

Phonological Processes as Distortional Devices in Language Games

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Abstract—Language games are forms of language that systematically manipulate normal spoken words in order to make them illegible by others. These languages highlight a good number of phonological processes employed by speakers of language games to distort source words. Among these processes are epenthesis, gemination, consonant insertion, and metathesis. The current study proceeds to verify the hypotheses that these processes are already present in normal language and that these processes take place in a systematic manner yielding uniform patterns. The collected data and the literature include a wide range of database out of which instances of distortional pieces of speech can be drawn and described. The conclusion reached out in this study is that these processes provide some insight into the structure of the source languages or dialects on which the language games are based.

Keywords— phonology, language games, phonological processes, slips, aphasic speech

I. INTRODUCTION

Linguists have always looked for evidence that can be utilised to support linguistic notions and theoretical concepts. Such attempts usually find their way towards investigating the manner in which human language operates, as a system, through examining instances in which this system malfunctions or deviates from the norm, thereby explicating the normal ways of language operation (Betti and Al-Jubouri, 2009: 376). A number of phenomena observed in language production involve such deviations as the acquisition of foreign languages, speech disorders, slips of the tongue and language games, among others (Bell and Hooper, 1978: 3; and Kenstowicz and Kisseberth, 1979:139).

These forms of speech production have been studied in search for evidence on linguistic observations. Their significance lies in the fact that they involve “speakers behaving linguistically in ways where they must call upon their knowledge of the rules and underlying forms of their language in overt and revealing ways” (Campbell, 1986: 164). Thus, while speakers of language games overtly and consciously draw upon the rules of their source language, the same is not true for other, distorted, types of speech, e.g., speech errors.

Furthermore, Ohala (1986, cited in Bagemihl, 1995: 556), in a study of the relative significance of evidence versatility within phonological investigation, places ludling material second only after experimental types of evidence. Bagemihl,

moreover, states that “ludlings are an integral part of the human linguistic capacity and as such, an integral part of linguistic theory”. Therefore, since language games incorporate rule-governed (systematic) manipulative processes, and since they represent deviations from the normal way of language operation, they are acknowledged as a significant source of evidence for phonological arguments such as underlying representations, rule-ordering, the psychological reality of phonological entities, like the syllable and the structure of the syllable (Kurabe, 2021: 1).

Speech plays or language games exemplify a customised variety of spoken languages that have been well established as an environment from which linguistic understandings are drawn (Botne and Davis, 2000: 319; Campbell, 2020: 1; Kurabe, 2021: 6; and McCarthy, 1984: 305, among others). Speakers of language games, also known as *ludlings*, implement one or more phonological manipulative processes to hide the meaning of their speech from outsiders in addition to establishing social identity and familiarity (Nevins and Endress, 2007: 1). These processes include the addition of segments, the insertion of phonological elements, the transposition of segments and syllables, the deletion of sound entities, and other practices (Adomako, 2015: 3; Botne and Davis, 2000: 319; Laycock, 1986; and Bagemihl, 1988). The diversity of the processes which can be traced in the available data indicate the aspect of flexibility of human language and the innovativeness of humans to manipulate normal speech while still communicating the desired meaning.

This study aims at: first, describing language games so as to provide insights into the phonological nature of words used in language games, such as stating the patterns of phonological distortion used in such forms of linguistic play, and second, discovering whether the process of phonological distortion is governed by rules and if so, stating these rules which determine the coinage of words in the attested ludlings. In accordance to the aims, the current study hypothesises that:

- i. Changing normal language words into play-words involves many processes, such as insertion, transposition, replacement, deletion, and even combinations of some of these, the most common of which is insertion.
- ii. The application of processes involved in speech play is not random, but rather systematic, i.e., they are governed by rules or patterns that could be stated.

II. METHODOLOGY

This study is a qualitative examination of the phonological structure of the manipulated words used by the speakers of the

language games in question. The data analysed in this paper were collected primarily by contacting people speaking language games on online platforms, i.e., Facebook, who had commented to Facebook posts on language games. The contacted people who agreed on providing data and clarifying the rules of the game they spoke were kind enough to send voice notes to be downloaded and analysed by the researchers. They were asked to produce spontaneous utterances in their version of ludling and provide the source forms as well. Additionally, the respondents were provided with words, phrases and short sentences in their respective languages or dialects and they were asked to convert them to game forms. A further, yet minor, portion of data were extracted from YouTube and posted Facebook videos of people being interviewed on the topic of language games and speaking those forms of language. Finally, some of the data in the study were taken from the previous studies in order to access more material that might involve further processes that the other two types of data might not contain. The data collected was diverse and included different Arabic vernacular dialects like, Iraqi, Yamani, Lebanese, Algerian, Syrian, Sudanese, and Saudi Arabian.

