for the article the. Note that when /th/ is in the initial position of a second word, all consonants and vowel sounds in the first word blend. An example of rule 06 from the Queen's Speech to the New Government (short e version of "the"): {Line 15} "My ministers will strengthen⁰⁶ the economy so that it supports the 06 creation of jobs and "{24:25-24:39}. An example of rule 06 from the Queen's Speech to the New Government (long e version of "the"): {Line 02} "the⁰⁶ European Union. My ministers are committed to working with Parliament, the devolved administrations," {23:04-23:06}. An example of rule 06 in President Trump's speech to the Muslim World (short e version of "the"): {Line 15} "one | of the⁰⁶ distinguished heads of state | who made this journey | here today. You greatly honor "{01:51-02:23}. An example of rule 06 in President Trump's speech to the Muslim World (long e version of "the"): {Line 09} "American President Franklin Roosevelt – King Abdulaziz began the⁰⁶ enduring partnership | "{00:49-1:50}.

Here is where United Kingdom and American English diverge on a single point in regards to sentence-level phonetic blends. The grammatical rule is that when the comes before any word that begins with a vowel, it is pronounced “thee”, and in Her Majesty’s Speech she indeed calls the EU “thee” European Union. In researching this paper, it was discovered to be the only instance where a written grammatical rule had forced itself into pronunciation, instead of the reverse being true. Americans say “thuh European Union” simply because the actual phoneme beginning the word Europe is actually a /y/ consonant, and which is grammatically incorrect and correct for sentence-level phonetic blends. In all other instances in Her Royal Majesty’s Speech words that begin with a consonant sound are preceded by the pronunciation “thuh”.

Rule 07

Rule for the article a and the word I. The words a and I always blend with the previous word, and even though dictionaries state an alternative of pronouncing the first word is ay, as the letter, it has fallen almost completely out of use except as in describing the letter /a/ or as an accent in some regions of both the United Kingdom and North America. An example of rule 07 concerning the word “a” from the Queen’s Speech to the New Government: {Line 08} “Kingdom makes⁰⁷ a success of Brexit, establishing new national policies on immigration, international” {23:28–23:57}. An example of rule 07 concerning the word “I” from the Queen’s Christmas Address {Line 26} “of which⁰⁷ I have been patron came to a lunlch in the⁰⁷ Mall. Many of these organisations are”{03:43–04:01}. An example of rule 07 concerning the word “a” from President Trump’s speech to the Muslim World: {Line 08} “of the Kingdom | who united | your great people. Working alongside⁰⁷ a | another beloved leader |”{00:49–1:50}. An example of rule 07 concerning the word “I” from President Trump’s speech to the Muslim World: {Line 16} “us | with your presence, and⁰⁷ I send | the warmest regards | from my country | to yours. Thank”{01:51–02:23}.

Rule 08

Rule 8 is for the article *an*. *An* always splits in two, and can be called a bifurcated truncation. Then the letter /n/ in the word blends with the next word when spoken. Further, the word *an* is very rarely pronounced as the dictionary states. It is almost always pronounced as “un” ([ʊ]) with the /n/ being attached to the next word. An example of rule 08 from the Queen’s Speech to the New Government: {Line 13} “implement aln⁰⁸ independent trade policy, and support will be given to help British businesses export to” {23:59–24:24}. An example of rule 08 in President Trump’s interview with the New York Times: {Line 40} “I just heard there was aln⁰⁸ email” {03:10–03:23}. This oddity creates problems for very young ESL learners (KG to grade 2). They hear the word *a* (uh) and often say “I see a elephant.” Since writing and grammar are not yet in their knowledge base, they must rely entirely on what they hear. This is one of four current lingual drifts that may be occurring. It is speculative, but perhaps this phenomenon occurs because the word *another* is a compound word used very frequently, with the initial letters “an” never pronounced as the word of the same spelling. Mastering spoken words comes before writing, and it may be a strange fossilization of mispronunciation that has a causal relationship with this common phenomena and difficulty, and so would be a curiously formalized form of lingual drift. As in the next rule, the word *another* is a reciprocal pronoun, with *another* being one of very few compound reciprocal pronouns in English.

