

Vocalic Coalescence in Owari Japanese*

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Keywords: Japanese, dialectology, phonology, Owari dialect, coalescence, Element Theory

1. Introduction

Owari Japanese is a variety or dialect of Japanese spoken in western Aichi and southern Gifu prefecture in central Japan. More specifically, the variety is spoken in and between Nagoya city and Gifu city approximately covering a landmass which was once known as Owari province (Keshikawa 1983) until the Meiji political reforms in 1871. The dialect of Owari is mentioned often in literature discussing Japanese linguistics and phonology due to its marked vocalic system which includes [y] [ø] and [æ]. Here we examine Modern Japanese coalescence¹ based on data collected by the author (see Appendix 1). Some examples are presented in (1) below.

(1) Examples of Owari coalescence

<u>Owari Japanese</u>	<u>Tokyo Japanese</u>	<u>Gloss</u>
a. ræ:nen	rainen	‘next year’
b. osö:	oso-i	‘slow-PRES’
c. fury:	furu-i	‘old-PRES’

These vowels are the product of coalescence, captured in this article as the combination of the unary features or Elements [A], [I] and [U]. The Owari dialect is well known for coalescence in Japan, most recently thanks to comedian Tamori using a mistaken pronunciation of a word imitating the coalescence and palatalization present in the dialect as his signature gag. Vocalic coalescence has been noted in the dialect previously (e.g. Keshikawa 1983) however raw data is scarce and deep investigations into the triggers and results are non-existent. Full English works relating to the Owari dialect are unavailable, with only small mentions in English. Here we seek to address this gap in the literature.

In this article, data will be presented from fieldwork in Ichinomiya (approx. 13 miles north of Nagoya) and an analysis of coalescence in Element Theory will be given as it is well suited to dealing with vocalic coalescence. Generational differences will also be examined. In the following section, a short review of the literature related to Owari Japanese is presented. Section 3 presents the data in question, followed by a descriptive discussion and an examination into the phonological status of the process. Section 4 introduces Element Theory and considers element spreading and governing relations between constituents. Consideration is also given to generational differences. Section 6 summarizes the article and points to further directions for research.

¹ Older coalescence processes forming [ee] and [oo] from /au, ou and ei/ in pre-Modern Japanese are not discussed here. Frellesvig (2010) proposes that these changes occur in Late Middle Japanese. In all dialects analyzed here, this coalescence has occurred though [ei] and [ou] do remain in some dialects of Japanese. The diphthongs also surface in careful or polite speech, typically with Sino-Japanese words. Orthographic interference is possible. For more information on this, see Frellesvig (2010:320-321), Labrune (2012a:40). In Element terms, I propose that this process is captured as [A] spreading from the governor to governee.

2. Previous work on Owari Japanese

Owari Japanese (also known as Nagoya Japanese) is commonly cited for having eight vowels, being noted in dialect sections of works such as Hirayama (1968), Shibatani (1990), Fujiwara (1997) and Labrune (2012a). Little to no data is analyzed though an outline of the vowel system and the coalescence that gives birth to it is noted. Of the dialects of this area, Hirayama (1968) writes:

“...In Mikawa and Mino, /ai/ coalesces into [e:] as in Tokyo, however in the plain region of Gifu and Owari, the coalescence is notable in becoming [æ:] e.g. /akai/ is [akæə]...” (Hirayama 1968, 137; translation mine, bracketing added)

Shibatani (1990:160) and Labrune (2012a:27) also note that there are the three long vowels /æ ø and y/, though they do not delve deeper as the focus of these works is not on the regional phonology. Works such as dialect surveys and phonetic surveys are far more useful for examinations into the basic facts about the dialect, giving small excerpts of data, typically in modified Japanese orthography (e.g. アイ or アエ for æ). While grammars and dictionaries of the dialect were published in the early 1900s, collected in Kaga (1975), these works focus on lexical and morphological variation rather than phonetic and phonological variation. Documentation of the phonology and phonetics of dialects in survey series has led to a better picture of Owari Japanese, such as *Zenkoku Hoogen Siryoo* (NHK 1966) which transcribes dialect greetings, conversations and stories from all over Japan. This work makes a point of mentioning the product of coalescence in Owari. A more recent publication is *Kooza Hoogengaku* (Iitoyo et al 1982-1986), in which Keshikawa (1983:215-223) discusses variation within Aichi prefecture. However, these works still present little data. In addition the lack of consistent phonetic transcription and usage of ad hoc modifications to orthography makes relying on these works difficult.

In the field of acoustic phonetics, there are two articles examining the pronunciation of the vowels in Owari Japanese: Terakawa (1983) who focuses on the phonetic realization of underlying /ai/ sequences and Imanishi et al (2006) who examine the cross-generational differences in realizations of all three coalesced vowels. Terakawa (1983) notes that objective phonetic evidence proves the unique nature of [æ] which never overlaps with [i] or [e]. Imanishi et al (2006) note that older and younger speakers produce the three unique vowels of Owari, however, the formants are nearer to the values of the five Standard Japanese or Tokyo Japanese (TJ) vowels [a, i, u, e and o]. Further work on modern phonetic realizations is discussed in Kojima et al (2010) and Inukai et al (2011).

