Grammaticality in Japanese clipping

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Abstract

This paper analyzes the role of morphology in the clipping process of the Japanese language. Contrary to views that clipping is either not a morphological or should not be accounted for in the grammar (cf. e.g. Scalise, 1984, p. 94; Spencer, 1991, p. 461; Mel'čuk, 2006, p. 311), Japanese clipping appears to be morphologically motivated and is a productive process in the language. A review of the relevant literature on clipping shows that the process is vaguely defined and often considered arbitrary in how its outputs are formed. I propose a unified definition of clipping on the basis of which I analyze examples from a database of over 600 Japanese clipped outputs. My own model of how clipping might fit into the grammar is based on the application of the Process-and-Paradigm Morphology framework (Pounder, 2000) and expansions upon that framework by Winters (2017). In this model, I create representations of word-formation operations which are able to account for many of the forms found in Japanese clipping while also giving an account of when clipping happens in word-formation. The retention of class-specific affixes and morphemes in Japanese clipped outputs provides evidence for patternability in clipping and an awareness of morphological structures by speakers, which demonstrates that clipping exhibits grammaticality and belongs within morphological theory.

Key words: morphology, semantics, phonology, clipping, word-formation processes, Japanese, Process-and-Paradigm Morphology

1 Introduction

In this paper, I discuss the morphological aspects of clipped forms in Japanese. While English has been the main focus of most of the research on clipping, Japanese provides insight into the process as clipping is rather productive in the language. Unlike Japanese, English often disregards morphemic boundaries in its clipping processes while Japanese adheres to these boundaries in most cases. In addition to this, expressions in Japanese are more morphologically transparent than English as the Japanese language uses class-specific affixes which remain in clipped outputs; moreover, the morphemes which comprise compounds are easily identifiable by speakers. For example, an English clipping example (1a) is compared to a Japanese one (1b) whereby morphemic boundaries are respected as well as able to be parsed.

1)	Whole Form		Clipped Output	Gloss
	a. ***app****li-cat-ion*	→	*app*	(application)
	b. *ri-**reki**-sho* perform-history-document	→	*reki*	(curriculum vitae)

In English, *application* has the morphemes of the base *apply*, the verbal affix *-cate*, and the noun affix *-tion*, yet its clipped output *app* disregards the morphemic boundary of *apply*. In the Japanese clipping of *rirekisho*, however, the morpheme *reki* which refers to 'history' has been retained and the morpheme is unbroken.

By applying morphological operations and approaches from Process-and-Paradigm Morphology (Pounder, 2000; Winters, 2017) to the well-researched phonological approaches which have already been done on Japanese clipping (see Poser, 1990; Itō, 1990; Nishihara, van de Weijer, & Nanjo, 2001; Irwin, 2011), this paper aims to show that the morphology of Japanese works in conjunction with its phonological rules in order to create clipped outputs, but ultimately it is the morphology which must direct the phonology. This paper shows that clipping is a process which is pattern-based and follows certain rules which therefore indicate it should be considered as part of a language's grammar.

Section 2 provides a background to clipping which details the issues which arise from considering it an arbitrary and non-grammatical process. It also gives a brief overview of the literature on clipping and provide descriptions and definitions of the clipping process. Section 3 provides a brief methodology for the compilation of the database of Japanese clippings underlying this research, and the analysis of the database follows in Section 4. Section 5 proposes a model of the clipping process and draws on principles from Process-and-Paradigm Morphology to highlight the patternability and grammaticality of clipping, and Section 6 concludes.

2 Background

Clipping is a process which creates new lexemes by shortening expressions. Even though this process alters the form of an expression, its status as a morphological process is controversial. Some linguists claim that is not a morphological process and should not be incorporated into morphological theory (cf. e.g. Scalise, 1984, p. 94; Spencer, 1991, p. 461;

Mel'čuk, 2006, p. 311). The proposed justification for this position is that morphology as a grammatical component is predictable and contributes to changes in meaning. Clipped forms, on the other hand, are considered phonologically unpredictable, violating morphological boundaries and offering no change to semantic content. This paper investigates the Japanese language, as it exhibits a large number of clipped words and phrases which appear to be morphologically motivated in their construction.

2.1 Issues

Clipped forms in Japanese are prevalent in various contexts across the language, all of which provide evidence of the highly productive nature of the Japanese clipping process. A non-exhaustive example of clippings in each of these contexts of single words, compound words, and hypocoristic pet names is shown in (2a-c).

2)	Whole Form		Clipped Output	Gloss	Source Type
	a. ***natsu****kashi-****i***	→	*natsu-i*	(nostalgic)	single word
	b. ***gai****koku* ***shi****hoɴ*	→	*gai-shi*	(foreign capital)	compound
	c. ***No****buo-****chaɴ***	→	*Noo-chaɴ*	(little Nobuo)	hypocoristic

The clipped forms in (2a), (2b), and (2c) exemplify why examining Japanese is important for considering the morphological status of clipping. In (2a), the single-word adjective *natsukashi-i* retains the adjective-specific suffix *-i* in its clipped form, while in (2b) the integrity of morphemic boundaries is once again shown to be an important factor in clipping, and finally in (1c) the diminutive naming suffix *-chaɴ* also appears to be retained during the clipping process. All of these facts show that morphology is part of the clipping process in Japanese and is considered when clipping expressions.