Rule 09

Rule nine concerns the /ch/ and /sh/ sounds when they occur at the end of a word (final position) and the next word begins with a vowel phoneme (and which applies to “tch” in the final position of a word as well). The /ch/ digraph always blends with the next word if the second word begins with a vowel sound (with the letter *y* having a consonant version that does not blend). This curiosity can also be

described as a bifurcated truncation, where the /ch/ sound is spoken as if it is the initial sound of the next word, as in rule 08. An example of rule 09 from the Queen’s Christmas Address: {Line 26} “of which⁰⁹ I have been patron came to a lunch⁰⁹ in the Mall.” {03:41–04:01}. An example of rule 09 in President Trump’s speech to the Muslim World: {Line 14} “Let me now also extend my deep and heartfelt | gratitude | to each⁰⁹ and every “{01:51–02:23}.

Rule 10

Rule ten is for vowels at the end positions of a first word and also in the initial position of the next. If a word ends in a vowel sound and the next word begins with a vowel sound, they blend, with the first and second vowels transitioning uninterrupted. An example of rule 10 from the Queen’s Speech to the New Government: {Line 25} “My government will continue to work to¹⁰ ensure that every child has the¹⁰ opportunity to “{25:25–25:48}. An example of rule 10 in President Trump’s speech to the Muslim World: {Line 21} “In my¹⁰ inaugural address | to the American People, |” {02:53–03:20}.

Some phonemes that blend across words create a “faint” phoneme, examples below being the unwritten but spoken /y/ consonant phoneme. One example of the /y/ consonant “faint” phoneme marked with an asterisk) is from Trump’s speech to the Muslim world: {Line 73} “With God’s help, this summit | will mark | the beginning of the * end | for” {08:46–09:10}. The words “the end” in the preceding example are commonly pronounced as “thee yend”. This phenomenon is produced from making the long e vowel phoneme, back of tongue to the roof of the mouth, and then lowering the tongue to open the dental air passage to create a second vowel. As the tongue moves down and the air pressure is constant, a /y/ consonant sound is inadvertently generated.

The /y/ “faint” phoneme requires further illustration. The words *oil*, *toil* and *foil* are listed in the dictionaries as being pronounced with no faint /y/ consonant phoneme, but they are spoken that way, simply because is highly difficult to the point of near impossibility to transition from the *oi* diphthong to the /l/ phoneme without producing a /y/ consonant. Further, the word *royal* in all dictionaries is assigned the /y/ consonant phoneme in the pronunciation keys. This may be a third form of lingual drift because the written rule is nearly impossible to apply. Other word structures that also create a “false” consonant /y/ phoneme include *rail*, *fail*, *jail*, *mail* and the name *Gayle* (which actually has the /y/ in the spelling, but if looked up in any dictionary has no /y/ sound in the pronunciation key whatsoever). It is certainly interesting when the spoken forms and textbook pronunciations differ with uniformity.

Rule 11

The eleventh rule of utterance level blends is that when a word ends with a vowel, and the next word begins with a consonant, the words will blend. An example of rule 11 from the Queen’s Speech to the New Government: (Line 01 } } “My¹¹ Lords and Members of the House of Commons.” {22:59 –23:02}. An example of rule 11 in President Trump’s speech to the Muslim World: {Line 01 } “I¹¹ would like to thank | King Salman | for his ¹¹ extraordinary words, | and the” {00:01–00:48}. This rule occurs most frequently in all data sections.