Lastly, in terms of phonology, very little has been published on the dialect except for an unpublished thesis (Maeda 1995) which is now unavailable and a book by Yoshida S. (1996) which notes only four words from the Nagoya dialect in a discussion of dialect vowel phenomena. In addition, these words in Yoshida S. (1996) are all polymorphemic with coalescence in adjectives.

3. Owari Dialect data from Ichinomiya, compared to Tokyo Japanese (TJ)

(2) i. Words containing /ai/ or /æ/ → [æ] sequences

<u>Older speakers</u>	<u>Younger speakers</u>	<u>TJ</u>	<u>Gloss</u>
a. ræ:nen	rʲæ:nen	raineN	‘next year’
b. ɛiharʲæ:	ɛihæ:rʲæ:~ɛiharʲa:	ɛiharai	‘payment’
c. æ:mæ:	aimai	aimai	‘unclear’
d. dæ:kon/dæ:ko	dæəkon	daikoN	‘daikon’
e. kawʲæ:so:	kawʲæ:so:~kæ:wæ:so:	kawaiso:	‘poor thing’
f. jæ:ta	jæ:ta~ja:ta	ja-ita	‘cook-PAST’
g. -	æ:sa	aida	‘between’
h. æ:chiken	æ:chiken	aichi-keN	‘Aichi Pref.’
i. æ:biki	aibiki	aibiki	‘affair’
j. hæ:	hæ:~hʲæ:	hai	‘ashes’
k. -	hʲæ:r	hai-ru	‘enter’
l. kæə	kʲæ:~kæ:	kai	‘clam’
m. anbæ:/anbʲæ:	anbai~anbæ:	anbai	‘seasoning’
n. sæ:ko	sæ:ko	saikoo	‘best’
o. hæ:	hʲæe~hae	hae	‘fly’

ii. Words containing /oi/ or /oe/ → [ø] sequences

<u>Older speakers</u>	<u>Younger speakers</u>	<u>TJ</u>	<u>Gloss</u>
a. pø:	pø:~pe:	-ppoi	‘like’
b. ø:	oi	oi	‘nephew’
c. osø:	osøi~osø:	oso-i	‘slow’
d. nozø:te	nozoite~noite	nozo-ite	‘remove-GER’
e. kø:	kø:-køe	koi	‘fish’
f. ɛirøe~ɛirø:	ɛiroi~ɛirʲoi-ɛirʲo	ɛiro-i	‘white’
g. tatoeba	tatøeba	tatoeba	‘for example’
h. køe	koe	koe	‘voice’

iii. Words containing /ui/ → [y] sequences

<u>Older speakers</u>	<u>Younger speakers</u>	<u>TJ</u>	<u>Gloss</u>
a. ɛiby:	ɛibui~ɛibyi	ɛibu-i	‘bitter’
b. atsy:~ate:y:	atsui~atei:	atsu-i	‘hot’
c. samy:	-	samu-i	‘cold’
d. mazy:	mazui~mazi:	mazu-i	‘gross’
e. furi:~fury:	furi:	furu-i	‘old’

- iv. Exceptions (Not exhaustive)
 - a. [koi] 'love'
 - b. [ai] proper name
 - c. [uisukii] whiskey (Loan Word)
 - d. [e: bi: si:] ABC (Loan Word)
 - e. [ai o: si:] I.O.C. (Loan Word)

- v. /ei/ or /e:/ sequences in TJ
 - a. [eidan] 'decision' (Not used by speakers)
 - b. [kire:] 'pretty' (Exhibits older ei>e:)
 - c. [ippe:] proper name

In the data above, one can make the following observations: the sequences /ai, ae, oi, oe, and ui/ in Tokyo Japanese² (TJ) coalesce into the long Owari Japanese (OJ) vowels [æ:, ø:, y:]. Quantity is always preserved and vowels must remain long. However, quality does vary at times, with the second half of the VV cluster remaining the same, e.g. [øi] becoming a schwa e.g. [æə], or being realized simply as a 'second half' of a long coalesced vowel e.g. [æ:].

The triggers are /i/ and /e/ in the N² position. The reverse sequences /ia, io, iu/ do not produce coalesced vowels. The reversed iV or eV sequences are not reported in previous literature to trigger coalescence. Coalescence here is treated as a merger or sharing of subsegmental content between N¹ and N². This will be discussed further in the section 4.

An elicitation gap of /ue/ sequences has been noted while analyzing the elicited data, however /e/ was not expected to trigger coalescence. /ue/ is expected to coalesce into [y:] as the above data predicts. Coalescence is nearly exceptionless when the context is met, though some words resist coalescence, perhaps due to their lack of use in everyday life or due to homophony avoidance e.g. /koi/ 'love' does not coalesce however /koi/ 'carp' does. The status of each sequence as a diphthong sequence is assumed as each has the same pitch accent pattern, however, further sessions with consultants will be held to confirm as pitch accent assignment is not the only diagnostic for diphthong status.

Extra palatalization is also noticeable in some tokens with coalesced vowels giving secondary palatalization where it does not exist in the TJ cognate such as [anb^hæ:] for TJ /anbai/. While /i/ does cause palatalization preceding alveolar stops in TJ and in OJ, other vowels do not (e.g. /e/). Extra palatalization only occurs preceding coalesced vowels and yet seems to be in free variation. This is not examined further here but will be examined pending further elicitation sessions.

