

Mora clipping of loanwords in Japanese

Mark Irwin
Yamagata University

Loanwords in Japanese undergo a variety of truncation processes, including mora-clipping. Mora-clipping can itself be subdivided into back- (e.g. *čokoreeto* > *čoko* ‘chocolate’), fore- (*vanisu* > *nisu* ‘varnish’) and mid-clipping (*moruhine* > *mohi* ‘morphine’). Although back-clipping is the unmarked process, this paper seeks to answer a major issue as yet unresolved in the literature: at which mora are back-, fore- and mid-clippings typically clipped, and why? Although previous studies have claimed that syllable structure plays a major role, many exceptions remain unexplained.

Areas of interest: loanword phonology, truncation, mora, syllable

1. Introduction

Truncation, or compression, is common cross-linguistically. In Japanese it occurs most frequently in the *gairaigo* stratum¹ and takes many forms. These can be broadly divided into three types:

- (1) mora clipping
- compound reduction
- Roman alphabet acronyms

While mora clipping may be found with any word form, compound reduction and Roman alphabet acronyms are restricted to compounds. All three types of truncation are summarized in Table 1 (taken from Irwin 2011: 130), where the *gairaigo* compound *konbinieⁿsisusutoa* ‘convenience store’ serves as input.

¹Japanese exhibits lexical stratification. Native, mimetic, Sino-Japanese and foreign (*gairaigo*) strata are all well established, with most scholars acknowledging the existence of three (e.g. Martin 1952, Gottlieb 2005) or four (e.g. McCawley 1968, Vance 1987) of these layers. A few scholars (e.g. Rice 1997, Ota 2004) are sceptical as to the existence of lexical stratification in Japanese at all. Rather than models based on lexical strata, Itō & Mester (1995, 1999), as well as Fukuzawa, Kitahara & Ota (1998), Fukuzawa & Kitahara (2005), have posited core-periphery models. *Gairaigo* may be grossly defined as the residue after native, Sino-Japanese and mimetic words have been removed from the lexicon. But as a definition this is insufficient. In this paper, I adopt Irwin’s (2011: 10) definition:

A *gairaigo* is a foreign word which has undergone adaptation to Japanese phonology, has been borrowed into Japanese after the mid-16th century and whose meaning is, or has been, intelligible to the general speech community.

I posit no specific date before which a word cannot be a *gairaigo*, but rather the broad “mid-16th century”. This corresponds to the first Japanese contact with European languages. Under my definition, *gairaigo* include Chinese and Korean words borrowed since this time but exclude all borrowings prior, i.e. early Korean and Chinese loans as well as some others, such as *raōko* ‘sea otter’ from Ainu *rakko*. Any word borrowed from Chinese before the mid-16th century, along with all *kango yakugo* 漢語訳語, I consider Sino-Japanese; any borrowed thereafter *gairaigo*. Under my definition, orthography plays no role.

Table 1. *Gairaigo* truncation processes (from Irwin 2011: 130)

TRUNCATION		INPUT	OUTPUT	FOUND
MORA CLIPPING	back-clipping	<i>konbiniensusutoa</i>	<i>konbini</i>	✓
		<i>konbiniensusutoa</i>	<i>konbi</i>	X
		etc...		
	fore-clipping	<i>konbiniensusutoa</i>	<i>toa</i>	X
		<i>konbiniensusutoa</i>	<i>sutoa</i>	☒
		etc...		
	mid-clipping	<i>konbiniensusutoa</i>	<i>konnisu</i>	X
		<i>konbiniensusutoa</i>	<i>konentoa</i>	X
		etc...		
COMPOUND REDUCTION	compound clipping	<i>konbiniensu+sutoa</i>	<i>konsuto</i>	☒
		<i>konbiniensu+sutoa</i>	<i>konsu</i>	X
		etc...		
	ellipsis	<i>konbiniensu+sutoa</i>	<i>sutoa</i>	☒
		<i>konbiniensu+sutoa</i>	<i>konbiniensu</i>	X
portmanteau formation	<i>konbiniensu+sutoa</i>	<i>konna</i>	X	
ROMAN ALPHABET ACRONYMS		convenience store	<i>šitesu</i> (<CS>)	X