Rule 12

The rule for transitional sounds /th/ and /z/: if a word ends with the unvoiced /th/ and the next word begins with the voiced /th/, the phrase has a foreshortened pair of /th/ phonemes. They are not uttered as distinct units. The created phoneme begins unvoiced and ends voiced. In the case of /z/, words with the phoneme in the final position blend with the next consonant and begin as a /z/ and

become an /s/ to smoothly blend with the next word. An example of rule 12 from the Queen’s Christmas Address (transition from voiced /th /to unvoiced /th/): {Line 27} “modest in size but inspire me with ¹² the work they do.” {03:41–04:01}. An example of rule 12 from the Queen’s Speech to the New Government (transition from /s/ to /z/): {Line 02} “My government’s priority is to secure the best possible deal as the country leaves¹² the “{23:04–23:06}. An example of rule 12 in President Trump’s speech to the Muslim World Government (transition from voiced /th /to unvoiced /th/): {Line 42} “Yesterday, we signed historic agreements | with¹² the Kingdom |” {05:00–05:39}. An example of rule 12 in President Trump’s Interview with the New York Times (transition from /s /to /z/): {Line 01} “Sessions¹² gets the job. Right after he gets the job, he”{00:09–00:16}.

Rule 13

The rule for the liquid consonants /r/ and /l/: the /r/ phoneme blends with any and all other phonemes in both the final and initial positions in a given word. An example of rule 13 from the Queen’s Speech to the New Government: {Line 06} “A bill will ¹³ be introduced to¹³ repeal ¹³ the European Communities Act and provide certainty” {23:28–23:57}. An example of rule 13 in President Trump’s speech to the Muslim World: {Line 12} “of our partnership, today we begin a new chapter | that will ¹³ bring lasting benefits | to all |” {00:49–1:50}.

3.2 Tabular Data and Analysis

Table 1.

This table shows the frequency of the blends for each public address and interview, with the speech in 3.2. being an example to prove that rules 09 exists in both United Kingdom spoken English and in USA spoken English (and not a common blend in either language), and to make word counts between compared speeches (3.1+3.2 and 3.3) nearly equal. Please note that the interview with President Trump,

Section 3.3., is speech being recorded from four different speakers at a conversational speed, and whose numbers closely track the numbers of sections 3.1 and 3.4. Also please note that speech 3.4. is President Trump’s speech, where he inserted “forced” pauses into his speech to allow translators to keep up. In his speech the percentage of sentence-level blends is significantly lower than either the speeches of section 3.1. or 3.3., and which was to be expected. If the “forced” pauses are counted as individual blends, the number of blends once again returns to very similar values (if the pipes indicating unnatural pauses (|) are added back in as blends, and which is not wildly speculative, but extrapolated). Total words are actual spoken words, excluding extraneous marks or identifiers in Sections 3.1–3.4. Error of Mean deviations are rounded to the second decimal. Word counts and figures were added from 3.2 to 3.1 to make the word count closely match the word count of 3.3 and are in parentheses. Total rule percentage is a comparison of rules to total words per section as a percentage.

Rule Number	Frequency Section 3.1 () includes 3.2	Frequency Section 3.2	Frequency Section 3.3	Frequency Section 3.4
01	41 (46)	05	14	56
02	11 (12)	01	19	30
03	64 (79)	15	64	82
04	10 (13)	03	32	31
05	16 (22)	06	14	41
06	07 (08)	01	01	03
07	09 (10)	01	42	20
08	01 (01)	00	01	00
09	00 (03)	03	02	03
10	02 (02)	02	02	08
11	190 (224)	34	260	371
12	06 (07)	01	12	04
13	63 (68)	05	31	82

Rule Number	Frequency Section 3.1 () includes 3.2	Frequency Section 3.2	Frequency Section 3.3	Frequency Section 3.4
Total Rules	400 (495)	76	493	731
Total Words	514 (602)	88	624	1184
Total Rule %	77.82% (82.22%)	86.36%	79.01%	61.74%
Forced Pauses	0	0	0	169
Total Rule %, with Forced Pauses	77.82% (82.22%)	86.36%	79.01%	76.01%

3.2.1 Data Analysis

When the word counts and counts of blends from Sections 3.1 and 3.2 is added together and compared to the word count and blends of Section 3.3., the figures fall into synchronization to a high degree, despite word preferences and vocabulary. When the figures of section 3.4. are changed by adding in the forced pauses from the speech as blends, again the numbers become synchronized to a high degree between all sections. Neither of these could occur if there was not a relationship between sentence-level word blends and word counts, which was expected.