Older speakers produced all of the three previously reported vowels while younger speakers produced all three vowels less consistently, failing to realize [æ] [ø] and [y] in all items but with palatalization effects of these coalesced vowels occurring, showing that the vowels have a coalesced identity even if phonetic output is not as accurate as in older speakers.

² Tokyo Japanese here is considered analogous to Standard Japanese due to the enormous amount of parallels between the two systems. Further discussion is not made here though the reader is referred to Twine (1991) for discussion on standardization based on Edo/Tokyo speech.

The preceding consonant in TJ and OJ forms is shown to be irrelevant to the occurrence of coalescence. It is only relevant when discussing the targets for palatalization. In addition, word class is somewhat relevant: Yamato verbs, nouns and adjectives undergo coalescence as well as Sino-Japanese compounds. However, no loan words and no names were coalesced in elicitation sessions, e.g. /uisuki:/ or ‘whiskey’ was realized as [uisuki:] (and are hence excluded from the above). The proper name [ai] or hypocoristic [ai-tɕan] remained as is even when asked for a dialect pronunciation from speakers. Inukai et al (2011) report that some varieties do indeed coalesce loanwords as did speaker YA who did not participate in the word elicitation session. The discussion below in 4 applies to loan word coalescing variants as well, with the scope of coalescence in the phonology expanded to loanwords.

Coalescence can be analyzed in a unified manner utilizing Element Theory, with dialectal and generational variation elegantly accounted for with an account of super and subsegmental feature licensing.

3.1 Is vocalic coalescence part of the underlying phonology?

Up until now, it has been assumed that the process of vowel coalescence is synchronically active in the OJ phonology, albeit with the exception of loan words. One must consider the process and its place in the phonology. Are these coalesced words lexical or derived?

First, the oddities of the process must be considered: all outputs must be long vowels, there are no short versions of the coalesced vowels, and they always appear in the same context regardless of the forms being monomorphemic or not. In addition, outputs are slightly variable with some coalesced vowels exhibiting the original characteristics of the trigger and with some coalesced vowels triggering palatalization. This slightly supports a derived status for coalescence in OJ.

Consider the process in terms of structure preservation (Kiparsky 1985). Any process which occurs outside the lexicon (e.g. which is active in phonology) preserves structure. The process is structure preserving as vowel sequences remains long. In terms of constituent structure, one could say the Nuclear constituents remain and share material. In addition, the products are not fully contrastive and the process occurs wherever the context is met. Outputs are variable. I propose that this process is indeed happening outside of the lexicon or rather it happens to an underlying form, with a clear trigger and context which pertains to a certain class of words in the variety of OJ presented here. The following formal analysis is incompatible with the idea of Lexical Phonology levels, however, and the reader is assumed to have basic knowledge of ET and GP approaches to derivation (See Harris 1997 for an introduction to GP and licensing and Kaye 1995 for derivations in GP).

In addition to the above facts, speaker intuitions must be noted, including reactions or statements in elicitation sessions. In elicitations with speakers of both age groups, it was clear that they recognized differences between TJ and OJ forms. Consultant TY could also produce ‘normal’ dialect forms and ‘emphatic’ forms such as [atsy:] which is normal and [atey:] which is emphatic. Younger speakers tested coalesced forms and deemed some acceptable or some as something they would ‘accept’ if it was heard, though they would not utter it themselves as they never use OJ outside of the home.

As for morphologically complex forms, it was found that coalesced vowels did not remain constant when the trigger was gone. While very few morphologically complex words were elicited, older consultants did produce the forms [atsukatta] ‘hot-PAST’ and [furukatta] ‘old-PAST’ which do not show the coalesced [y] which might be expected from [atsy:] and [fury:] if these were lexical vowels. In addition, the complex forms show a short [u]. However, the coalesced vowels do not change in words such as [dæ:kon]. These do not alternate with any other vowel, which is unsurprising considering their monomorphemic nature³.

Lastly, younger speaker H extended her usage of coalescence to TJ forms absent in OJ, such as /tatoeba/ ‘for example’ allowing [tatøeba]. However, there is evidence of stasis in lexical items such as /daikon/ produced as [dæ:kon] where the context never fails to be met. Further fieldwork and elicitation sessions with verbs and adjectives will be necessary to examine the extent to which this is true. A nonsense word or loanword adaptation task would be useful in determining the level of activity coalescence has in OJ. In conclusion, the process is active synchronically and creates non-lexical vowels.

The discussion here contrasts with dialects of Tohoku Japanese in which vowels which originally were born of the same context have indeed become part of the underlying phonology, expressing both long and short versions and in which lexemes contrast. This issue will be discussed in Youngberg (forthcoming).

3.2 A note on the status of diphthongs in Japanese

Japanese diphthongs (or adjacent nuclear sequences) did not occur in Old Japanese Yamato vocabulary and many were created through loss of consonants in Middle Japanese (see Frellesvig 1995, 2010 ch. 7 and 11 for more information). While in polymorphemic words any sequence is possible, Labrune (2012) cites Takayama (2003) and states that the only sequences noted in monomorphemic forms are [ai], [oi], [ui], [ie], [ae], [oe], [ue], [io], [ao], [uo]. These are the candidates for word internal diphthongs though many may simply be vowel sequences. Pre-Modern SJ[Vu] sequences in monomorphemic words have coalesced by the modern day into the following sequences [iu>ju: eu>jo: au>o:, wou>o: etc.], (see Frellesvig 2012: 321, 348; Labrune 2012a:44). It is also noted by Labrune (2012) that Va sequences have glides inserted. These ‘diphthongs’ or rather vowel sequences with glides inserted are not candidates for consideration as diphthongs are not divisible.⁴ I claim that the monomorphemic forms in the data above have heavy diphthongs.