If a word undergoes truncation, it is typically found in one truncated form only; if a number of truncated forms exist, then usage heavily favours only one of them. In the case of *konbiniensusutoa* in Table 1, although the back-clipped form *konbini* is found with overwhelming frequency (✓), truncated forms may also occasionally (☒) be found which undergo fore-clipping, compound clipping, ellipsis, etc. A truncated form (e.g. the back-clipped *konbini*) may undergo further truncation (e.g. to fore-clipped *bini*) and even subsequent verbalization (e.g. *biniru* 'go to a convenience store'). A cross (X) in the rightmost column of Table 1 does not indicate that a truncated form is non-existent, rather that the author is unaware of one. Truncation processes are highly fluid and often confined to jargon, slang, youth speech and dialect. None of the truncation processes shown in Table 1 are restricted to *gairaigo*, although they occur a great deal more commonly in this stratum.

A number of questions regarding truncation processes in Japanese remain unanswered. In this paper, the author will focus on mora clipping only and attempt to answer the following questions. Of those *gairaigo* that undergo mora clipping, what proportion undergo back-, fore- and mid-clipping? At which mora (μ) are back-, fore- and mid-clippings typically clipped, and why?

To this end, the author has compiled a mora clipping database, henceforth referred to as the "MCD". All 334 MCD tokens appear as either an entry (or as a redirection to an entry) in the Wikipedia Japan pages posted during 2009 or 2010, and/or in at least one of the following 11 dictionaries: Umegaki (1956), Arakawa (1977), JKS (1977, 2003, 2010), Maruyama et al. (1992), Yonekawa (1997), GJH (2001), Watanabe et al. (2003), Shinmura (2008), SSDH (2010). Mora clippings that undergo vowel lengthening (e.g. *kemii* from *kemikarujii*nzu 'chemical-washed jeans') or mora obstruent insertion (e.g. *teQku* from *tekunikarusen*taa 'driving school practice ground') are omitted from the MCD. Also omitted are borrowed clippings and potential borrowed clippings, e.g. *in*toro 'intro', *basu* 'bus', *neQto* '(inter)net', *demo* 'demo', *anpu* 'amp', *furanku* 'frank(furter)', *maiku* 'mic', etc., all from English.

2. Mora clipping: A statistical analysis

The primary motivation behind mora clipping (and truncation processes in general) is the above-average word length of *gairaigo* compared to the Japanese lexicon as a whole. This is brought about, in particular, by epenthesis.² The more moras a *gairaigo* contains, the more likely it is to undergo mora clipping. In a survey of 6,249 loanwords, Kanno (1985: 56-57) found that, while approximately 35% and 25% of 11 μ and 10 μ *gairaigo* have clipped forms,³ the proportions fall to 10%, 7% and 3% for 5 μ , 4 μ and 3 μ *gairaigo*, respectively.

Mora clipping in loanwords can be divided into three categories: back-clipping (apocope, §2.1), fore-clipping (aphaeresis, §2.2) and mid-clipping (syncope, §2.3). The first of these clipping processes, back-clipping, is, by a considerable margin, the dominant one. In the MCD, the back-fore-mid ratio is 86:8:6. The motivation for a given *gairaigo* to either back-, fore- or mid-clip remains obscure, however, and here further research is required.

2.1. Back-clipping

In back-clipping, the latter portion of a *gairaigo* is clipped and only the first two (2), three (3), four (4) or, occasionally, five moras (5) retained. Analysis of the MCD shows a robust correlation between the length of a *gairaigo* full form and the length of its back-clipping (correlation coefficient = 0.99): those *gairaigo* back-clipped to 2 μ possess full forms which have, on average, 5.1 μ ; those back-clipped to 3 μ , full forms with 6.6 μ ; those back-clipped to 4 μ , 7.6 μ ; and those clipped to 5 μ , 9.5 μ .

Retention of the first two moras – binoraic back-clipping – is slightly preferred, making up 41% (118/286) of the back-clipped forms in the MCD, while trimoraic and quadrimoraic back-clipping account for 33% (94/286) and 24% (70/286), respectively. Itô (1990: 217) claims that, except for a very few written abbreviations whose status is questionable, monomoraic back-clippings are impermissible, as are those composed of 5 μ or more. While there are no 1 μ back-clippings in the MCD, there are four examples (1%) with 5 μ , as shown in (5).⁴