Further research should yield more complete information in regards to nationalistic tendencies, vocabulary preferences, and systematic tendencies based on the purpose-oriented style of speech (be it informal or formal, a family-oriented address, or factual briefing). The speech in Section 3.4 had over one hundred “artificial pauses” in the speech to allow translators to keep up with the English being spoken, and when combined back into the speech as blends shows a striking uniformity in the relationship between word counts and blends between all compared data. Such “artificial pauses” are noted on the transcript of the speech in the data as underlined pipes (|). A wide variance in the number of rules compared to word counts were noted and tabulated, but the raw number of rules showed a strong correlation with word counts.

3.3 Specific Notes on Annotated Public Addresses and the Interview

Each following example was annotated with the rule numbers positioned above the letter where each blend begins. Markings for Rules 08 and 09 are different. For these two rules the rule number appears above the first letter where the bifurcation begins, with an underlined pipe inserted between the letters to mark how the first word is split. The section breaks are maintained from the original published speeches and addresses. All identifiers for line numbers are contained in braces {} and appended at the beginning of each section. At the end of each section is the beginning and ending time for that section, also appended and contained in braces. Note that all numeric expressions in the transcripts have been changed to alphabetic ones. Each detail below also includes a single line of example to demonstrate annotations.

3.4 Her Royal Majesty the Queen of England and Northern Ireland's Speech to the New Government

Below is the partial transcript of the Queen's speech to the new British Government on June 20 of 2017, from <https://www.gov.uk/government/speeches/queens-speech-2017>. The recording of the speech is at <http://newsvideo.su/video/7097904>.

All times are noted after each section or paragraph and rounded up or down to the nearest second. Please note that the speech had a long stretch of formalities from other speakers and activities, and which was not in the scope of analysis. The Queen actually begins speaking at 22:59 into the broadcast. The transcript is triple-spaced to place Rule markers. Below is an example (line one of speech).

11 11 03 11 11 11

{Line 01} My Lords and Members of the House of Commons.{22:59 -23:02}

3.5 The Queen's Christmas Address from 2016.

Below is the partial transcript of the address Her Royal Majesty Queen Elizabeth II made on December 25, 2016, here only partly rendered to illustrate the use of the /ch/ end position digraph and how it blends with the next word in a sentence, a pronunciation that does not exist in the previous speech. The complete audio video is available at https://www.youtube.com/watch?v=_6LpdcfRYro. Please see lines {22} and {26}. The transcript is a matter of public record, but copied from the newspaper *The Guardian*, listed in citations.

04 03 05 06 11 11 11 11 11 11

{Lines 21–22} This has been the experience of two remarkable organisations, the Duke of

11 03 01 01 09 11 13 10 03 11 13 03 03

Edinburgh's Award and the Prince's Trust, whi~~ch~~ are sixty and forty years old this year. These

{01:31–02:10}

3.6 President Donald Trump's interview with the New York Times.

Below is the excerpted transcript of an interview with U.S. President Donald Trump held by *New York Times* reporters Peter Baker, Michael S. Schmidt and Maggie Haberman on July 19 of 2017. The excerpt shows conversational dialogues and expected rules for sentence-level phonetic blends. The audio video file is at <https://www.nytimes.com/video/us/politics/100000005285371/donald-trump-interview-sessions-comey.html?mcubz=0>.

12 05 11 11 13 11 12 11 04

{Lines 01–02} PRESIDENT TRUMP: Sessions gets the job. Right after he gets the job, he

04

recuses himself. {00:09–00:16}

3.7 President Donald Trump’s Speech to the Arab Islamic American Summit.

Follows is the shortened transcript of President Donald Trump’s Speech to the AIAS delivered in Saudi Arabia on May 24, 2017, and released by the US Federal Government. The link to the video is at <https://www.youtube.com/watch?v=tE3LY8399yc>. Please note that references to numbers are written as words, whereas in the original print they appeared as numeric characters. Please note that President Trump was speaking with deliberate interruptions to his sentence-level phonetic blends as advised so the translators could keep up with him (as contrasted with Section 3.6, where his sentence-level phonetic blends follow the rules outlined in this paper strictly). Such unnatural pauses between words are readily-identifiable to native speakers of English and are marked with a bold underlined pipe [|]. Some such pauses are for dramatic effect, and please see the last two pipes of line 03, for examples. Such dramatic effects are by far the minority and are here marked for uniformity. Between these pauses, note that the word groups still followed the rules for sentence-level phonetic blends. Note that Trump bifurcated the word *another* by misspeaking and saying “a another” at Line 08, which bears directly on Rule 08, for the word *an*.