Naturally, it is controversial to say that each of the vowel sequences noted above is a diphthong; indeed I do not claim that all adjacent vowels are a heavy diphthong. Based on phonological behavior and some phonetic evidence, some considerations upon relations must be considered. Yoshida S. (1996) notes that both long vowels and diphthongs may de-geminate a verb where there is a sequence of VVCC e.g. *kootta* >

³ Some of the elicited words which I consider monomorphemic could also be considered Sino-Japanese compounds. However, other forms which are certainly monomorphemic like *koi* ‘carp’ undergo coalescence. The status of the compound does not affect the process.

⁴ Labrune also notes that glottal stops can be inserted between vowel sequences which can disqualify some vowel sequences from being diphthongs e.g. *u.e* ‘above’ *u.o* ‘fish’ or *a.i* ‘love’. Note that this evidence is only given for three words.

koota ‘freeze-PAST’. In addition, Yoshida Y. (1999) notes a pitch accent shift phenomenon which applies only to long vowels and heavy diphthongs. Note that not all sequences have the pitch shift and thus not all sequences behave in the same way, leading one to believe there is a phonological difference in their relations. In addition, Vance (1987:74) corroborates these facts with a discussion of pitch accent behavior.

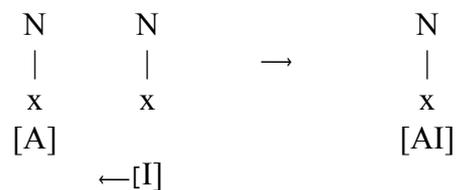
While the full details cannot be presented here due to space constraints, I consider the above an indication that diphthongs do exist in Standard Japanese. If vowels behave as if they are in a relation, they must be something more than an unrelated sequence of vowels. I make the claim that some (not all) vowel sequences are heavy diphthongs, or two nuclei in a governing relation when considered in strict ONON or CVCV theory. I also present below that coalescence is a process of conflict resolution to allow for government between two nuclear constituents.

4. Element Theory

In a unary feature theory utilizing [AIU] such as Element Theory the combination or merger of vowels that occurs during a process of coalescence is straightforward. See the following examples from Zulu as approached utilizing elements.

- (3) Coalescence in Zulu (Harris & Lindsey, 2000)
 (a) na-inkosi > nenkosi ‘with the chief’
 (b) na-umuntu > nomuntu ‘with the person’

(4) Representation of Coalescence in Element Theory



In Zulu, adjacent vowels compact into one vowel, with different high and low vowels creating a mid-vowel, here showing the combination of [A] and [I] creating the mid vowel [AI] or [e]. While the elemental approach has many other benefits, Harris and Lindsey (2000: 9) point out that this approach is less arbitrary than a combination of features. The same process in SPE style features is captured by the change in binary values: [-high, +low, +back] - [+high, -low, -back] is replaced by the feature set [-high, -low, -back]. Compare this to the addition of a unary feature.

The theory applied to the data here is Element Theory (Kaye Lowenstamm & Vergnaud 1985)⁵. The version used here is also known as the Revised Theory of the Elements (Ploch 1999). Element Theory is a privative and autosegmental theory of phonological representation which shares the basic vocalic primes with Dependency Phonology (Anderson & Ewen 1987) and Particle Phonology (Schane 1984, 1995).

⁵ For more on the development of Element Theory, see references such as KLV 1990; Harris 1990, Harris & Lindsey 1995, Charette & Göksel 1996, 1998; Cobb 1997, Cyran 1997, Ploch 1999, Nasukawa 2000, 2005, Scheer 2004, Cyran 2010 and Backley 2011. Backley 2011 contains further references for interested parties.

Here we use only the elements for vowels. (More on Element Theory is available in references in Footnote 5.)

(5) The elements for vowels

[A]	Lowness, openness
[I]	Frontness
[U]	Roundedness, backness

Element Theory does not make any strict claim as to the universal phonetic output or the phonological representation of a segment e.g. '[A] always has an output of [a]'. The same phonetic segment may indeed be represented in multiple different ways phonologically across languages (e.g. Charette & Göksel 1996, 1998 for discussion of vowels in English, Vata and Turkish, Cyran 2010 for comparisons of alveolars in Polish, Welsh and Irish). Elements are claimed to have an acoustic signature, which is discussed in work by Harris and Lindsey (1995, 2000) and Backley (2011).