(2)	Eng. <i>operation</i>	opereēšON	>	ope	'operation'
	Eng. <i>strike</i>	sutoraiki	>	suto	'(labour) strike'
	Eng. <i>character</i>	kyarakutaa	>	kyara	'(cartoon, etc.) character'
	Ger. <i>Seminar</i>	zemināaru	>	zemi	'seminar'
	Eng. <i>mistake</i>	misuteeku	>	misu	'error, slip, mistake'
	Fr. <i>mayonnaise</i>	mayoneezu	>	mayo	'mayonnaise'
	Fr. <i>millimètre</i>	mirimeetoru	>	miri	'millimetre'
	Eng. <i>husband</i>	hazubāndo	>	hazu	'husband'
	Eng. (<i>cash</i>) <i>register</i>	rejisutaa	>	reji	'till, cash register'
	Eng. <i>ecology</i>	ekorojii	>	eko	'green, eco-friendly'

² In the context of contact linguistics, epenthesis refers to the insertion of additional phonemes by the borrowing language. In the case of Japanese, this can be further subdivided into vowel epenthesis and epenthesis of the mora obstruent /Q/. Thus, *supuriigoto* 'split (in bowling)' contains three epenthetic vowels and one epenthetic /Q/ (all highlighted in bold) – a single English syllable has been adapted to five moras (or four syllables) in Japanese.

³ Although Kanno makes no distinction between mora clipping and compound clipping (see Table 1) in his statistics, they still serve as a useful indicator of the relationship between length and truncation processes in general.

⁴ The last of these, first attested in 1779 (Arakawa 1977), is now obsolete. The first two have English sources ending in the morpheme *ment*. It is possible to view the process at work with these two loans as morphological reduction (during adaptation donor words are typically shorn of native morphology), in this case deletion of the *ment* morpheme. This means that, synchronically, there would only be one example of a 5 μ back-clipping, *konšenŋO*.

(3)	Ru. кампания	kaNpania	>	kaNpa	'fund-raising campaign'
	Eng. <i>permanent (wave)</i>	paamanento	>	paama	'perm'
	Fr. <i>centimètre</i>	senčimeetoru	>	senči	'centimetre'
	Eng. <i>MacDonald's</i>	makudonarudo	>	makudo ⁵	'MacDonald's'
	Eng. <i>component</i>	konponento	>	konpo	'component'
	Ger. <i>Impotenz</i>	inpotencu	>	inpo	'impotence'
	Eng. <i>puncture</i>	pankučaa	>	panku	'puncture'
	Fr. <i>esthétique</i>	esutetioku	>	esute	'beauty care/salon'
	Eng. <i>animation</i>	animeešon	>	anime	'cartoon'
	Eng. <i>supplement</i>	sapurimento	>	sapuri	'vitamin supplement'
(4)	Eng. <i>eucalyptus</i>	yuukariputasu	>	yuukari	'eucalyptus'
	Eng. <i>accelerator</i>	akuserureetaa	>	akuseru	'throttle, gas'
	Ru. интеллигенция	interigenča	>	interi	'intellectual'
	Eng. <i>inflation</i>	infureešon	>	infure	'inflation'
	Eng. <i>illustration</i>	irasutoreešon	>	irasuto	'illustration'
	Eng. <i>rehabilitation</i>	rihabiriteešon	>	rihabiri	'(medical) rehabilitation'
	Eng. <i>conservative</i>	konsabatibu	>	konsaba	'conservative'
	Eng. <i>asparagus</i>	asuparagasu	>	asupara	'asparagus'
	Eng. <i>extension</i>	ekusutenšon	>	ekusute	'(hair) extension'
	Eng. <i>restructuring</i>	risutorakučuaringu	>	risutora	'downsizing'
(5)	Eng. <i>concentric plug</i>	konsentoriokupuragu	>	konsento	'plug, socket, outlet'
	Eng. <i>compartment</i>	konpaatomento	>	konpaato	'compartment'
	Eng. <i>appointment</i>	apointomento	>	apointo	'appointment'
	Du. <i>elektricititeit</i>	erekiteruseeriteeto	>	erekiteru	'electricity'

Analyses by Itô (1990), Itô & Mester (1992) and Labrone (2002) have demonstrated that the patterns of back-clipping which arise in forms such as those in (2)-(5) are governed by patterns of light (ō) and heavy (ō̄) syllables.⁶ To an overwhelming degree, the output of the back-clipping process is restricted to five forms: ōō, ōōō, ōōōō, ōō and ōōō. Thus, heavy syllables are typically confined to initial position in 3μ (ōō) and 4μ (ōōō) forms: e.g. (3) *kaNpa*, *paama*, *senči*, etc.; (4) *yuukari*, *interi*, *infure*, etc. Back-clippings consisting of a single heavy syllable (e.g. **kan*, **paa*, **sen*, **yuuu*, **in*, etc.) or ending in a heavy syllable (e.g. **animee*, **konsen*, etc.) are generally not tolerated.