11 03 03 11 11 04 11 11 03 11
{Line 01} I would like to thank | King Salman | for his extraordinary words, | and the

3.8 Discussion

The original set of rules numbered only four; however, on close examination and analysis to ascertain concise rules with exceptions and variants the list was expanded considerably. It was first necessary to create a rule set, compare it to existing data, and then to modify and expand the rules to include demonstrated patterns.

It seemed necessarily true that because fluency is taught to young native speakers during the early years, and refined later as vocabulary and skill advances, that a rule set had to exist that was probably being transmitted orally simply because the entire lexicon of language to young learners is phonetic. Reading and writing are several years away. This oral transmission and tradition may exist in other languages as well, and for the same reasons stated herein. Despite variations in vocabulary used, the degree of formality in given situations, actual instances of rules utilized, and the countries of origin of all speakers, the uniformity of how the rules are utilized to create fluid, smooth speech was comprehensively uniform in execution, despite wild variations in sentence complexity. This may not hold true in the future as language continues to evolve, and which allows this study to serve as a “time capsule” to track aspects of lingual drift as it occurs, and which is the purview of anthropological linguistics.

Curiously, Her Majesty’s speech to her new government did not contain a single instance of rule 09, being the pronunciation of a sentence-level phonetic blend when a word has /ch/ as the sound in the final position precedes a word that begins with a vowel sound; however, in her Christmas Address to the people of the U.K., Her Majesty demonstrated three usages of rule 09.

It must be stressed again that the comparison between the individuals used in this study is strictly for purposes of deducing a multi-national comparison of sentence-level phonetic blends, irrespective of the individual or the nation in which they are native. The counts and instances of the analysis showed a wide variation in the numbers of occurrences of specific rules, and which invites further study in regards to setting, purpose of discourse, and intent on the part of the speakers; however, for purposes of beginning this work this framework was created. It was first necessary to prove these Rules do indeed exist and have a structure. If such a rule set did not exist than teaching fluency would be impossible.

Fragmentary pieces of this rule set appeared in a wide variety of ESL lessons and discussions online, especially in regards to rules 02 and 03, but a concise set of rules was. The observation and assumption that formed the primary hypothesis in regards to a set of rules already being in existence is that these oral instructions are being taught to native learners over time, but in order to teach fluency to foreign students, where English is their second or other language, these rules had to be quantified in order to be taught. If a rule set cannot be quantified it cannot be taught. The rules have been taught and are being taught verbally in native-speaking countries, and to provide them as a quantified rule set to teachers of ESL to advance their students' understanding is hopefully of value.

The research showed that the differences between English in the United Kingdom and the United States are primarily in some fine points of written grammar and word-level pronunciation, not sentence-level phonetic blends, with one exception noted in Rule 06. Setting accents and idioms aside, and which both the United Kingdom and the United States and every country that calls English their native language have in abundant numbers, the sentence level utterances remain the same to a very high degree, are universal, and are simply English in regards to the interactions of words that are combined to create utterances. For purposes of posterity, the speeches made by two world leaders are here analyzed in Table 1., Section 2.2.1, and 2.2.1. The name of the English language and country of origin are one in the same, and; therefore, the reasoning behind using the speech and address of Her Majesty the Queen of England and Northern Ireland as a component of the basis for this paper is that in all ways she can be considered Mother of the Mother Tongue, just as the editors and contributors to *The Oxford Standard Dictionary of the English Language* are widely considered to be the gatekeepers in regards to what words are considered standard and grammatically correct words, and which is a very important task in that language is evolving and changing. The analysis of President Trump's speeches is

for purposes of cross-examination and confirmation despite differences of nationality and proficiency of articulation. Please note that this comparison between Her Majesty and President Trump is narrowly restricted to phonological blends, not content in any manner, configuration or semblance. In both cases, the speeches were also chosen because modern record keeping for such prominent persons, written and auditory, is concrete and extensive, so this analysis can function as an enduring record for peer review and further analysis.