Elements are also held in licensing relations when a segment is composed of more than one element, namely there is a head and an operator or operators.⁴ One may view this relationship in acoustic phonetic terms as the head being the stronger part of the acoustic signal and the operator being a supplement or color giving element. Harris & Lindsey (1995) propose this approach. ET does not recognize equally dependent elements as in DP, only expressions with a governor or without. In this paper, elements are presented in square brackets with head elements underlined e.g. [A] or [AIU]. No hierarchy is assumed besides the relationship of head and operator or operators.⁶

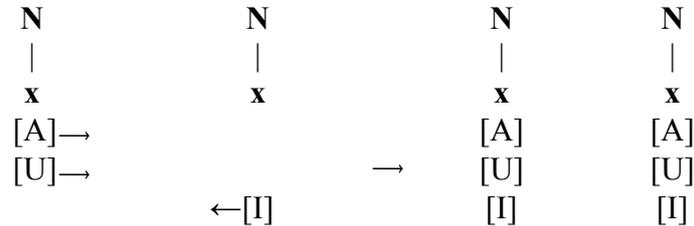
To illustrate the theory and headedness briefly, consider the elements [A] for an open vowel or /a/ and [I] for a front vowel or /i/. In combination, [A] as head and [I] as operator will create an open vowel that is slightly fronted or palatalized and [I] as head with [A] as operator will produce a front vowel with a slight open character. In a hypothetical system, [AI] produces /e/ and [IA] produces /æ/. (Harris & Lindsey 1995, 57). Here it is important to note that it is not simply the acoustic phonetics of the segment which is essential to the assignment of a phonological representation in elements, but its phonological behavior.

As with Zulu, coalescence in OJ is easily captured as an element merger or sharing process, though with quantity of the constituents being retained. As directionality cannot be assumed for the moment, elements are 'shared' between constituents and thus the surface vowel changes in quality but not length. For a representation *sans* heads, this is acceptable.

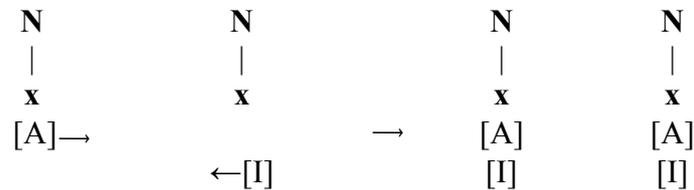
⁶ There is no multiple dependency assumed such as [A[IU]], unlike some DP approaches. See Anderson & Ewen 1987 as well as other works for more on the hierarchical dependencies assumed between elements in expressions combining [A] [I] and [U].

(6) Illustration of Merger in VV sequences (heads and onsets omitted)

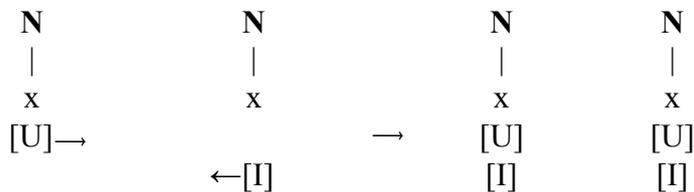
a. In /oi/ contexts e.g. *osoi* ‘slow



b. In /ai/ contexts e.g. *takai* ‘high’



c. In /ui/ context e.g. *furui* ‘old’



Headedness is not assumed here. We see that coalescence is reframed as the sharing of elements. The merging of [U] and [I] as well as the merger of [A] [I] and [U] are unique as compared to the five lexical vowels of OJ. However, without heads we reach a problem. Both the lexical [e] and the coalesced [æ] would be composed of the elements [AI]. While a representation of [A] for [æ] has been proposed for New York English alternations between [a:] and [æ] by Charette & Göksel (1998), this is inappropriate here as there is no alternation between [a] and [æ:] which is based on stress or reduction as in New York English. [æ:] also does not alternate with [a] in any context besides that where /a/ is adjacent to an [I] containing vowel, /i/ or /e/. A representation of [AI] is necessary however, and causes an identity problem with /e/ or [AI]. We note that for each surface vowel, the issues of representational opacity necessitate a different representation due to different phonetic output, behavior and source. The following discussion examines the lexical inventory of Tokyo Japanese (TJ) and then the elemental representations for Owari Japanese (OJ).

4.1 Capturing Tokyo and Owari Japanese lexical vowels

Tokyo Japanese has a five vowel system comprised of /a, i, u, e, o/. We are concerned with generating five vowels and capturing the qualities of each, including the unroundedness of the high back vowel in TJ. Yoshida Y. (2006) proposes the following set of elemental representations for Standard (Tokyo) Japanese to explain the phonetic qualities of the system as well as the phonological behavior of the 5 vowels in terms of pitch accent assignment. The lack of lip rounding for /u/ in Tokyo Japanese as well as the statistical evidence showing /u/ receives significantly less pitch accent assignment leads Yoshida Y. (2006) to the following representations for TJ lexical vowels.

(7) Tokyo Japanese vocalic expressions

$$\begin{array}{ccc} \underline{\text{I}} & & \underline{\text{U}} \\ \underline{\text{AI}} & & \underline{\text{AU}} \\ & \underline{\text{A}} & \end{array}$$

For OJ, the following expressions are proposed. Reasons for these assumptions are made directly following and in 4.3.

(8) Owari Japanese vocalic expressions

$$\begin{array}{ccc} \underline{\text{I}} & & \underline{\text{U}} \\ \underline{\text{IA}} & & \underline{\text{UA}} \\ & \underline{\text{A}} & \end{array}$$

Owari Japanese expressions differ from those in TJ, the more rounded quality of the Owari /u/ (which differs from TJ unrounded /u/) and the involvement of expressions containing [I] in coalescence and palatalization⁷. However, we will see further evidence for the OJ representations in section 4.4.

However, simply stating the inventory is not enough. One should also account for the lack of [I] and [U] combination, and the lack of expressions with [I] and [U] as head. Constraints on generation and propagation must also be introduced.