III. THEORETICAL BACKGROUND OF PHONOLOGICAL PROCESSES

Phonological processes are used by speakers of ludlings as gaming devices. These processes alter the source patterns to conceal their meaning. They involve a collection of practices such as insertion, prothesis, sound switching, among other processes. Similar occurrences, however, are not far from emerging in normal speech. As Odden (2013: 208) states, phonological processes are viewed as being divided into two diameters: segmental and prosodic. What we are concerned with in this paper is the former type. Segmental, or featural, processes have to do with how segmental features affect one another in a string of speech. In other words, a phenomenon related to the location of segments in a phonological chain (ibid).

These processes arise in connected speech primarily to harmonise speech and make it easier to produce, and they involve assimilatory processes such as vowel harmony, or restricting certain sounds to occupy a place within a phonological domain, in addition to elision, epenthesis, and other phenomena (Oden, 2013: 208-224; and Roach, 2009: 121-127). Moreover, such processes occur in the form of slips of the tongue, i.e., speech errors, and speech disorders (Kenstowicz and Kisseberth, 1979:139; and Prunet, Béland & Idrissi, 2000). Also, in one way or another, these processes are attested in loanword phonology and in child phonology (Paradis & LaCharite (1997). Hence, gaming processes can be viewed as having almost analogous processual occurrences in normal everyday speech, as assimilatory processes, spontaneous slips of the tongue and speech impairments, as in the articulation of some aphasics.

The subsequent discussion focuses on the occurrence of phonological processes in everyday speech and later, in section (4), processes implemented in language games will be surveyed.

A. Segmentation

There is considerable amount of debate on the notion of single segments and segmentation. If we analyse a string of speech, we can determine a number of sound elements, primarily as a consequence of our linguistic knowledge. Thus, we can write down in terms of letters, and transcribe in sound symbols, the speech that we hear. In many instances, however, this act of segmenting speech into distinct elements can be an extremely difficult task since many gestural movements which articulate sounds are continuous and not precisely distinct. For instance, neighbouring fricatives normally overlap to the extent that of being impossible to be distinguished, as in a /ʃs/ sequence, e.g., *'fish soup'*. Therefore, one view sees that the process of segmentation has no reasonable grounds.

The opposite view, however, takes the stance that segmentation is at work in most cases and that speakers are aware of discrete phonological elements of their language (Trask, 1996). And it is under such circumstances that the significance of the so-called 'external evidence' comes into play as they involve types which add, delete, insert, transpose, or switch single discrete sounds.

B. Prothesis

Prothesis characterises the addition of a phonological element -a single sound or a syllable- to the beginning of a word (Trask, 1996: 296). Hence, words like *'snoopy'* will be preceded by /e-/, yielding /esnu:pi/; and words like *'school'* or *'snow'*, are pronounced as /əsku:l/ and /əsnə/, respectively (Avery and Ehrlich, 1992: 147). Prothesis also emerges in Arabic where speakers may add a vowel, which is phonetically preceded by a glottal stop, to simplify initial CC- clusters in satisfaction of Arabic's undominated onset ranking, as is seen in words like /kla:b/ → /ʔi-kla:b/ (Kiparsky, 2003: 3). The fact that prothesis is present in normal human languages and that it has a place within the phonological knowledge of native speakers, makes it available as a process used by language gamers in distorting source patterns.

C. Insertion

Insertion, which is also known as *epenthesis*, is a process by which a segment is inserted into a location at which no segment previously existed (Kenstowicz and Kisseberth 1979:85; Trask, 1996:296; and Roach, 2009). This added sound is typically redundant or unnecessary in the sense that it does not add any new information to that contained in the other sounds (ibid). Insertion in normal everyday language usually take the form of a transitional element. Consonant insertion or *epenthesis* occurs as a typical sound change (Picard, 1987: 133). Wetzels (1985) proposes that it has two types: the first, a consonant epenthesis within liquid-final clusters; and the second, stop a cluster involving non-liquids.

- TYPE 1) kam(e)ra → kambrə
- TYPE 2) wə:mθ → wə:mpθ (Picard, 1987: 134-135).

The occurrence of such epenthetic consonants is known as bridging consonant clusters, i.e., the epenthesised consonant plays the role of a bridge in the articulation of one consonant to

the next. This is clearly noticed in /wɔ:mpθ/ as the /p/ serves the transaction from the bilabial nasal /m/ to the dental /θ/. (see also Nathan, 2008: 99-100 for further examples).

D. Vowel Epenthesis

Inserting a vowel within the structure of a word or a syllable, usually between two consonants, is known as vowel epenthesis or *anaptyxis*. This form of epenthesis usually takes when the syllable structure requires it (Nathan, 2008: 81; and Trask, 1996: 24). That is, when a language like English disallows stop +nasal onsets, words such ‘Pnomh Penh’ (place name) are produced as /p-ə-nɔm pen/. Hence, the schwa is inserted to break the intolerable initial consonant cluster (Nathan, 2008: 81). also, in the adaptation of loanwords, a word like film /film/ becomes /fɪl-ə-m/. this epenthised vowel is called *anaptyctic vowel*. Vowel anaptyxis is very common in many languages of the world, especially Arabic due to the tendency of the language with many of its varieties to disallow complex consonant clusters (Broselow, 2018; Kenstowicz, 1986; and Kiparsky, 2003).