Table 2 shows that the MCD corroborates previous research. A full 94% (264/282) of back-clippings⁷ are of the form ōō, ōōō, ōōōō, ōō or ōōō: 97% of 2μ, 98% of 3μ and 81% of 4μ back-clippings. Common exceptions include *paareNteeze* > *paareN* (ōō) 'parenthesis' and *purezeNteešon* > *purezeN* (ōōō) 'oral presentation', as well as loans ending in *-meNto* ← Eng. *-ment*. These include *depaato* and *apaato* < *depaatomento* and *apaatomento* ← Eng. *department store* and *apartment*. If,

⁵ Used mainly in the Kansai region. In Kantō, the typical truncation is *maoku*. Here, a compound – *biogu+maoku* 'Big Mac', *maoku+seeku* 'McShake' or the like – has undergone ellipsis (see Table 1).

⁶ Light syllables are monomoraic and are of the form (C)(G)V, where the optional onset C is a consonant, the optional glide G an approximant, and V a vowel. Heavy syllables are bimoraic and of the form (C)(G)VV, (C)(G)VQ or (C)(G)VN, where Q is the mora obstruent and N the mora nasal. 'Heavy' syllables may also be termed 'long'. Issues relating to syllable division in the case of certain vowel combinations, as well as issues of accent placement, mean that the question of what constitutes a heavy syllable is complex. See Vance (2008: 131-138) for a useful overview of the difficulties.

⁷ Ignoring the four problematic 5μ back-clippings listed in (5).

rather than back-clipping, the patterns found in these loans are viewed as morphological reduction,⁸ i.e. deletion of the English morpheme *ment*, then these exceptions are eradicated.

Table 2. Preferred syllable formations for back-clippings

SYLLABLE FORMATION	BACK-CLIPPING TYPE		
	2 μ	3 μ	4 μ
ōō	114 (97%)		
ō	4 (3%)		
ōōō		53 (56%)	
ōō		40 (43%)	
ōō		1 (2%)	
ōōō			30 (43%)
ōōōō			27 (39%)
ōōō			5 (7%)
ōōō			4 (6%)
ōō			4 (6%)
TOTAL	118	94	70

Since ōō, ōōō and ōōōō are all permissible outputs from back-clipping, what is the motivation behind a loanword such as (4) ōōōōō *akuserureetaa* back-clipping to ōōōō *akuseru*, rather than the similarly permissible ōōō **akuse* or ōō **aku*? Since both ōō and ōōō are permissible outputs, what is the motivation behind a loanword such as (4) ōōōōō *interigenča* back-clipping to ōōō *interi*, rather than to ōō **inte*? The answer would appear to be found in Labrune's (2002: 106) claim that, by and large, loanwords are back-clipped directly before the **accented mora**,⁹ as illustrated in (6). After back-clipping, the location of the accent may shift, or the clipped form may become unaccented.

- (6) Eng. *accelerator* ōōōō... akuserureetaa > ōōōō akuseru 'throttle, gas'
 Ru. интеллигенция ōōō... interigenča > ōōō interi 'intellectual'
 Eng. *symposium* ōōō... šinpojūmu > ōō šinpo 'symposium'
 Eng. *terrorism* ōōōō... terorizumu > ōō tero 'terrorism'

Of course, Labrune's claim does not apply in cases where a *gairaigo* is unaccented. Nor, since back-clippings composed of more than 5 μ are illicit, does it apply in cases where a *gairaigo* is accented 7 μ or further from the beginning of a word. The output of back-clipped *gairaigo* accented on the first or second mora is governed by rules different from those in (6). Since 1 μ back-clippings are illicit, those accented on the first or second mora will, according to Labrune, have a 2 μ output. This is illustrated in (7). If, however, such a *gairaigo* begins in a heavy syllable, then a 2 μ output is blocked by Labrune's constraint against back-clippings consisting of a single heavy syllable.¹⁰ Thus, Labrune claims, a

⁸ See also footnote 4.