4.2 Licensing and Processing Constraints

One school of element theory is also concerned with the appropriate generation of an inventory, leading to the creation of constraints to restrain the licensing power of a feature within an inventory and a word. Licensing constraints or LCs (Charette & Göksel 1996, 1998) constrain the presence of an element in a segment and an inventory and Processing constraints or PCs (Kula & Marten 2000, Kula 2002) restrain the power of an element to license itself intrasegmentally. Processing constraints were proposed by Kula & Marten (2000) to account for trans-constituent processes and long distance processes at the nuclear projection which are not accounted for with LCs. PCs will be used in reference to OJ in further work.

⁷ Behavior of expressions in pitch accent assignment would be necessary but a full description of OJ dialect pitch accent is unavailable at the present time and will be left to further research. Previous accounts of Nagoya and Owari pitch seem to cover the Owari Accent as used in the Standard/Tokyo dialect. See Keshikawa (1983) for more on Nagoya accent for SJ words.

To restrict the generation of the lexical inventory, the following LCs are those that are most commonly used. For more discussion of LC ontology, see Cobb (1997) and Ploch (1999).

- All operators must be licensed (by a head element)
- X may not be licensed (i.e. X may not be operator in an expression)
- X must be licensed (i.e. X may not be head in an expression)
- X is not a licenser (does not license operators)
- Operators cannot be licensed

The first constraint either allows or prevents headless expressions.⁸ The second constraint calls for a specific element to be head. In other words, this element is licensed as head in whatever expression it is present in and ‘overpowers’ other elements. ‘X is not a licenser’ reflects an element’s inability to license other elements within its expression. Cobb (1997) and Ploch (1999) also add a constraint to explain the cross-linguistic markedness of [IU] complex expressions, namely “[I] and [U] may not combine”. Processing constraints (PCs) will be applied in future work in discussions of the domain for [I].

4.3 Constraints for TJ and OJ

Tokyo Japanese has a five vowel system comprised of /a, i, u, e, o/. To account for Yoshida Y’s analysis of Tokyo Japanese calling for unheaded [U]⁹ and to prevent /y/ and /ø/ or [IU] and [AIU] we can posit the following constraints:

- (9) Licensing constraints for Tokyo Japanese
- i) A must be head.
 - ii) U must not be head.
 - iii) I and U may not combine
 - iv) All operators must be licensed.

These constraints correctly derive the five possible vowels for Tokyo Japanese. In addition they account for facts such as the lack of pitch accent assignment for [U] and other issues (see Yoshida Y. 2003 and 2006 for discussion). Constraints simply account for lexical properties of vowels - post lexical properties are not accounted for (as in variations in Turkish initial and recessive nucleic [AI] expressions, see Charette & Göksel 1998 for more.) For OJ, once again only five vowels are needed, though we must account for lack of [AIU] and [IU] and as well as the rounded properties of [U]. The constraints proposed are the following.

⁸ All systems are assumed to have headed expressions, though some languages allow for systems with headless expressions as well, such as ATR Harmony languages like Vata or non-stressed reduction languages like English. Simplex or complex expressions without a head are typically expressed as a lax, reduced or -ATR vowel. See Cobb 1997 for more discussion on ATR licensing, contrast and harmony and Backley 2011 for a discussion of RP English and headedness in ET.

⁹ Yoshida S. (1996) argues for a different analysis of [U] claiming that it is an epenthetic element. While this is valid as it does indeed behave as the epenthetic element at times, this does not mean every expression of [U] is epenthetic e.g. in words such as [sui] ‘vinegar’.

(10) Licensing constraints for Owari Japanese

- i) I must be head
- ii) U must be head
- iii) All operators must be licensed.

Here we prevent the lexical generation of [IU], [AIU] and a contrasting [AI] expression. As our focus is OJ and coalescence, we will continue to discuss the constraints for OJ and their interaction in the following section. We must also remember to account for the appropriate expressions for the contrast of [AI] combinations. This is stipulated in order to prevent the impossibility of production and comprehension that would exist in a system without headedness generating only seven expressions.

4.4 Licensing elements in Owari Japanese

In this section we will examine how mergers and conflicts of headship created by the lexical licensing constraints are resolved. Older and younger speakers differ in their production and this is accounted for in 4.6. The older speakers' data is summarized in (11).

(11) Owari Japanese Data (Older speakers)

a. /ai, ae/

<u>Older speakers</u>	<u>Tokyo Japanese</u>	<u>Gloss</u>
ræ:nen	raineN	next year
ɕiharjæ:	ɕiharai	payment
æ:mæ:	aimai	unclear
dæ:kon~dæ:ko	daikoN	daikon
kawjæ:so:	kawaiso:	'poor thing'
jæ:ta	ja-ita	'cook-PAST'
æ:chiken	aichiken	'Aichi Pref.'
æ:biki	aibiki	'affair'
hæ:	hai	'ashes'
kæə	kai	'clam'
anbæ:/anbjæ	anbai	'seasoning'
sæko	saikoo	'best'
hæ:	hae	'fly'

b. /oi, oe/

<u>Older speakers</u>	<u>Tokyo Japanese</u>	<u>Gloss</u>
pø:	-ppoi	'like'
ø:	oi	'nephew'
osø:	osoi	'slow'
nozø:te	nozo-ite	'remove-GER'
kø:	koi	'fish'
ɕirøe~ɕirø:~ɕiro:	ɕiroi	'white'
tatoeba (N/A)	tatoeba	for example
køe	koe	'voice'