E. Syllabification

Syllabification pertains to the assignment of segments in any string of phonological representation into syllables (Trask, 1996: 345). This is an area that is quite variable cross-linguistically. Languages differ in the way they syllabify words, i.e., divide words or larger speech portions into syllables (ibid). Rules for syllabification have been postulated by scholars to come up with regular processes by which syllabification is done. Examples are the Sonority Dispersion Principle proposed by Kenstowicz (1994: 283), and Onset First Principle put forward by Kahn (1976) then Clements and Keyser (1983).

Principles like these provide solutions for problematic incidences of the sort VCVCCVC where V elements will associate to a peak of a syllable, C elements need to be linked to a syllable node as well. In such an ambiguous circumstance where a C could attach to either a following or a preceding peak, phonological theory has to present ways to determine the site of this attachment. Take the word *panic* /pænik/ as an example. To which peak should the medial /n/ be attached?

Kahn (1976) and Clements and Keyser (1983) have proposed the Onset First Principle to reconcile such a problem. The principle states that:

- a) ‘Syllable-initial consonants are maximised to the extent consistent with the syllable structure conditions of the language in question.
- b) Subsequently, syllable-final consonants are maximised to the extent consistent with the syllable structure of the language in question’ (Clements and Keyser, 1983: 37).

In any relevant derivation, principle (a) is applied before (b). Hence, in ambiguous incidents, consonant clusters preceding a peak take priority over those following a peak. It follows, therefore, that a VCV sequence, for instance, is divided as V-CV instead of VC-V, unless some language-specific restrictions inhibit such a division from taking place. Thus, the word *ever* syllabifies as /e-və/, not as /ev-ə/.

A further situation includes biconsonantal clusters such as /sp/ occurring in English, where they can appear syllable initially in words like *speak* /spi:k/, or syllable finally such as *wasp* /wɔsp/. But such clusters can also occur in words like *aspire* /əspairə/ creating ambiguity as to which syllable they should belong, i.e., should the sequence /sp/ become onset for the second peak /ə-spairə/, or coda for the first peak /əsp-airə/? the Onset First Principle postulates that the first way of division is the proper analysis.

The theory integrates a step-by-step strategy to build up syllables. The process applies beginning from the peak -the V element- and outwards to abutting C segments following the arrangement below:

1. Every V element of the CV-level is underlyingly connected to a syllable node ‘σ’. This necessitates, then, that the V-element is an obligatory component of any syllable.
2. Associate each C-element with the closest V-element on the right, while not violating any rules of the language. This process initiates syllable onsets.
3. Link any remaining C-elements to the closest V-element to their left. This step forms syllable codas.

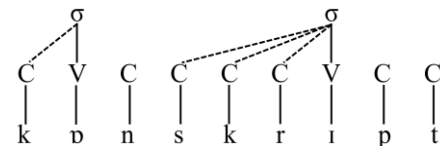
The overall procedure is further illustrated diagrammatically as follows:

1)



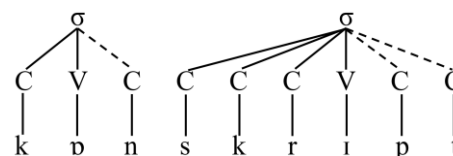
V-elements are first linked to syllable nodes by rule (1)

2)



C-elements are linked, one by one, to the V-element on the right with the formed sequence abiding by the rules of the language. Hence, each of /r/, /k/ and /s/ are linked, one after the other, to the V on their right. /n/ is not allowed to be associated with the same V because the sequence /*nskr+V/ is impermissible by the norms of the language.

3)



In this last step, C-elements are linked to the preceding V given that the new sequence is tolerated by the language.

Hence, it is convenient to note that the language specific restriction on consonantal sequences have precedence over universal principles. For example, the word *atlas* /ætɫəs/ in English has to be syllabified as /æt-ɫəs/ not as /æ-tɫəs/, since the sequence /tɫ/ cannot occur syllable initially, following the Onset

First Principle. Thus, universal principles are perceived as representing the default set-up that operates as long as it is not resisted by conflicting language-specific restrictions.