Evidence for morphological involvement in the Japanese clipping process can be seen by applying Itō's (1990) prosodic minimality constraint. Itō (1990, p. 221) states that in Japanese, a minimal word derived by deletion processes such as clipping must be more than one syllable and must contain at least two morae distributed across its syllables. In (2c) if the suffix *-chaɴ* is not considered in the clipping process, the expected clipped output would be **Noo*. However, **Noo* only consists of one long syllable; thus, it violates Itō's prosodic minimality constraint. Additionally, while **Nobu* could be created as a clipped output and would satisfy the minimality constraint, *Noo-chan* is what is produced. The form *Noo-chaɴ* satisfies the minimality constraint through the attachment of the suffix; therefore, the *-chaɴ* suffix seems to be crucial in satisfying the minimality requirement of the clipped form. Although *-chaɴ* can be argued as just another syllable being selected to satisfy the minimality constraint without regard to its morphology, the fact that *-chaɴ* is key in hypocoristic formation seems to suggest that its morphological status is what speakers are considering in the clipping process as opposed to its syllabic structure. This suggests that speakers are exhibiting an awareness of the morphological structure of an expression when engaging in the clipping process.

Another issue regarding the investigations of clipping in general thus far is that the majority of analyses are phonological. This is also the case with analyses of Japanese clipping (see Poser, 1990; Itō, 1990; Nishihara, van de Weijer, & Nanjo, 2001). However,

such analyses have limitations when considering other aspects of linguistic expressions such as semantics and morphology. Inasmuch as a phonological account can explain the sound profile of a clipped output and the constraints used by speakers to produce it, it is not able to explain the influence of materials like *-i* in (2a), *-chaɴ* in (2c), or other affixes in the creation of a clipped output.

Although some accounts have focused on hypocoristics, also known as diminutive personal names (see Poser, 1990, Itō, 1990), they do not analyze the presence of the *-chaɴ* suffix in the clipped output. This is a missed opportunity for a morphological investigation of clipping as others who have researched hypocoristic formation such as Roca and Felíu (2003) or Lappe (2003) who have investigated Spanish and German hypocoristic clipping respectively have found that in using a morphological approach, they can account for linguistic material which the phonology cannot predict. For example, the Spanish hypocoristic clipping *Agustín* → *Tino* (Roca & Felíu, 2003, p. 200) uses the suffix *-o* which indicates masculine gender and therefore exhibits morphological agreement. In this case, grammatical gender agreement is something which the morphology of a language must direct the phonology to convey and cannot be derived from phonology alone. This finding is similar to the appearance of the *-i* suffix in a Japanese adjective clipping, e.g. *hazukashi-i* → *hazu-i* 'embarrassing' which is not accountable by phonology alone. Therefore, the works of Lappe (2003), and Roca and Felíu (2003) indicate that morphological accounts of clipping are able to provide information beyond those of phonological accounts. This strongly suggests that the clipping data for Japanese needs research beyond just the phonological, something which a morphological account may explain.

2.2 Exploring definitions and descriptions of clipping

In order to properly analyze clipping, it is imperative that a general definition of the process be established. Definitions of clipping available in the literature are often general, omitting specifics of how clipping is actually accomplished. In his description of clipping in English, Marchand (1969, p. 441) defines the clipping process simply as reducing a word to just one part of its whole form, like *mag* for *magazine*. He also claims that a clipped form is not a morpheme, but an arbitrary part of the source word; however, this does not mean the remnants of a clipping can never be morphemic. Counterevidence is seen in Japanese clippings, e.g. *daigaku-iɴ-sei* 'graduate student' → *iɴ-sei*, as both remnants of the clipped form are morphemes as well as syllables.

Additionally, Adams (1973, p. 135) defines clipping as a process which usually occurs primarily on nouns whereby two or more syllables are removed from the word and no meaning change occurs. Bauer (1983, p. 233) shares some ideas with Adams by defining clipping as "the process of shortening a lexeme without changing its meaning or part of speech". Bauer also states that which parts or syllables of a word and how much of it will be clipped are unpredictable, again framing clipping as targeting material arbitrarily.

Even though Adams (1973, p.135) and Bauer (1983, p. 233) state that clipping is unpredictable, López-Rúa (2002, p. 43), Plag (2003, pp. 148-152), Fandrych (2004, p. 30), and Mattiello (2013, pp. 72-79) identify patterns in clipping. Of these patterns, there are many subtypes: back-clipping – the deletion of the end of a word; fore-clipping – the deletion of the beginning of a word; mid-clipping – the deletion of the middle of a word;

edge-clipping – the deletion of the beginning and end of a word; and, clipped compounds – the deletion of a compound to one or two of its parts. Each of these subtypes can be found in Japanese and is shown in (3a-e).