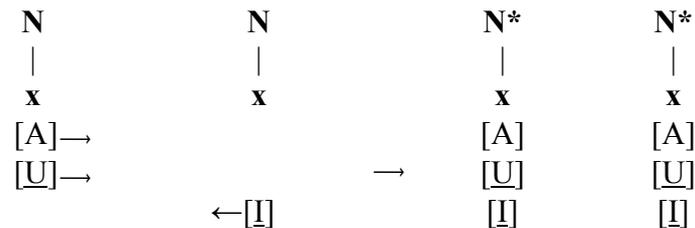
c. /ui/

<u>Older speakers</u>	<u>Tokyo Japanese</u>	<u>Gloss</u>
eiby:	eibui	‘bitter’
atsy:~ate:y:	atsui	‘hot’
samy:	samui	‘cold’
mazy	mazui	‘gross’
furi:~fury:	fury:	‘old’

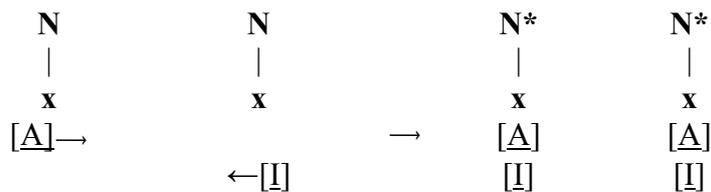
It is obvious that the trigger of the coalescence, which is postlexical, is always the presence of [I] in the latter half of a TJ vowel sequence. The subsequent vowel will then have an additional [I] in the resulting expression e.g. /o/ [AU] becomes [ø] [AIU]. [I] does not affect /e/ or /i/ as there is an [I] element present in the expression already. Let us re-examine the diagrams presented above with headedness represented as given in 4.1. See (12) below.

(12) Illustration of Merger in VV sequences (Heads included)

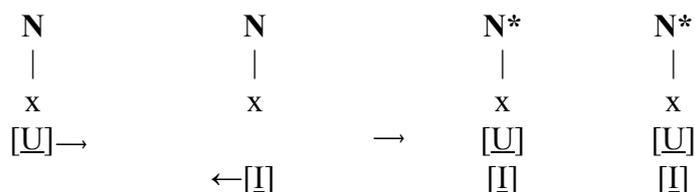
a. In /oi/ contexts e.g. *osoi* ‘slow’



b. In /ai/ contexts e.g. *takai* ‘tall’



c. In /ui/ context e.g. *furui* ‘old’



In each Nucleus pair before the merger, each expression is headed and upon merging, there is a conflict of headedness. No expression is permitted to have more than one

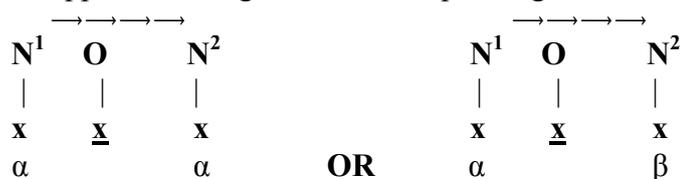
head in a constituent. Note that licensing constraints are not violated as they pertain to lexical expressions, not derived expressions.

The issue here is what decides which expression remains head in the derived expression? Is it possible that the [I] element is no longer the head of the complex expression? If directionality were assumed and one assumed [I] was licensing itself as operator spreading regressively to the previous ON pair, that may be a satisfactory yet ultimately descriptive solution¹⁰. [I] is involved in the process, however, the relation of governor to governee in a diphthong sequence or a stem to suffix is more important as it explains partially why coalescence only happens in three specific adjacent vowel pairs with exceptions where a diphthong cannot be claimed.

4.5 Capturing diphthongs in an ONON language

While Japanese has been proposed to lack any branching constituents¹¹, there are new issues which must be considered if constituents without branching are to be accounted for. A heavy diphthong here is considered to be two nuclei in a governing relation that also behave as a constituent to some degree in monomorphemic forms. Yoshida S. (1996) proposes postlexical nuclear fusion to deal with the assumed governing relation in diphthongs. Taking a strict ONON structure as the base for Japanese, (as in Cyran 2010; or see Strict CVCV¹² e.g. Lowenstamm 1996) a fusion operation to create a branching nucleus is not an option. However, Left to Right government of Nuclei is a viable option and has been utilized for long vowels in Yoshida S. (1993) and for diphthongs in Strict CV in Ségéral & Scheer (1998) suggesting a slightly different solution. A way to capture diphthong governance conditions has not yet formally been proposed¹³ though N1 is assumed to be head¹⁴. Cyran (2010:192) notes that Nuclear government directionality is not specified in a Strict CVCV or ONON framework due to variation across phonological systems and perhaps even within a single system as pursued in Scheer (1998, 2004). See (13) for an illustration of governance in long vowels and diphthongs with governance specified from left to right.

(13) L-R Government applied to Long vowels and diphthongs



¹⁰ Also see footnote 1 for more on /ei/ sequences..

¹¹ Arguments against branching nuclei and rhymes for Japanese geminates, NC clusters and ‘long’ vowels are presented in Yoshida S. (1996, 2003) and Yoshida Y. (1999, 2003). For recent alternative discussion based on the mora, see Labrune (2012b) among others.