F. Metathesis or Reordering

Metathesis is a phenomenon that appears in normal speech either as a historical alteration, word derivation from other languages (Lass, 1998: 188; and Trask, 1996: 345), undeliberately in the form of slips of the tongue, (Clark and Clark, 1977: 274; and Fromkin, 1973), or in cases of speech impairment (Kenstowicz and Kisseberth, 1979:139; and Prunet, Béland & Idrissi, 2000). Metathesis refers to the exchange or transposition of phonological elements: sounds, syllables, words or larger units (Crystal, 2008: 303). Instances of metathesis, which occur in domains other than language games, can involve forms as those cited in the following table:

TABLE 1:
METATHESIS OF SEGMENTS IN LINGUISTIC PHENOMENA

Original form	Form with metathesis	Type of occurrence
/wɪps/ 'Lispings'	/wɪsp/	Historical Change
/kroko:diɪlus/ (Latin) 'Crocodile'	/ko:kodriɪlo/ (Spanish)	Development of one language into another
/haɪpəds:mɪk ni:dl/ 'Hypodermic needle'	/haɪpədi:mɪk nɜ:dl/ 'Hypodermic nerdle'	Slip of the tongue
fa:fil	ʃa:fil	1Aphasic metathesis (Speech disorder)

G. Gemination

The process which doubles a consonant without a vowel intervening is known as gemination, otherwise known as consonant lengthening (Ghalib, 1984: 27; and Lass, 1998: 316). Put differently, gemination is the articulation of two identical consonantal sounds in succession, one immediately after the other (Roach, 2009). Gemination can be looked at in two ways. One side views gemination as a lengthening of a consonant. In many cases, one simply hears a segment that has greater length compared to a non-geminate counterpart (ibid). Phonetically, however, as El-Saaran (1951: 162) claims, it is preferable to consider gemination as a matter of doubling a consonant, i.e., "repetition of sounds". Before El-Saaran, Jones (1967: 116) also states that geminates occurring between vowels should be regarded as double, rather than single, since it is possible (in

precise speech) to divide the geminates into two segments by a decline of force in the middle, thereby joining the first part with the first syllable and the second with the following syllable.

Moreover, according to Crystal (2008: 206), a geminate sequence cannot be thought of as merely a 'long' consonant, because of the syllable division, and transcriptional distinctions normally explicate this, e.g., /ff/ is geminate, /f:/ is long. So far it seems that the primary feature which has received attention concerning gemination is length. Other aspects clearly also play a role in learning what geminates are. An investigation of these aspects is beyond the scope of this paper, however.

H. Vowel Harmony

The phenomenon of sharing particular (one or more) phonological features by vowels within the boundaries of a given domain, typically the word, is known as *Vowel Harmony* (Katamba, 1989). The description of vowel harmony according to the autosegmental phonology framework can be presented by employing the following principles:

- 1) specify the group of harmonising phonological properties that are suprasegmentalised and assigned to a different tier;
- 2) specify the group of items (vowels) which exhibit the harmonising property(ies);
- 3) specify *Opaque Segments*, i.e., vowels which are supposed to abide by the rules of vowel harmony yet fall short of doing so.
- 4) In fulfilment of the ¹Well Formedness Conditions, harmonising properties are affiliated with vowels.

IV. PHONOLOGICAL PROCESSES IN LANGUAGE GAMES

4.1 Segmentation

In language games, the process of segmentation is carried out rather naturally. Speakers of ludlings which entail the addition of phonetic segments, segment words or stretches of speech and specify which phoneme should be replaced, added or duplicated. The locations at which a phoneme should be added, and from which a phoneme should be extracted also indicate speakers' ability to identify slots which are meant to be filled by single segments. In SL and the YL, speakers seem to ignore the definite article /ʔal/ when manipulating words and replace the initial sound of the word in its bare - without the definite article - form. Examples of the latter sort include:

- /ʔal.ma.ʔar/ → /ʔal.wa.ʔar-ran.ma/ 'rain' [Yamani]
- /ʔil.ba:qa/ → /ʔis.sa:qa-bal.lun/ 'the package' [Sugha Lamba]

The definite article, therefore, remains intact in the distorted forms. The Iraqi ludling, however, takes a slightly different approach. The conversion drops the definite article altogether and starts the secret form by replacing the sound that

¹ Well Formedness Conditions (WFC): within a multi-tier phonological organization, relatedness of tiers is regulated through the principle of WFC. The principle is set out, according to Goldsmith (1979) as: a) each vowel is

associated with at least one tone; b) each tone is associated with at least one vowel; and c) association lines may not cross (Katamba, 1989: 203).

immediately follows the article, as in: /ʔil.mu.ʕa.ma.la/ → /ju.ʕa.ma.la.bi.ma/ ‘the paperwork’.

4.2 Prothesis

Among the speech plays included in the current analysis, two employ a syllabic template prothesis. One is based on Iraqi, and the other on Lebanese Arabic. The former adds the syllabic template of the form /sV-/ and the latter prophesizes a (CV) syllable /za-/. These ludlings attempt to obfuscate the initial portion of words and prothesis is applied only once per word; e.g.,

- ʔe:ma → saye:ma ‘A cloud’ [Iraqi]

- matal → zamatal ‘A proverb’ [Lebanese]

4.3 Insertion

A lot can be said about consonant epenthesis as a phenomenon of everyday speech; this is not, however, the aim of this paper. Rather, the primary aim is to show that the gaming processes used in converting source words into secret forms are similar to those that emerge in normal speech. Speakers of many ludlings employ segment epenthesis to encrypt their speech. The portion of sound, which is added, can be a single segment or a sequence of segments. Thus, epenthesis of segments corrupts the configuration of source syllables. Insertion is the most common gaming or distorting device used in language games (Botne and Davis, 2000: 319).