3)	Source Form	Clipped Form	Gloss	Clipping Type
	a. *gooru-**kiipaa***	*kiipaa*	(goal keeper)	fore
	b. ***mini**-sukaato*	*mini*	(mini skirt)	back
	c. ***tou**kyou **dai**gaku*	*tou-dai*	(Tokyo University)	compound
	d. *ri**reki**-sho*	*reki*	(curriculum vitae)	edge
	e. ***kyabine**tto-**baɴ***	*kyabine-baɴ*	(cabinet-size photo)	mid

The patterns seen in (3a-e) support the evidence that clipping is a patternable process which indicates that clipping is not wholly arbitrary. Furthermore, Bauer, Lieber, and Plag (2013, p. 403) claim that there are two types of clippings styles – phonological clippings and morpheme clippings. A phonological clipping targets sound sequences with no focus on meaning, whereas a morphemic clipping is one which targets morphemic constituents for retention. This corresponds to compound noun clippings in Japanese, for example *gaikoku shihoɴ* → *gai-shi* 'foreign capital', as both *gai* 'outside' and *shi* 'resource' are morphemes. Therefore, it appears that clipping is a process which takes an expression, selects a sequence of material to retain as opposed to delete since the phenomenon of morphemic clipping implies that a morpheme's meaning is essential to the interpretation of the clipping, and deletes the rest of the unselected material.

Thus far, many definitions, descriptions, and views of clipping have been reviewed which describe clipped outputs, but either do not define the clipping process itself or do so vaguely. Therefore, I suggest a working definition of clipping combines properties and patterns outlined by Marchand (1969), Nishihara, van de Weijer, and Nanjo (2001), López-Rúa (2002), and Bauer, Lieber, and Plag (2013) with some modifications.

> **Clipping:** the word-formation process which creates a shorter form of a whole expression without a change in meaning or lexico-syntactic class.
> **Truncatum:** the phonologically or morphologically defined material remaining after the clipping of an expression.
> **Truncandum:** the phonologically or morphologically defined material deleted during the clipping of an expression.

The working definitions of clipping, truncatum, and truncandum that I have established may be revised later if evidence shows that they are insufficient.

To discuss clipping theoretically, I have adopted Pounder's (2000) theory of Process-and-Paradigm Morphology framework which claims that word-formation is paradigmatic. A short explanation of the word-formation operations used in this framework and specifically for this paper are shown in (4).

4)
X + *-ku*	← Form rule: signifies changes in form
ADV ('X')	← Semantic rule: signifies changes in meaning
$\Sigma_{Adj} \rightarrow \Sigma_{Adv}$; Slot I	← Syntactic rule: signifies changes lexico-syntactic class
(SAMUKU-)	← Derived Form as a result of the operation

In (4), the word-formation operation is applied to the base Japanese lexeme SAMU 'cold'. The form rule shows that affixing *-ku* maps onto a meaning of 'coldly' and transforms the adjective into an adverb. Moreover, the clipped forms produced by the operations in Winters (2017) are not standalone words, nor do they act as independent word-forms; but rather, they are combined with other clipped forms to create blends. Therefore, the contributions of the current paper apply the word-formation operations found in the Process-and-Paradigm framework to create standalone clipped forms. Furthermore, in this framework, all operations applying to a given base type are organized in a dynamic network or paradigm array in the morphological component, which is mirrored at the lexical level by the paradigmatic organization of lexemes related through word-formation. Ultimately however, the paradigmatic side of clipping will not be discussed in this paper, but see Daniel (2018).

The exploration of definitions and descriptions of clipping and establishment of a unified definition in this chapter serve to create a foundation for my analysis of Japanese clipping data in Section 4 and its discussion in Section 5. The clipping types attested for in Japanese (see Nishihara, van de Weijer, & Nanjo, 2001; Irwin, 2011) and the application of Itō's (1990) minimality constraint supplement the identification of the roles of morphology, phonology, and semantics in the Japanese clipping process which occurs in Sections 4 and 5. Lastly, the brief overview of word-formation operations in Process-and-Paradigm Morphology as outlined in this chapter provide for a fuller, more in-depth discussion of clipping in Japanese in Section 5.

3 Methodology

This section discusses the methodologies for the database underlying this research. This database of clipped forms was compiled from sources such as Prem (1993), Jisho Online Dictionary (n.d.), Zokugo Dictionary Online (n.d.), and from various newspaper articles compiled from Asahi Newspaper (2011) which appeared in a compilation book of that year. In compiling this database, I specifically sought out native Japanese expressions and Sino-Japanese expressions. Loanwords were omitted in general as most of the research on Japanese clipping (see Itō, 1990; Nishihara, van de Weijer, & Nanjo, 2001; Irwin, 2011; Petrulyté, 2015) has been conducted using them, and they do not show the complex morphological structure as seen in native expressions. However, some loanwords appear in the database since they were compounded with a native Japanese or Sino-Japanese word.

Overall, 609 items were collected for the database. However, out of these 609 items, a few are counted two or three times as they contain multiple affixes and each affix was analyzed separately. The database compilation contains various organizational categories such as source form, expression type (e.g. a single word, compound, or phrase), syntactic class (e.g. noun, verb, adjective), phonological clipping type (e.g. fore-clipping, back-clipping), morphological formation type (e.g. derivational, inflectional), affix retention status, and affix type which corresponds to the affixes found in the clipping and their meaning. These organizational parameters were established to aid in analyzing the data which is discussed in Section 4.