⁹ Accent patterns are, in all cases, those of Tokyo Japanese. In the small number of cases where a full form has two or more possible accent patterns, the most common is employed for the analysis here and below. Accent data is taken from NHK (1998) and Kindaichi and Akinaga (2010). Where a full form is listed in neither of these dictionaries, I use the judgment of a native speaker of Tokyo Japanese, Morita Mitsuhiro, for whose help I am most grateful.

¹⁰ There are, in fact, four single heavy syllable back-clippings in the MCD. Labrune bases her claims on her own database.

gairaigo accented on its initial mora and beginning in a heavy syllable¹¹ will be clipped to 3 μ . This is illustrated in (8). Here, the constraint against 1 μ back-clippings disallows **ka* and **me*, while the constraint against single heavy syllable back-clippings rules against **kaa* and **meN*.

- (7) Eng. *festival* ǫ... fesutibaru > fesu 'festival'
 Eng. *ecology* ǫ... ekorojii > eko 'green, eco-friendly'
 (8) Eng. *cardigan* ǫ... kaadegan > kaade 'cardigan'
 Eng. *maintenance* ǫ... meNtenaNsu > mente 'maintenance'

There are, nevertheless, a significant number of exceptions to Labrune's claims. Table 3 shows the back-clipping output for full forms accented on the third, fourth, fifth and sixth mora (a total of 188 tokens, or 66% of all back-clippings in the MCD). For those full forms accented on the third, fourth and fifth mora, only 63%, 61% and 57%, respectively, are clipped at the juncture (shaded in the table) proposed by Labrune's model. For those full forms accented on the sixth mora, none is back-clipped to the expected 5 μ , the majority (73%, 8/11) being back-clipped to 4 μ .

Table 3. Back-clipping output for full forms accented on third to sixth mora

LOCATION OF ACCENT	NUMBER OF FULL FORMS	LENGTH OF BACK-CLIPPING				% FULFILLING LABRUNE'S CLAIMS
		2 μ	3 μ	4 μ	5 μ	
3 μ	72	45	18	8	1	63%
4 μ	70	8	43	19	0	61%
5 μ	35	6	9	20	0	57%
6 μ	11	1	2	8	0	0%

Meanwhile, Table 4 shows the back-clipping output for those full forms accented on the first mora, as well as those accented on the second mora and beginning in two light syllables (a total of 69 tokens, or 24% of all back-clippings in the MCD).¹² Here, Labrune's claims are more robust: in total, 83% of relevant full forms are clipped at the juncture (shaded in the table) proposed by her model.

¹¹ Words accented on the second mora and beginning in a heavy syllable do not exist.

¹² The remainder of tokens in the MCD are unaccented (3%); accented on the second mora and beginning ǫǫ, about which Labrune makes no claims (1%); or accented seven moras or further from the beginning of the word (6%).

Table 4: Back-clipping output for full forms accented on first and second mora

LOCATION OF ACCENT	INITIAL SYLLABLE(S)	NUMBER OF FULL FORMS	LENGTH OF BACK-CLIPPING				% FULFILLING LABRUNE'S CLAIMS
			2μ	3μ	4μ	5μ	
1μ	ō...	30	26	3	1	0	87%
1μ	ō...	11	3	7	1	0	64%
2μ	ōō...	28	24	4	0	0	86%

Labrune contends (opus cit.: 111-114) that exceptions can be largely explained by constraints against the back-clipped output ending in an epenthetic vowel (9a) and, to a lesser extent, an /rV/ mora (9b). In (9a), the expected back-clipping **infu* is not found, Labrune claims, because the /u/ is epenthetic. Note, however, that the attested form *infure* ends in an /rV/ mora, which she also claims is avoided. With (9b), the accent on the second mora, together with the fact that the initial syllable is light, mean that we expect the bimoraic back-clipping **fura* (cf. 7). This is not found, Labrune maintains, because of the avoidance of a final /rV/ mora.