In most of the ludlings that incorporate insertion, segments are typically inserted after the onset of a syllable. BL employs insertion of a single segment of different identities. This segment is, either the voiced alveolar fricative /z/, the voiced velar stop /g/, or its voiceless counterpart /k/. While this deliberate epenthesis occurs, an additional segment will also be epenthesised, but this time it is rather unplanned for. In the current analysis of BL, it has been argued that in the course of distorting words, what is being inserted is a single segment, rather than a /CV/ sequence or a mono/bimoraic template. The insertion of the consonant, whether it is /z/, /g/ or /k/ or any other consonant, is a deliberate process but the epenthesis of the preceding vowel is a repairing action, and unintended for.

Epenthesis can also involve a biconsonantal cluster. Such is the case in the Algerian ludling Al-Ziglamia. The sequence /-ns-/ is introduced either after or before the original vowel of the heaviest syllable depending on phonotactic constraints. The location at which the sequence is inserted -before or after the vowel- is regulated by the phonotactics of the Algerian dialect. If the sequence cannot occur with the preceding consonants, then it appears before the original vowel, and vice versa; e.g. /ʔre:k/ → /ʔra:nse:k/ and /nta:l.ʕo/ → /nta:nsil.ʕo:so/ respectively. Generally, however, the vowel on both sides of the inserted sequence has the same identity as in /mʕa:ja/ → /mʕa:nsa:ja/.

4.4 Vowel Epenthesis

Vowel epenthesis appears to be an offshoot event that accompanies the deliberate insertion of segments in the language games that incorporate segment intrusion. In all the versions of BL, there is a consonantal segment to be inserted

within syllables. This is performed deliberately to corrupt the integrity of those syllables and consequently, to disguise the identity of words. However, the vowel before the inserted segment does so to break the disallowed consonant cluster which emerges after the insertion of the consonant.

TABLE 2:
VOWEL EPENTHESIS IN BIRDS’ LANGUAGE

Source form	Consonant insertion	Intolerable CC cluster	Accommodator vowel epenthesis	Meaning
ʕafwan	ʕ-g-afwagan	ʕg	ʕ-a-gafwagan	‘Welcome’
lamma ʔa:na	l-z-amma ʔ-z-a:niza	lz ʔz	l-a-zamma ʔ-i-za:niza	‘When’ ‘I’

This is a common practise in normal speech as well in most of the Arabic dialects. Speakers of Arabic break intolerable consonant clusters in their language by epenthesising a vowel between those consonants (Kiparsky, 2003: 3; and Fery and Van de Vijver, 2003: 13). The same kind of consonant cluster simplification is found in Arabic in loan words, as seen in words like *protein* /prəʊti:n/ → /b-o-ro:ti:n/, and *break* /breik/ → /b-i-reik/ (Hafez, 1996; and Bouchhioua, 2019: 38). Furthermore, some native Arabs might do the same when pronouncing words from other languages, such as English. Words like *excuse* /ɪkskju:z/ is pronounced by some Arab learners of English as /ɪks-i-kju:z/ (Bouchhioua, 2019: 38); hence, the cluster is broken apart by way of vowel epenthesis and the practice of vowel epenthesis is not uncommon, even in normal speech. In fact, Jenkins (2000, p.101), makes the claim that simplifying consonant clusters is a universal phenomenon present in most languages. She cites the English word *scripts* as an example being often reduced by native speakers of English to /skrips/.

Such phenomena as cluster simplification and the inclination of native speakers to integrate ‘unusual’ forms into their own form of speech production via the application of the native phonological rules could well be due to speakers’ perception of a continuous acoustic stream (Gibson, 2012: 38-39). Put more clearly, speakers generate certain tendencies for the application of certain -phonological- aspects of their native language. Additionally, evidence that might suggest speakers’ unawareness of comes from the use of a prothetic /e-/ by native speakers of Spanish prior to loanwords starting with /s+C/. It is argued that the surfacing of the prothetic /e-/ is a perception-based undertaking, and not a result of a productive grammar activity. Gibson (2012: 35) states that this argument is supported by an empirical study in which 50 Spanish-speaking subjects conveyed hearing an illusory vowel prior to non-native complex onsets. Hence, cluster simplification in the speech of Arabic speakers when speaking certain languages or in loanwords could also be a perceptual process of which speakers are not fully aware. (See *ibid*, and the references therein, for more discussion and details).