4 Morphological structures in clipping

This section analyzes the material in the database described in this paper. This section contains a short discussion of the theoretical implications of the database items while a broader and in-depth discussion will be found in Section 5.

In this section, an analysis of the database of compiled Japanese clippings shows that predictability can be found in clipping beyond just the phonological patterns attested (see Subsection 2.2). Evidence for this is shown in (5-7) where in each expression, the lexical morpheme *gen* 'prime' is always retained. The retention of this morpheme indicates a level of predictability for clipped outputs involving atom-related topics in Japanese which may be able to be extrapolated to other clipped outputs.

5) ***gen***-*shi-ryoku* ***hatsu***-*den*-*sho*[1] → *gen*-*patsu* (atomic power plant)
prime-particle-power **emit**-electric-place$_{AFF}$
(atomic)-power (generation)-place

6) ***gen***-*shi-ryoku* ***nen***-*ryou* → *gen*-*nen* (atomic fuel)
prime-particle-power **burn**-material
(atomic)-power (fuel)

7) *ni-hon* ***gen***-*shi-ryoku* ***san***-*gyou* → *gen*-*san* (Japan atomic industry)
sun-origin **prime**-particle-power **produce**-craft
(Japan) (atomic) (industry)

At first, the process of producing a clipped output may seem to be unpredictable in what components will be retained or deleted. For example, unlike in (5) and (6), the output in (7) does not appear as **ni-gen* which would be the expected output of a compound clipping. However, as shown in these examples, predictability can indeed be found beyond a surface phonological view as in all of these examples, the focus of retention is the morpheme *gen* 'prime' and not just a phonological sequence. This implies that anytime 'atomic' is part of the source, the *gen* morpheme is retained. Furthermore, this implies patternability in Japanese clipping on a semantic level. In this section, analyses of the morphology of clippings will ultimately show that there are distinguishable morphological patterns in clipped outputs which are not deducible from a phonological analysis alone.

As evidenced from examples (5-7), phonology alone does not seem to account for why certain phonological sequences of a source word which happen to be morphemes are retained during clipping. This suggests that the phonology in a speaker's grammar is being directed by another component of the grammar so as to select what materials and sequences should be retained for a clipped output. A view suggested in Section 1 of this paper is that the morphological component of the grammar is ultimately responsible for driving the clipping process and directing the phonological component in how to carry out instructions for creating a clipped output. In the database compiled for this paper there are two components of expressions which seem to affect the truncata of a clipped output: root morphemes and affixes.

[1] The change of /h/ to /p/ is a process of despirantization in Japanese which occurs on an initial consonant when a word, or in this case a truncatum, becomes the second element of a compound (Hinds, 1986, p. 421).

Nishihara, van de Weijer, and Nanjo (2001, p. 300) and Ishiwata (1993, p. 99) state that morphemes are an essential component in clipping Sino-Japanese compound expressions which originate from Chinese. This statement appears to be true as morphemes often contain more than one mora which would mean that the phonological minimal constraints of two morae and two syllables (Itō, 1990) for a clipped output would often be satisfied by just the first morpheme alone in a compound clipping. Yet as predicted by Nishihara, van de Weijer, and Nanjo (2001), and Ishiwata (1993), a two-word compound as in (8) retains its first morpheme of its first word in the compound as well as the first morpheme in the second word of the compound. Thereby, these outputs which contain four morae in (8) and six morae in (9) as indicated by the period notation in the examples, have exceeded two and three times that of the prosodic minimum.

8) ***wa.ri****-ma.e* ***ka.ɴ****-jo.u* → *wa.ri-ka.ɴ* (Dutch treat-style date)
split-before **cheque**-determine
(portion) (calculation)

9) ***te.i-ki*** *jo.u-sha-****ke.ɴ*** → *te.i.ki-ke.ɴ* (season commuter pass)
determine-period ride-vehicle-**ticket**AFF
(periodic) (boarding)-ticket

By having more than the minimally required number of morae, the truncata in (8) and (9) imply that these clippings as well as many others like them do not have their elements selected for retention solely on the basis of meeting phonological constraints. When analyzed further, the morphemes *wari* and *kaɴ* in (8) contain the semantic meanings of 'split' and 'cheque' respectively. In (9) *tei*, *ki*, and *keɴ* mean 'determine', 'period', and 'ticket'. Regarding the semantics of morphemes, examples such as (8) and (9) show logical ties with the composite meaning of their respective compounds. For example, a 'split-cheque' relates easily to the idea of a Dutch-style date where each person pays their own way; just as a 'determine(d)-period-ticket' relates easily enough to the intended meaning of a season pass since a season is a fixed or determined period of time for which the ticket or pass is valid. Examples (8) and (9) show that when analyzing the truncata which form Japanese clipped outputs, the semantics of morpheme elements appear to be important in the formation of clippings. More research is needed for this topic as the focus of this paper is not morpheme semantics, but this is only addressed to clarify that the semantics seem to play a role in determining what truncata will result from a clipping.