- (9)a. Eng. *inflation* infureešON > infure (*infu) 'inflation'
 b. Eng. *fraction* furakušON > furaku (*fura) 'fraction'

Table 5: Analysis of exceptions to Labrune's claims concerning location of back-clipping

LOCATION OF ACCENT	NUMBER OF EXCEPTIONS TO LABRUNE'S CLAIMS	EXPLANATION				% EXPLICABLE
		final epenthetic vowel	final /rV/ mora	both	none	
1μ	8	3	1	0	4	50%
2μ	4	0	2	0	2	50%
3μ	27	5	8	2	12	56%
4μ	27	11	3	1	12	56%
5μ	15	4	3	0	8	47%
6μ	11	3	2	0	6	45%
Total	92	26	19	3	44	52%

Table 5 is an analysis of the exceptions to Labrune's claims – just over half (52%, 44/92) of the exceptions to her claims are explicable. However, moras containing an epenthetic vowel or an /rV/ mora are not uncommon amongst *gairaigo*. Of the 92 exceptions to Labrune's claims, 26 (28%) are explicable via the epenthetic vowel constraint, 19 (21%) via the /rV/ mora constraint and 3 (3%) via both these constraints. In a random sample¹³ of the back-clipped forms in the MCD, 26% (24/92) of syllables had an epenthetic vowel, 9% of syllables (8/92) contained an /rV/ mora, while 3% of syllables (3/92) showed both these constraints: i.e. an /rV/ mora where /V/ is epenthetic. Thus, the proportion of exceptions

¹³ Every fourteenth of the 286 back clippings in the MCD was selected, for a total of 20 *gairaigo* containing 114 moras and 92 syllables.

apparently explicable by the three constraints in Table 5 differs little from what would be expected by chance.

2.2. Fore-clipping

Fore-clipping is the opposite of back-clipping and is considerably less common. The final two (8/28, 29% of the fore-clipped forms in the MCD), three (12/28, 43%) or four moras (8/28, 28%) are retained, never the final one and never the final five moras or more. Some examples are shown in (10).

(10)	Ger. <i>Arbeit</i>	arubaito	>	baito	'part-time job'
	Du. <i>vernīs</i>	wanisu	>	nisu	'varnish'
	Eng. <i>platform</i>	puraQtohoomu	>	hoomu	'railway platform'
	Eng. <i>propeller</i>	puopera	>	pera	'propeller'
	Eng. <i>velveteen</i>	berubeQčĩN	>	beQčĩN	'velveteen'

As with back-clipping, there is a robust correlation between the length of the *gairaigo* full form and the length of its fore-clipping (correlation coefficient = 0.99). Those *gairaigo* fore-clipped to 2 μ possess full forms which have, on average, 4.0 μ ; those fore-clipped to 3 μ , full forms with 5.3 μ ; those fore-clipped to 4 μ , 7.4 μ .

Table 6: Preferred syllable formations for fore-clippings

SYLLABLE FORMATION	FORE-CLIPPING TYPE		
	2 μ	3 μ	4 μ
ōō	7 (88%)		
ō	1 (13%)		
ōōō		0	
ōō		11 (92%)	
ōō		1 (8%)	
ōōō			1 (13%)
ōōōō			0
ōōō			0
ōōō			1 (13%)
ōō			6 (75%)
TOTAL	8	12	8

As illustrated by the shaded cells in Table 6, 90% (25/28) of fore-clippings are bisyllabic: 88% of 2 μ , 100% of 3 μ and 75% of 4 μ fore-clippings. The preferred syllable formation for fore-clippings – a marked predilection towards bisyllabicity – thus differs from that of back-clippings.

There are no claims in the literature regarding the juncture at which full forms are fore-clipped. However, an analysis of the MCD shows that 69% (9/13) of full forms accented on the antepenultimate mora are clipped to 3 μ , 100% (7/7) of full forms accented on the fourth mora from the end are clipped to 4 μ , and 80% (4/5) of unaccented full forms are clipped to 2 μ . There are no fore-clippings whose full forms are accented on the final or penultimate mora, and only three accented further forward than the fourth mora from the end. Thus the favoured clipping juncture for fore-clippings – prior to the accented mora – mirrors that of back-clippings.

2.3. Mid-clipping

Mid-clipping is the rarest of the three types of mora clipping. Here, moras from anywhere in the full form are clipped, typically including one or more word-final moras. Some examples are shown in (11).