Hence, the inclination of Arabic speakers to apply vowel epenthesis to simplify consonantal clusters has strong support in the literature. Moreover, the identity of this epenthetic vowel

is determined through either autosegmental spreading from the original vowel which follows the insertion site, or the tendency of most Arabic dialects to insert the an /i/, which is subject to be assimilated, under dialectally varying situations, to a back vowel in the preceding syllable (Kenstowicz, 1986: 117; Kiparsky, 2003: 11).

4.5 Syllabification

Some ludlings involve the transposition or reordering of syllables within words. Others entail the addition, exchange and deletion of phonemes, which constitute the structure of the syllable. Therefore, it is possible to account for the inner structure of the syllable through the analysis of language games (Hombert, 1986).

The process of syllabification that language players carry out is a spontaneous one and can provide insights into the knowledge of phonological rules which speakers implicitly possess (Botne and Davis, 2000). The addition of segments at certain positions within words, after a vowel for example, indicates that speakers are easily able to cut the words into smaller units based on some implicit yet uniform rules (Davis, 1993: 11). Investigating how language players syllabify words might provide insights into syllable boundaries and for solving the problem of ambisyllabicity and comparing those with what theories have proposed on such issues (Botne and Davis, 2000).

Hence, one of the first evidence that the analysis of language games provides is the psychological reality of the syllable as a phonological unit. Typological accounts of language games, such as that provided by (Botne and Davis, 2000: 319), involve reference to some language games in which whole syllables are repositioned in diverse ways. A typical example of this form of distortion is reported by Conklin (1956), as cited in Botne and Davis (2000: 319) on a language game in Tagalog in which the initial and the final syllables exchange positions. Consequently, the distortion of the word *kapatid* /ka.pa.ti:d/ 'sibling' yields *tidpaka* /ti:d.pa.ka/. As is clear from the latter example, a speaker of this language game syllabifies the word *kapatid* into its constituting syllables then replaces the first and last syllables for each other. In another form of ludlings in Sanga, the word /ba:.ko.lwe/ is altered to /ba:.lwe.ko/ where the middle and the final syllables exchange location within the word (Kenstowicz and Kisseberth, 1979: 168). Thus, it becomes clear that such movement of whole syllables indicate the reality of syllable as a phonological entity.

Analyzing ludlings can also provide information about the inner structure of the syllable. Other sorts of transposition games appear in numerous languages in addition to the ones mentioned above. In order to disguise the identity of the source words, these words randomly introduce specific phonemes at specific points, disrupting the order of the constituent syllables. Such games, using the Spanish language as an example, would involve using words like *grande* /grande/ has the distorted form of *grafandefe* /grafandefe/.

Botne and Davis (2000) make a distinction between insertion games and imposition-games, under phoneme-addition games. In the former type, a fixed set of phonemes is inserted directly after the onset of the syllable, or between morae. In turn, imposition-games involve a consonant, but also in some cases a -CVC- sequence, imposed on the prosodic peak of the vocalic gesture. Thus, insertion-games breach the

construct of the syllable, whereas imposition-games violate the flow of the vocalic gesture.

Earlier nonlinear phonology studies have investigated the imposition-games as including the insertion of a CV-template. The analysis states that C stands for a predetermined consonant and V for a vowel that gains its vocalic identity through autosegmental spreading from the vowel that precedes it. Botne and Davis (2000) argue that it is more beneficial to analyse these games as involving a consonant-articulation imposition on the vocalic gesture. They maintain that the prosodic peak of the vocal gesture is the domain at which the imposition occurs: in syllable-prominent languages, the demisyllable break; and in mora-sensitive ones like Japanese, the demi-mora break (ibid).

In the medium of language games, generalisations on the syllable structure of the converted forms can provide good amount of support on previous claims relative to the source languages. A number of such generalisations are the following:

1. All of the new forms adhere to the Onset First Principle, which was put forth by Kahn in (1976) and supported by Clements in (1989), so long as they do not violate any language specific rules, like the morphological restrictions in Arabic.
2. Given that the nucleus is the centre or peak of the syllable, language players who use segment insertion usually do the conversion before the nucleus and occasionally after it, depending on the phonotactic rules of the language.
3. The reality of syllabic consonants is highlighted by language games that use conversion processes with respect to the syllabic element in a syllable, such as Gibberish, which converts words like *apple*/æpl/ into /ɪdɪgæpɪdɪg/, thereby treating the /l/ as a syllable peak.
4. In Arabic language games, all new forms conform to the typology that already exists in the source dialects, with the exception that new syllable types (configurations) that differ from the source types never emerge.
5. The new forms support observation of the disallowance of Arabic of onsetless syllables (Broselow, 2018: 2).
6. The CV type is the most common syllable type in language game forms, which contributes to its universality and higher frequency when compared to the other types.