Other elements which are retained in Japanese clippings as seen in (5) and (9) are elements which appear to be affixes. This classification is suggested by the fact that these elements are attached onto words yet are not words in and of themselves. For example, *-sho* 'place' is attached onto nouns to indicate some type of location, while if one wanted to refer to the word for 'place' alone, then one would use the noun *basho*. A similar phenomenon happens in English where the word *like* is a standalone word in many contexts, for example *he has reflexes* ***like*** *a cat*. However, English speakers are able to affix *-like* onto a noun, e.g. *he has cat-****like*** *reflexes*. Marchand (1969, p. 356) calls these "semi-affixes" which are morphemic elements midway between a standalone word and a suffix.

Aside from semi-affixes, truncata which are unambiguously affixes are also important in influencing what elements of a source word will remain in its clipped output. In Japanese, verbs and adjectives have obligatory, lexico-syntactic class-specific marking

for tense. From the database entries gathered, there is a noticeable retention of these adjective and verb markers. Examples are given in (10) of an adjective clipping and in (11) of a verb clipping, both of which show that the morphological value of these class-specific tense markers affect the clipping process as they must appear affixed to a clipped output.

10) ***utto****ushi-****i*** → *utto-i* (gloomy)
gloom-ADJ
11) ***koku****-haku su-****ru*** → *koku-ru* (confess)
reveal-white do-NON-PAST

Overall, the presence of an affix or semi-affix appears to contribute to a morphological pattern in the clipping process. For example, affixes like *-i* and *-ru* for adjectives and verbs, and semi-affixes like *kei-* 'light', *juu-* 'heavy', and *-hou* 'law' show consistent retention in the database, while other semi-affixes like *-ryoku* 'powered', *-sei* 'type', and *-tou* 'et cetera' show consistent deletion. Moreover, semi-affixes like *zeɴ-* 'all', *sou-* 'general', and *-kai* 'association' show variable rates of deletion and retention. Out of the 609 entries in the database with affixes or semi-affixes in their source forms, 195 items showed affix/semi-affix retention which is roughly 35%. The deletion and retention as mentioned previously seem dependent on the semi-affix.

Of the (semi-)affixes in the database, the positioning of the (semi-)affix appears to show some pattern in its retention or deletion. The semi-affix *-iɴ* 'member' in (12) for example, shows retention when it is the final element in an expression; however, when *-iɴ* is not the final element of a word as in (13), it is deleted.

12) *giɴ-****kou-iɴ*** → *kou-iɴ* (bank teller)
silver-**conduct-member**AFF
(bank)-member
13) ***kok****-ka* ***kou****-mu-iɴ-****hou*** → *kok-kou-hou* (national civil service law)
nation-house **public**-task-memberAFF-**law**AFF
(state) (official)-member-law

The implication that arises from (12) and (13) is that some (semi-)affixes are dependent on the headedness of a compound or phrasal expression. This is not a topic covered in this paper and is reserved for future research; however, the results of the morphological analysis in this section suggest that the morphological component of the grammar plays a significant role in the clipping process. This is attested by the morpheme retention shown in the examples of this section and strongly indicates that the morphological structure of an expression seems to be analyzed to a great extent during the clipping process.

5 Discussion

This section addresses the analyses from the compiled database of Japanese clippings in order to discuss how a morphological approach to clipping relates to the grammar. The primary question of this discussion is: when does the clipping process take place in the grammar? To be able to answer this question, a conceptual model of the grammar needs to

be developed. Of the scholars discussed in this paper so far, none have addressed when clipping takes place in the grammar. Adapting a model from Beard (1995, p. 45), Table 1 shows a hypothetical model of how the clipping process in Japanese may correspond to the grammar.

Table 1: A conceptual model of the clipping process

Grammar	Clipping Process
Lexicon	
Lexical Organization Word-Formation and Grammar Rules	Early-phase clipping: analysis of syntactic class, origin of expression, and morpho-semantics –if noun: select morphemes to retain –if adjective, verb: select first two morae
Inflection Phonology	Late-phase clipping: analysis of inflection and phonological structure –select necessary inflectional material, check prosodic requirements
Spellout	Clipped Output

The model in Table 1 shows that there are two phases of clipping. The first phase of clipping, named "early-phase clipping", corresponds to the lexical organization, word-formation, and rule-based components of the grammar. The second phase of clipping, or "late-phase cliping", corresponds to the inflectional and phonological components of the grammar. Finally, the clipped output occurs at "spellout". I will argue for this model and these phases in the following sections using evidence from the database analysis.

Subsections 5.1 and 5.2 are dedicated to discussing two phases of the clipping process which lead up to creating a clipped output in Japanese. To elaborate, Subsection 5.1 explores early-phase clipping - the phase in which certain expression information such as syntactic class and origin of the expression are analyzed in preparation for clipping. Subsection 5.2 explores late-phase clipping - the phase in which clipping operations occur and the output is near to being finalized before spellout. Subsection 5.2 also discusses the end of the clipping process before all expressions are clipped for spellout.