4. Conclusion

This research had three objectives. The first objective, establishing a set of rules that identified sentence level phonetic blends through research was successful. In regards to establishing a rule set for smooth speaking (fluency) through completely quantifying sentence-level phonetic blends, more work needs to be done in regards to identifying further rules, quantifying punctuated pauses (such as some commas) through transposing musical notation, or rests, and in analyzing English tones within both words and utterances.

The second objective, in creating accessible information for teaching ESL, the research was also successful. In regards to direct TESOL applications, more detailed lesson plans, in addition to activities and drills, all need further development. Since students studying English in non-native speaking environments have difficult challenges from lacking immersion, limited monetary resources, and actual time spent outside the classroom practicing, a more detailed approach in regards to application in the classroom would benefit all concerned. Often TESOL teachers abroad declare their best students are either talented or very driven; however, few tools exist to help the majority of learners. It is hoped that sentence-level phonetic awareness can be one such tool, and one that can be adapted and used to enhance existing curricula and texts.

The third objective in the study, in creating a written “time capsule” to identify current spoken phonological grammar, may be successful. In regards to anthropological linguistics and lingual drift, how language changes over time is very difficult to track and twice as difficult to predict. Just as weather changes quickly and climate changes slowly, so do slang words and idioms change quickly and word boundaries within utterances changes slowly, if at all. It is hoped that this research can assist in tracking lingual drift in English of a particular type. Since the relationships of the sentence-level phonetic blends is so intimate between the two most populous high-proficiency native English speaking countries, the UK and the US, any emerging deviations in this aspect of English language should be simpler to monitor and graph. What changes may occur is simple speculation, but having a base line to track is essential for such work.

Further research needs to be done, especially in regards to predictability (the only measure of any theoretical approach), and which is one reason that President Trump’s Speech to the Muslim World was included, since the speech contains over one hundred artificial pauses to allow translators to keep up with his speech. If these rules are indeed being followed by native speaking listeners, listeners should be able to easily identify the majority of ‘unnatural’ pause in the speech, regardless of how they decode the words for comprehension. That will be a focus of the next phase of this research and quantitative. Another focus will be a study using L2 learners in listening and speaking classes, one a control group and one being taught these rules, to ascertain if such knowledge facilitates second language learning.

Creating paired word constructions from any of the rules here illustrated is a simple matter for teaching through modeling. For example the /cl/ sentence-level blend could be written and then modeled as “The giant roclands” or “This cake has thick layers of frosting” (“ck” being phonetically identical to /k/). Any online word

finder can greatly assist such constructions in listing words that begin or end with given letters or sounds.

Because the entire lingual lexicon of young learners is audio, and audio modeling is the only method for language teaching at least during the first four years of life, it is highly likely that sentence-level phonetic blends are orally transmitted over the early and subsequent years as vocabulary develops, regardless of what strategy for decoding is being employed. Unfortunately most students learning English in a non-native speaking country have no such luxury, and unless linguistically talented, monetarily well-off, highly-driven, or in a household where English is spoken daily, the learners have too little exposure to absorb the information through environmental osmosis. To assist the struggling majority is a very difficult task for teachers to complete, and it is hoped this information will further their efforts by providing a new tool to be used.

Disciplines outside these three original objectives that can benefit from this research include digital communications and computer science, specifically in regards to speech recognition, speech-to-writing, and in machine-to-speech applications, automations and functions. Identifying word boundaries is impossible for machines without having a rule set to serve as a starting point. Speech recognition software and computers with elementary AI systems have a great deal of difficulty with this aspect of disambiguation.