4.6 Metathesis or Reordering

Metathesis or transposition of phonological elements in speech plays takes a number of forms depending on the metathesized units involved. An Arabic game derived from the Algerian dialect switches the first consonant in a word with the nearest one to its right. As in:

TABLE 3:
METATHESIS OF SEGMENTS IN AL-ZIGLAMIA LUDLING

Source form	Game form	Metathesized segments
ʃu:f	fu:ʃ	/f/ for /ʃ/
ruh.na	hur.na	/r/ for /h/
ʃwjjə	wʃjjə	/w/ for /ʃ/
si:di	di:si	/d/ for /s/

Some other types of games in other languages like Bosnian, Tagalog and Sanga involve the transposition or reordering of syllables word-internally.

TABLE 4:
METATHESIS OF SEGMENTS IN SOME LANGUAGE GAMES

Language	Source form	Game form	Metathesized segments
Sanga	/ba:.ko.lwe/	/ba:.lwe.ko/	/ko/ for /lwe/
Tagalog	/ka.pa.ti:d/	/ti:d.pa.ka/	/ka/ for /ti:d/
Bosnian, Croatian and Serbian	/zdra:.vo/	/vo:.zdra/	/zdra:/ for /vo/

The metathesis of phonological elements strongly support the reality of those elements and the awareness of speakers of their existence. Two observations may be significant in this regard. First, metathesis differs in terms of the span or distance within which it emerges from one medium to another. In historical changes, slips of some aphasics and language games, the largest span within which metathesis takes place is the word. While slips of the tongue involve metatheses which can exceed the word to larger portions of speech such as phrases and sentences. Second, and consequently, the largest metathetical unit in historical changes, ludlings and aphasic speech is the syllable; while in slips words and even phrases can occur as metathetical elements. This fact is direct support for the Strict Layer Hypothesis (SLH) proposed by Nespov and Vogel (1986) which demonstrates the relationship among the levels of prosodic structure. The SLH states that each prosodic unit is fully included and directly dominated by a unit of the next highest tier. Consequently, a syllable, for example, would necessarily be contained within a phonological word.

4.7 Gemination

What can be learned about gemination from the data of language games is that it results as a by-product of the encryption process. It occurs in both the Iraqi and the Syrian versions of BL in order to create heavy syllables in contexts where the preceding syllable is a light one. This is because the Iraqi data, and, according to Abu-Abbas (2009), the Jordanian and Standard Arabic data, necessitate the syllable that will receive the /z/ as its onset to become a heavy syllable unless it appears phrase finally. Gemination, however, takes a different form with respect to the dialect. The Iraqi BL incorporates consonant gemination while the Syrian BL displays vowel gemination (vowel lengthening), and, in fewer cases, consonant gemination. Thus, in all the cases of gemination, the syllable is light and a geminate consonant (a copy from the onset of the following syllable) joins the light syllable as a tail so that it becomes heavy; as in the following instance from Iraqi BL data:

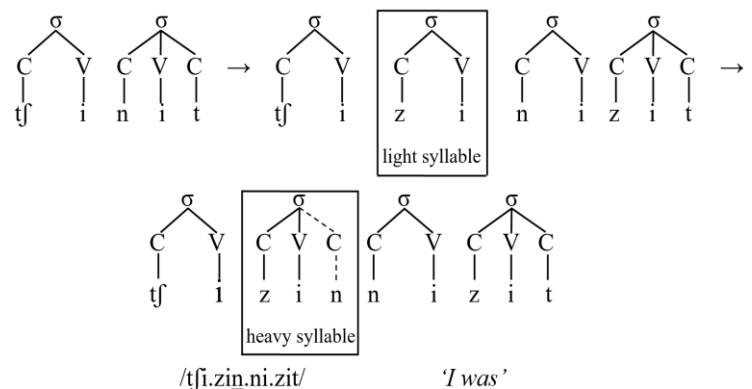


Fig. 1. Changing a light syllable into heavy through consonant gemination

In the Syrian version, light syllables are made heavy by way of vowel gemination or vowel lengthening so that the vowel will receive double its weight, as in: /ʔa.na/ → /ʔa.za:.na.za/ and /ka.ma:n/ → /ka.za:.ma.za:n/.

4.8 Vowel Harmony

Cases of vowel harmony are found in numerous incidents throughout the data in this study. BL game versions incorporate vowel epenthesis along with the inserted consonant and this epenthetic vowel needs to be harmonised with vowel of the source syllable. In the Syrian, Jordanian and MSA data, the epenthetic vowel is either a copy or a short version of the source vowel. In open light and closed heavy syllables, the epenthetic vowel is a copy of the source vowel; while in open heavy syllables (CVV), it is a short counterpart of the source vowel. With respect to the Iraqi and Saudi versions, the data display three different identities of the epenthetic vowel. It is either a replica, a short correlative of the source vowel or a short, mid-high, central vowel, represented as /i/ in the current study.