5.1 Early-phase clipping

As discussed in Section 4, a number of factors appear to influence the creation of a clipped output in Japanese – lexico-syntactic class, morphological structure, phonological structure, and even language origin. I argue that each of these factors is essential to creating a clipped form and have a correspondent phase of the grammar in which they are assessed in the clipping process.

The early phase of clipping happens right after word-formation operations have been applied. In this phase, an expression's syntactic class, language origin, and morpho-semantics are assessed. Syntactic class is important in this assessment as expressions which are adjectives or verbs have obligatory class marking, whereas nouns do not have this requirement for form. For example, in the adjective *kara-i* 'spicy', *-i* is suffixed to an

adjective's base to mark tense, in this case, the non-past form. As the *-i* suffix is class-specific to adjectives however, it also indirectly marks the lexico-syntactic class[2].

Language origin is important for the system to discern the degree to which the morpho-semantics play a role in the expression's interpretation and is crucial in the analysis of nouns. For example, a loanword such as *merodii* 'melody' is clipped to its first two morae: *mero*, while a Sino-Japanese word such as *ri-reki-sho* 'curriculum vitae' is clipped to one of its morphemes *reki* instead of its first two morae **ri-re*, which would break a morpheme boundary. According to a survey of vocabulary conducted by Kokuritsu Kokugo Kenkyuujo (1964), the national language institute in Japan, Iwasaki (2002, p. 29) reports that words of Sino-Japanese origin (47%) outnumber words of native Japanese origin (36%) and loanwords (17%) when compared to these categories separately. A source expression's language of origin is oftentimes apparent to Japanese speakers, as Sino-Japanese expressions have certain phonological structures which set them apart from most native Japanese expressions, while loanwords, most of which come from English, are also rather phonologically transparent as foreign in origin. Shibatani (1990, p. 147) further elaborates that the meanings and origins of Sino-Japanese words are transparent to Japanese speakers, much like how Latinate words are sometimes transparent in English. Furthermore, Itō and Mester (1999, pp. 62-63) also attest this phenomenon which they label "phonological stratification". Therefore, language origin in regards to clipping and morphemic analysis refers to the notion that a loanword has little or no morphemic analysis to offer, while a Sino-Japanese word is comprised of multiple morphemes transparent to the speaker. Examples of loanword structure and Sino-Japanese structure are shown in (14a and b).

14) a. *ma.ɴ.ne.ri.zu.mu* (stereotype)
b. *a.sa i.chi-ba.ɴ* (first thing in the morning)
morning one-number

In (14a), *mannerism* has morphological structure in English with the base lexeme MANNER and the derivational affix *-ism*. In Japanese, however, the corresponding word consists of nothing more than a base. The breakdown of an expression into its morphemes as in (14b), seems to be the reason why clipping targets specific moraic sequences rather than one mora alone. For example, (14b) can be clipped to *asa-ichi* which shows that when morphological boundaries are transparent, violation of them seems to be avoided as forms like **asa-i*, **sa-ichi*, and **ichi-ba* are not produced. In cases of Sino-Japanese expressions, it is a lexical morpheme, not a phonological sequence, that is retained and/or clipped and therefore may exceed the two-mora minimum established by Itō (1990, p. 233). In (15), *ko.ku* 'nation' and *re.ɴ* 'connect' consist of multi-moraic sequences which correspond to single morphemes in the compound ***koku**-sai **reɴ**-gou* 'United Nations'. Breaking these morpheme boundaries is not permissible in the clipping process and thus explains why clipping results in the complex structure *koku-reɴ* rather than the simpler **ko-re* which would satisfy Itō's (1990) prosodic minimality requirement.

[2] The status of the *-i* suffix as a non-past inflection marker is debated by Iwasaki (2013, p. 109) who claims it is a derivational stem-formation suffix, but for the purposes of this paper the *-i* suffix is an inflectional marker.

15) ***ko.ku***-*sa.i* ***re.ɴ***-*go.u* → *ko.ku-re.ɴ* (United Nations)
nation-edge connect-join
(international) (union)

Example (15) of a Sino-Japanese compound noun illustrates that noun clippings as well as clippings of Sino-Japanese origin have much more analyzable material in their structures which necessitates thorough morphological analysis in the early phase of the clipping process.

When an expression's syntactic class is assessed, adjectives and verbs are coded to clip to the first two morae and pass through the early phase without a need for in-depth morpheme analysis due to their class-specific obligatory marking. Nouns, however, require an assessment of language origin in order to discern how thorough of a morpho-semantic analysis is needed. This analysis determines which morphemic components, if any, are to be selected for retention and therefore language origin seems to offer an important contribution to Japanese clipping. As an example, a loanword noun will be recognized in origin as a loan and selected to clip to a minimum number of morae plus any derivational affixes it has which are key to its interpretation. In the case of having a key derivational affix, the loan will then most likely distribute its required morae across the clipped base and the affix, seen in (16) and (17), where the base has been clipped to just one mora and the affix completes the overall mora requirement.