- (11) Du. *morfine* *moruhine* > *mohi* 'morphine'
 Eng. *correspondence* *koresupoNdensu* > *korepon* 'correspondence'
 Eng. *instructor* *iNsutorakutaa* > *iNtora* 'instructor'
 Eng. *transparency* *toraNsupeareNšii* > *torapeN* '(OHP) transparency'
 Eng. *entertainment* *eNtaateenmeNto* > *eNtame* 'entertainment'

Although examples are few (only 20 in the MCD), here too there is a strong correlation between the length of the *gairaigo* full form and the length of its mid-clipping (correlation coefficient = 0.99). Those *gairaigo* mid-clipped to 2μ possess full forms which have, on average, 5.3μ ; those mid-clipped to 3μ , full forms with 6.5μ ; those mid-clipped to 4μ , 8.0μ .

Table 7: Preferred syllable formations for mid-clippings

SYLLABLE FORMATION	MID-CLIPPING TYPE			
	2μ	3μ	4μ	5μ
ōō	3			
ō	0			
ōōō		3		
ōō		1		
ōō		1		
ōōō			4	
ōōōō			1	
ōōō			0	
ōōō			4	
ōō			1	
ōōōō				1
TOTAL	3	5	11	1

Table 7 shows the conspicuous variation apparent in the syllable formation of mid-clippings: no syllable formation is preferred. The small number of examples here makes any significant analysis impossible.

3. Summary

Of the three mora clipping truncation processes, back-clipping is overwhelmingly favoured, although why this should be the case remains unclear. Within back-clippings, truncation to 2μ is slightly preferred, although not to the extent of being the dominant pattern. While 3μ and 4μ back-clippings are also common, 5μ back-clippings are extremely rare, while 1μ and $6\mu+$ back-clippings are illicit. Within the much smaller number of fore-clippings, those with 3μ are slightly preferred, although 2μ and 4μ are almost as frequent. As with back-clippings, fore-clippings consisting of 1μ or $6\mu+$ are illicit. Although the small number of mid-clippings makes meaningful analysis difficult, 4μ truncations are preferred while, once again, 1μ and $6\mu+$ forms are illicit.

The majority of back-clippings favour syllable patterns which tend towards avoiding a final heavy syllable. The same is not the case for fore-clippings, where the propensity is towards bisyllabicity.

Back-clippings whose full forms are accented on the first mora are typically clipped to 2 μ if they begin in a light syllable and 3 μ if they begin in a heavy syllable; those whose full forms are accented on the second mora are typically clipped to 2 μ . Back-clippings whose full forms are accented on the third, fourth or fifth are often clipped immediately before their accented mora, with many exceptions accounted for by proposing constraints against back-clippings ending in an epenthetic vowel or an /rV/ mora. Fore-clippings follow a broadly similar pattern, with those full forms accented on the third or fourth mora from the end overwhelmingly fore-clipped to 3 μ and 4 μ , respectively.