TABLE 5:
CONSONANT INSERTION IN BL LUDLINGS WITH VOWEL EPENTHESIS

BL variety	Source form	Ludling form	Epenthetic vowel
1. Saudi /k/ insertion	a. tallaʕna	tikallikaʕnika	i
	b. bu:sa:mi	bukuska:mi	u
2. Iraqi /g/ insertion	a. ʕala	ʕiga:liga	i
	b. kullij	Kugulligij	u, i
3. Iraqi /z/ insertion	a. ʔaxu	ʔizaʕʕizu	i
	b. wa:qha	wiza: qhiza	i
	c. ʕalajkum	ʕizallizajkizum	i
4. Syrian /z/ insertion	a. lamma	lazammaza	a
	b. ka:nu	kaza:nazu	a
	c. biħku:ha	bizihkuzu:haza	i, u, a
	d. sa:yi:ri	saza:ya:zi:razi	a, a, a
	e. husam	hazusazam	a, a
	f. fi:kum	fizi:kuzum	i, u

It is clear from the data above that the most common epenthetic vowel is the short, high vowel /i/, which is consistent with the traditional observation that intolerable consonant clusters in Arabic, especially in the eastern dialects, are broken apart by the insertion of the epenthetic vowel /i/ (Kiparsky, 2003: 11; and Mobaidin, 1991: 106). Nevertheless, dialectal

rules and the identity of the inserted segment are also factors in determining the quality of this vowel. The Iraqi version in which the /z/ is inserted, the epenthetic vowel is always /i/ regardless of the identity of the source vowel of the original syllable.

Dialectally, respondents of the two Iraqi versions of BL spoke a Baghdadi dialect. This and similar Iraqi dialects choose the /i/ vowel as an epenthetic element to break consonantal clusters in which consonants cannot be joined to a syllable, e.g., /gilt+la/ → /gi-lt-la/ → /gil-i-tla/ (Kiparsky, 2003: 3). The /i/ is short, mid-high, ²neutral and central, which allows it to be somewhat close to all the vowels of Arabic during articulation.

Furthermore, during the articulation of the inserted consonants /z/, /g/ and /k/, the tongue claims a high position which provides further support for the choice of /i/ in anticipation for the articulation of the three consonants. In other words, it is rather easy to epenthesise the /i/ vowel because of the tongue position in its articulation. In determining the identity of the epenthetic vowel, moreover, harmony operates in accordance with the stem vowel (Mobaidin, 1991: 106). Hence, the epenthetic vowel surfaces as /i/ in (1, a) and (2, a and b) since the vowel is /a/ in the stem /talaʕa/; and as /u/ in (1, b) since the stem vowel is /u:/ in ³bu:/.

In some of the data, the quality of the epenthetic vowel seems to be determined by the articulatory transition from one segment to the next. For instance, in (4, e) the pharyngeal /ħ/ is articulated then the tongue only needs to claim an almost natural position for the articulation of /a/, before moving to the front to produce the alveolar /z/. thus, the tongue first retracts back to articulate the /ħ/ consonant then moves to the front to a nearly natural position - a position close to when the tongue is inactive- and finally moves forward to produce the alveolar /z/. in other words, the movement of the tongue has an almost straight direction starting from the back, to the middle and then to the front of the mouth.

V. CONCLUDING REMARKS

The study has reviewed some phonological processes observed in ordinary speech and has given a descriptive account of similar processes used in language games as a means of phonological distortion as well. Speech plays employ the processes cited in this paper in order to distort the configuration of the source forms and hence disguise their meaning. These processes already exist in normal speech and in a number of phenomena, e.g., historical changes, speech disorders and spontaneous slips of the tongue. Everyday speech typically involves phonological processes occurring in a natural, intuitive manner largely because of modifying speech sounds with their surroundings, which eventually makes connected speech a relatively easier activity. The processes occur in speech impairments and tongue slips as a result of failure to execute target forms with sufficient accuracy, and are therefore undeliberate. The difference between these occurrences and the ones that are attested in speech plays is the aspect of intentionality. Phonological gaming processes are usually deliberate, e.g., vowel harmony. As a result, there are analogous

processes in normal language that, in some manner, correspond to gaming activities. The current analysis can be used to draw a number of conclusions. These include:

1. The implementation of gaming processes is systematic which are employed to conceal ordinary speech.
2. All of the phonological processes which arise in speech plays as surveyed in this paper have their analogous processes in normal speech.
3. The processes which occur in ordinary speech are accommodatory in the sense that they arise to condition or assimilate speech sounds with their phonological environments, whereas those utilized in language games are planned for.
4. The outcome forms after applying the gaming processes are tolerable by the rules of the languages from which the ludlings are driven.
5. In theory, the number of processes which can be used in language games is unlimited. Speakers may innovate any type of processes to form a secret means of communication.
6. The most common phonological process used in language games is insertion of phonological elements, i.e., single segments, sequences of sounds and even syllables.

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² 'Neutral' in terms of lips rounding. The other two configurations of the lips during the articulation of vowels -which represent opposing extremes- are 'spread' and 'rounded'. Hence, the epenthetic /i/ claims a middle configuration.

³ /bu:sami/ is originally /bu:/ 'father of' plus /sa:mi/ 'Samy', i.e. personal name.

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