16) ***po***.*ru.to.ga.ru*- *+* -***go*** → *po-go* (Portuguese language)
Portugal language
(Portugal) (language)
17) ***ga.i***-*ko.ku*- *+* -***go*** → *gai-go* (foreign language)
outside-country language
(foreign) (language)

(16) is an expression gathered from the database wherein it is evident that the suffix, which is Sino-Japanese in origin, has been retained. When compared to a wholly Sino-Japanese expressions with the same *-go* 'language' affix attached as in (17), the number of morae differs to the loanword clipping containing the same Sino-Japanese affix. This two-mora base in Sino-Japanese clippings corresponds to morphemes whereas the one-mora base in the loanwords has no morphological structure to analyze.

Thus, an expression of native Japanese or Sino-Japanese origin requires more processing due to its morphological structure as opposed to loanwords. After an analysis of syntactic class and language origin occur, the morpho-semantics determine which components of the expression exhibit the best saliency for interpretation in a shorter form. Using the example of the *-go* 'language' affix in (16) and (17), it is evident that this affix provides crucial information for these expressions and is therefore carried through to its clipped forms.

In compound expressions, as discussed in Section 4, the most frequent type of clipping retains the first morpheme of each word in a two-word compound. However, there are numerous compounds where the first morphemes are not always the ones which appear in clipped outputs. Furthermore, in compounds containing many words, many morphemes are usually retained. The example given in (18) shows a clipped output where

multiple morphemes are being retained beyond the expected one morpheme per word in the compound.

18)	***ji****-do.u*	***ha.ɴ****-ba.i-****ki***	→	*ji-ha.ɴ-ki*	(vending machine)
	self-move	**market**-sell-**machine**AFF			
	(automation)	(vending) (machine)			

In (18), it seems that morpheme retention is dependent on the semantics of the morphemes, rather than the sequence in which the morphemes occur. Therefore, (18) shows further evidence that the morphological analysis of an expression is vital to the clipping process in Japanese. After the syntactic class, language of origin, and morpho-semantics are analyzed in the early stage of clipping if applicable, then expressions proceed to the late phase of clipping

5.2 Late-phase clipping

In the late phase of clipping, inflection and phonology are carried out. Inflectional affixes such as *-i* for adjectives, *-ru* for verbs, and case affixes are attached to the clipped forms created in the early phase of clipping. For nouns, the late-phase is only used for case marking as inflection occurs after derivational affixes had been attached. Adjectives and verbs, on the other hand, pass through the early phase typically without undergoing any derivation; thus, they are simply clipped to a first two-mora template, then sent off to the late phase for their inflection. Evidence for this can be seen in examples like the compound adjective *ki-shoku waru-i* 'sickening, creepy' and *dabeɴ-o rou su-ru* 'to chitchat' shown in (19) and (20) wherein the morpheme boundaries of *shoku* and *beɴ* are both violated to create their clipped outputs.

19)	***ki-sho.****ku*	*wa.ru-****i***	→	*ki-sho-i*	(sickening, creepy)
	spirit-colour	bad-NON-PAST			
20)	***da-be****.ɴ-o*	*ro.u su-****ru***	→	*da.be-ru*	(to jabber, chitchat)
	trivial-speech-ACC	trifle do-NON-PAST			

In (19), the morpheme boundary of *shoku* is violated as only the first mora *sho* is retained, while in (20) the morpheme boundary of *beɴ* has been reduced to just its first mora *be*. The breaking of morpheme boundaries is the opposite of what would be expected in a noun clipping where the integrity of the mora sequencing which corresponds to a morpheme would be maintained. What this seems to imply is that for adjectives and verbs, because there is obligatory tense marking which is class-specific, the clipping process uses class-specificity to allow for morpheme boundary violation. Because the clipping of adjectives and verbs show a predictable pattern, I have illustrated two inflectional operations for adjectives in (21) and verbs in (22) with corresponding examples in (23-24).

21) Inflection Operations: Adjectives

x- + *-i*	x- + *-katta*
'non-past'	'past'
Adj; Slot I	Adj; Slot I

22) Inflection Operations: Verbs

x- + *-(r)u*	x- + *-ta*
'non-past'	'past'
V; Slot I	V; Slot I

23) TSUYOI (strong)

tsuyo- + *-i*	→	*tsuyoi*	(strong-NON-PAST)
tsuyo- + *-katta*	→	*tsuyokatta*	(strong-PAST)

24) KANGAERU (think)

kaɴgae- + *-ru*	→	*kaɴgaeru*	(think-NON-PAST)
kaɴgae- + *-ta*	→	*kaɴgaeta*	(think-PAST)

Given the patternability seen in adjective and verb clippings, I have created a clipping operation for adjectives and verbs, which is shown in (25) with corresponding examples in (26-27).

25) Clipping Rule for adjectives and verbs

$\mu_1\mu_2\mu_3$...- → $\mu_1\mu_2$-	←——Form rule: source form clips to its first two morae
Z ('X')	←——Semantic rule: clipped form undergoes no meaning change
$\Sigma_{Adj, V} \rightarrow \Sigma_{Adj, V}$	←——Syntactic rule: clipped form undergoes no syntactic change

26) UZATTAI (annoying)

u.zat.ta-	→	*u.za-*	→	*u.za-* + *-i*	→	*uza-i*
Base		Clipped Base		Inflection		Clipped Output

27) SHASHARIDERU (to partycrash)

sha.sha.ri.de-	→	*sha.sha-*	→	*sha.sha-* + *-ru*	→	*shasha-ru*
Base		Clipped Base		Inflection		Clipped Output

The clipping rule which applies to adjectives or verbs results in the lexeme base being reduced to just two morae before inflectional operations. In these types of clippings, the affix appears in the clipped output, which suggests that these expressions' inflectional material has been added after the clipping process.