References

- Arakawa, Sōbei (ed.) 1977. *Gairaigo jiten dai 2 ban* [Loanword dictionary 2nd edition]. Tokyo: Kadokawa Shoten.
- Fukuzawa, Haruka and Kitahara, Mafuyu. 2005. Ranking paradoxes in consonant voicing in Japanese. In: van de Weijer, Jeroen; Nanjo, Kensuke; and Nishihara, Tetsuo. (eds.), *Voicing in Japanese*, 105-121. Berlin: Mouton de Gruyter.
- Fukuzawa, Haruka; Kitahara, Mafuyu; and Ota, Mitsuhiro. 1998. Lexical stratification and ranking invariance in constraint-based grammars. In: Gruber, M. Catherine; Higgins, Derrick; Olson, Kenneth; and Wysocki, Tamra (eds.), *Papers from the 34th regional meeting of the Chicago Linguistics Society, Part II: The panels, 47-62*. Chicago: Chicago Linguistic Society.
- Gakken Jiten Henshūbu (GJH) [Gakken Dictionary Editorial Board]. 2001. *Pāsonaru eiwa katakanago jiten* [Personal English-Japanese and *Katakana* word dictionary]. Tokyo: Gakken.
- Gottlieb, Nanette. 1995. *Language and society in Japan*. Cambridge: Cambridge University Press.
- Irwin, Mark. 2011. *Loanwords in Japanese*. Amsterdam: John Benjamins.
- Itō, Junko. 1990. Prosodic minimality in Japanese. In: Ziolkowski, Michael; Noske, Manuela; and Deaton, Karen (eds.), *Papers from the 26th regional meeting of the Chicago Linguistics Society Vol. 2: The parasession on the syllable in phonetics and phonology*, 213-239. Chicago: Chicago Linguistics Society.
- Itō, Junko and Mester, Armin. 1992. Weak layering and word binarity. Report LRC-92-09, University of California, Santa Cruz. Republished (2003) in: Honma, Takeru; Okazaki, Masao; Tabata, Toshiyuki; and Tanaka, Shin-ichi (eds.), *A new century of phonology and phonological theory: A festschrift for Professor Shosuke Haraguchi on the occasion of his sixtieth birthday*, 26-65. Tokyo: Kaitakusha.
- Itō, Junko and Mester, Armin. 1995. Japanese phonology. In: Goldsmith, John (ed.), *The handbook of phonological theory*, 817-838. Cambridge, MA: Blackwell.
- Itō, Junko and Mester, Armin. 1999. The phonological lexicon. In: Tsujimura, Natsuko (ed.), *The handbook of Japanese linguistics*, 62-100. Oxford: Blackwell.
- Jiyūkoku-minsha (JKS) [Free Citizens Company] (ed.) 1977. *Gendai yōgo no kiso chishiki 1977* [Essential modern vocabulary 1977]. Tokyo: Jiyūkoku-minsha.
- JKS (ed.) 2003. *Gendai yōgo no kiso chishiki 2003* [Essential modern vocabulary 2003]. Tokyo: Jiyūkoku-minsha.
- JKS (ed.) 2010. *Gendai yōgo no kiso chishiki 2010* [Essential modern vocabulary 2010]. Tokyo: Jiyūkoku-minsha.
- Kanno, Ken. 1985. *Yōgō no ryakugokei* [The abbreviated forms of Japanese loanwords]. *Nihongogaku* 4.9. 54-64.
- Kindaichi, Haruhiko and Akinaga, Kazue. *Shinmeikai nihongo akusento jiten* [New meikai Japanese accent dictionary]. Tokyo: Sanseidō.
- Labrone, Laurence. 2002. The prosodic structure of simple abbreviated loanwords in Japanese: A constraint-based account. *Onsei Kenkyū* [Journal of the Phonetic Society of Japan] 6.1. 98-120.
- McCawley, James. 1968. The phonological component of a grammar of Japanese. The Hague: Mouton.
- Martin, Samuel E. 1952. Morphophonemics of standard colloquial Japanese. *Language* 28.3 (Part 2, Supplement).
- Maruyama, Takao; Kobayashi, Tadao; Yamazaki, Chiaki; and Terauchi, Masanori. 1992. *Katakanago o eigo ni suru jiten* [Dictionary of *Katakana* words and their English translations]. Tokyo: Taishūkan Shoten.
- Nippon Hōsō Kyōkai (NHK) (ed.) 1998. *Nihongo hatsuon akusento jiten* [Dictionary of Japanese accent]. Tokyo: Nihon Hōsō Shuppan Kyōkai.

- Ota, Mitsuhiko. 2004. The learnability of the stratified phonological lexicon. *Journal of Japanese Linguistics* 20. 19-40.
- Rice, Keren. 1997. Japanese NC clusters and the redundancy of postnasal voicing. *Linguistic Inquiry* 28. 541-551.
- Shimura, Izuru. (ed.) 2008. *Kōjien dai 6 ban* [Kōjien 6th edition]. Tokyo: Iwanami Shoten.
- Sanseidō Henshūjo (SSDH) [Sanseidō Editorial Institute] (ed.), 2010. *Konsaisu katakanago jiten dai 4 ban* [Concise *Katakana* word dictionary: 4th edition]. Tokyo: Sanseidō.
- Vance, Timothy. 1987. *An introduction to Japanese phonology*. Albany: State University of New York Press.
- Vance, Timothy. 2008. *The sounds of Japanese*. Cambridge: Cambridge University Press.
- Watanabe, Toshiro; Skrzypczak, Edmund; and Snowden, Paul (eds.). 2003. *Kenkyūsha's new Japanese-English dictionary (5th Edition)*. Tokyo: Kenkyūsha.
- Yonekawa, Akihiko. 1997. *Wakamono kotoba jiten* [Dictionary of youth speech]. Tokyo: Tōkyōdō.

Mark Irwin
Faculty of Literature & Social Sciences
Yamagata University
Japan
irwin@human.kj.yamagata-u.ac.jp