References

- Baquet, Dean, editor. (2017). **Excerpts from the Times' Interview With Trump**. New York Times. [audio and transcript]. Retrieved from <https://www.nytimes.com/2017/07/19/us/politics/trump-interview-transcript.html>
- Bradley, L., & Bryant, P. (1983). Categorising sounds and learning to read: a causal connection. *Nature*. 301: 419–421.
- Bryant, P. E. (1993). **Phonological aspects of learning to read**. In R. Beard (Ed.), Teaching literacy, balancing perspectives. Kent: Hodder and Stoughton.
- Category: English Blends. Wiktionary, (July, 2017).
- Chomsky, Noam. (1956). “Three models for the description of language” (PDF). **IRE Transactions on Information Theory**. 2 (3): 113–124. doi:10.1109/TIT.1956.1056813 Retrieved August 2017 from https://en.wiktionary.org/wiki/Category:English_blends
- R. Delmonte. (2000). “SLIM prosodic automatic tools for selflearning instruction”, **Speech Communication**, 30: 145–166.
- English Letter Frequency (based on a sample of 40,000 words). Cornell, 2003–2004. Retrieved from <https://www.math.cornell.edu/~mec/2003-2004/cryptography/subs/frequencies.html>
- Ehri, L. C. (1997). **Grapheme–phoneme knowledge is essential for learning to read words in English**. In J. Metsala, & L. C. Ehri (Eds.), Word recognition in beginning literacy (pp. 3–40). New Jersey: Lawrence Erlbaum Associates.
- Iversen, S., & Tunmer, W. E. (1993). Phonological processing skills and the Reading Recovery program. *Journal of Educational Psychology*. 85: 112–126.
- Miller, Stephen. (2017). **Trump's Speech to the AIAS**. [transcript]. Retrieved from <https://www.whitehouse.gov/the-press-office/2017/05/21/president-trumps-speech-arab-islamic-american-summit>

- Miller, Stephen. (2017). **Trump's Speech to Arab American Islamic Summit**. [audiovisual file]. CNN. Retrieved from <https://www.youtube.com/watch?v=Udz9b5BThnw>
- Morais, J. , Bertelson, P. , Cary, L. , and Alegria, J. (1 98 6) . Literacy training and speech segmentation. **Cognition**. 24: 45 – 64 .
- Morais, J., Cary, L., Alegria, J., & Bertelson, P. (1979). Does awareness of speech as a sequence of phones arise spontaneously?. **Cognition**, 7, 323–331.
- Morais, J., & Kolinsky, R. (1995). **The consequences of phonemic awareness**. In B. de Gelder, & J. Morais (Eds.), *Speech and reading: a comparative approach* (pp. 317–337). Hove: Erlbaum (UK) Taylor & Francis.
- Olson, R. K., Wise, B., Ring, J., & Johnson, M. (1997). Computer-based remedial training in Phoneme awareness and phonological decoding: effects on the post training development of word recognition. **Scientific Studies of Reading**, 1, 235–253.
- Read, C., Zhang, Y., Nie, H., & Ding, B. (1986). The ability to manipulate speech sounds depends on knowing alphabetic spelling. **Cognition**. 24: 31–44.
- Skeat, Walter William. (1888). **An Etymological Dictionary of the English Language**. Oxford Clarendon Press. Retrieved from [https://www.theguardian.com/uk-news/2016/dec/25/the-queens-speech-christmas-day-full-transcript-elizabeth](https://archive.org/details/etymologicaldict00skeauoft/Thompson, M. (1991). Developmental dyslexia — studies in disorders of communication. London: Whurr.</p>
<p>Windsor, Elizabeth Alexandra Mary. (2016). The Queen's Christmas Message. Retrieved from <a href=)
- Windsor, Elizabeth Alexandra Mary. (December, 2017). **The Queen's Christmas Message**. [audiovisual file]. Retrieved from <http://www.bbc.com/news/av/uk-38431575/the-queen-s-christmas-message>

- Windsor, Elizabeth Alexandra Mary. (June, 2017). **The Queen's Speech**. BBC News. [audiovisual file]. Retrieved from https://www.youtube.com/watch?v=Xk_pi_nq838
- Wood, C.S., (2003). Phonemic awareness: A crucial bridge to reading. **Montessori Life**. 15(2): 37.