The end of the late phase of clipping consists of the phonological analysis wherein prosodic minimality constraints are assessed and then spellout. By this point, an expression should meet the two-mora, two-syllable minimum in either its base or through a combination of a base truncatum and a derivational or inflectional affix, or in rare cases, affixes or semi-affixes alone. For example, ***ki.za****.wa.ri* → *ki.za* 'disagreeability' meets the moraic and syllabic minimum by forming its truncatum in the base alone, ***po****.ru.to.ga.ru-****go*** → *po-go* 'Portuguese language' meets the minimum by combining a base truncatum and an affix, and *da.i.ga.ku-****i.ɴ-se.i*** → *i.ɴ-se.i* 'graduate student' meets the minimum through retaining two semi-affixes. Naturally, only a well-formed clipping will proceed to spellout and be used. There are, however, a few examples which seem to involve breaking the order of the clipping process or the expected output for a clipping such as hypocoristic formation involving moraic lengthening as well as clippings which have two outputs of which both are

used by speakers. For example, *ji-dou haɴ-bai-ki* 'vending machine' is clipped to both *ji-haɴ-ki* and *haɴ-bai-ki*, when what would be expected is just one form: *ji-haɴ**. Additionally, the hypocoristic *Ami-chaɴ* 'little Ami' clips to *Aa-chaɴ*, where the *mi* mora is dropped and the *a* mora is lengthened, when what would be expected is *A-chaɴ**. However, these are topics I will leave for future research.

The positions argued for in this section have shown evidence based on the database corpus conducted for this research, and that a clipping model which consists of early and late phases for clipping provides more predictability in how Japanese clipped outputs are formed using a combination of morphological structure, semantics, and phonology. How these clippings relate to the source form is best accounted for using the Process-and-Paradigm Morphology approach designed by Pounder (2000) and expanded upon by Kunduracı (2013) and Winters (2017), as this framework corresponds to the paradigmaticity of bases to derived word-forms and word-formation morphology; however, the application of this framework to the lexical aspects of clipped forms and their storage is not a topic covered in this paper (see Daniel, 2018).

6 Concluding remarks

This paper has argued with evidence from Japanese that morphology plays a substantial role in the clipping process. Japanese was chosen as the focus for this research as it is a rather morphologically transparent language, and the clipping process is shown to be productive. By analyzing Japanese clipping from a morphological perspective, it is evident that there is predictability in the clipping process which can be accounted for by not only the morphology, but also the semantics and phonology of a clipped form.

The database of clippings which I compiled to investigate the Japanese clipping process is analyzed in this paper, and through this analysis numerous patterns of clipping are identified. The noted patternability of clipping allows for word-formation operations to be applied to the language via the Process-and-Paradigm Morphology framework. Moreover, the application of this framework and the phase model of clipping that I argue for in this paper are valid for the analysis of clipping in Japanese; however, these concepts may also be applicable to other languages. In English, there are suffix clippings much like in Japanese which appear to retain inflectional morphology in their clipped forms.

For example, *spectacles* referring to 'glasses' is frequently clipped to *specs*, a form which has the plural *-s* suffix in the output. This clipped form and forms similar to this may relate to the early and late-phase model of clipping wherein the source *spectacles* is the base lexeme which is modified by the clipping process shortening the lexeme then in the late-phase attaching the plural suffix *-s* to produce *specs*.

Future research that would supplement the evidence for morphology in clipping are topics such as the investigation of hypocoristic clippings mentioned in Subsection 5.2, in-depth analyses of the semantics of morphemes mentioned in Section 4, and lastly, historical accounts of clipping.

In detail, hypocoristic clippings behave differently to word clippings, as they are the only clippings which undergo compensatory lengthening on the vowel of the base when the base is reduced to one mora, for example *Nobu-chaɴ* being clipped to *Noo-chaɴ*, instead of *No-chaɴ**. The fact of this vowel lengthening indicates the possibility that the phonology

interacts with the morphology throughout the clipping process as opposed to separately after the morphological analysis has been achieved. Likewise, a deeper analysis of the morphemes involved in Sino-Japanese clippings may provide further insight on how semantics plays a role in which truncata will be selected for retention in the clipping process. This paper so far offers a rather cursory look into the involvement of semantics in clipping; thus, it would benefit the research of Japanese clippings were for semantic analyses to be done. Additionally, investigating the history of clipping in Japanese can illuminate how the process has changed over time.

In conclusion, while this paper offers insight and evidence for the role of morphology in clipping, it is not an exhaustive account of clipping in Japanese or of the process in its entirety. As discussed prior, many directions of future research that lie in other spheres of linguistics would supplement the findings in this paper.

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