¹² In Strict CV, long vowels have been proposed to be represented as a Nuclear sequence in a trochaic governing relation from left to right based by Rowicka (1999).

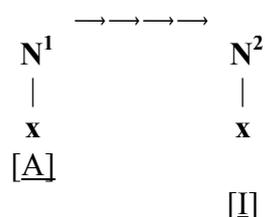
¹³ See also Polgardi (2012) based on English diphthongs utilizing L-R Trochaic gov’t (Rowicka 1999) in Loose CVCV. Note that this approach and Ségéral & Scheer assumes the second half of a diphthong to be a consonant. This is inapplicable for Japanese and there is no evidence of the second half of a diphthong behaving as a consonant. It is counted in pitch accent assignment and must therefore be a Nucleus.

¹⁴ Further thoughts on conditions for diphthongs are worthwhile. Consider lexical New York English heavy diphthongs. The latter member of a diphthong must always be lax e.g. [faɪ] or an operator in ET terms. Note that English allows for lax expressions e.g. [bɪt]. and OJ does not. This will be pursued at a later date.

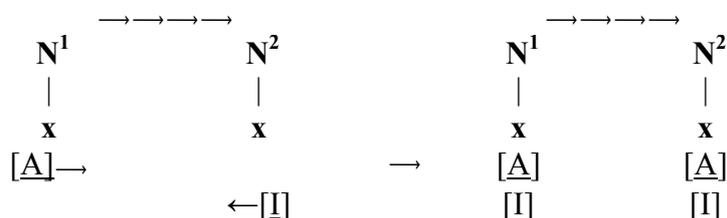
The government of N² prevents N² from licensing an Onset. (Harris, 1990). Right-to-left government is not considered here but is described for long vowels in Scheer (2004:267). The following proposal is theoretically applicable to most versions of Government Phonology and is a work in progress.

Japanese Diphthongs, both lexical and derived via morphology, here are assumed to be sequential nuclear constituents in a governing relation rather than branching nuclei as in previous GP models (KLV 1990). Monomorphemic forms are in a clear relation while in adjectival or verbal forms, the relation of stem to suffix is one of licensing as well. The licensing of the suffix vowel can be thought to be in a governing relationship between domains of the shape [[A]B]. (See Kaye 1995 for more on domains.) Consider the following diagram with government represented by arrows. Note that Onsets are not represented here as per the above note on N²'s Onset licensing.

(14) In /ai/ contexts in TJ



(15) In /ai/ contexts in OJ



Two nuclei in TJ and OJ are in a governing relation with the preceding nucleus acting as head and licensing the latter half of the nuclear sequence.¹⁵ TJ allows for adjacent N nodes with a governing relation to remain separate.¹⁶ In OJ, the elements merge when in a governing relation and the head of N1 remains head as it is the governor. N2 or [I] is demoted to operator to resolve a conflict of headedness. Perhaps exceptions do not undergo coalescence, as they are not in a governing relation, as they are not part of the ‘main’ OJ lexicon. Further investigations into the status of diphthongs must be made, however, as there is currently no reason to assume /koi/ ‘love’ should not coalesce.

To summarize, TJ simply has nuclear government with no merging and therefore no conflict of headedness. . OJ merges elements due to an issue with government and this

¹⁵ This contrasts with higher levels of internuclear relations, such as pitch accent assignment, which exist on the Nuclear Projection in which government is right to left.

Tokyo Japanese can possibly have coalescence of /ai/ to [e:], but it is not seen as ‘proper’ or is seen as slightly rude, rambunctious or boyish and therefore is considered an optional expressive process rather than Owari Japanese, where coalescence has no marked semantic value and is a regular process.

leads to a conflict of headedness. The OJ phonology then resolves conflicts of headedness through demotion of elements in the weaker, governed N2 position. Further research is needed to determine what else may be at play and what conditions there are for nuclear government or what may trigger merging or sharing.

4.6 Generational Differences

As for younger speakers who fail to consistently produce coalesced vowels, this may be seen as interference from the phonology of Tokyo (Standard) Japanese. It is perhaps an issue of phonetic output accuracy rather than phonological failure. The key here is that vowels behave as coalesced vowels (e.g. they can trigger secondary palatalization) as in palatalization as in the word [eiri^o] ‘white’. The case of /ui/ productions is less clear, though note [mazi:] for /mazu-i/. [ʒ] is not produced typically in the OJ dialect of Japanese and was only found in this ‘coalesced’ environment.

Other factors that may be relevant include usage. Younger speakers use the dialect less than older generations (only with family at home) and their OJ phonology interpretation could be seen as less ‘robust’. The lack of coalescence as well as the markedness of [IU] or [AIU] combinations in SJ may be affecting the production of OJ coalesced vowels. While produced successfully at times, there are clearly interference and usage aspects which must be considered. The palatalization, however, is a strong clue that every coalescence pattern is attested in both generations of speakers. The results of the data parallel the assertion in Imanishi et al (2006) that younger speakers are not producing the vowels as robustly as older generations - indeed, there is some phonological evidence to present involving the disruption of the phonetic output which can validate their findings.

5. Conclusions and further avenues of research

In this article, the reflexes of Owari Japanese were examined based on data from speakers in Ichinomiya. It has been argued here that the coalescent vowels are derived from underlying surface forms. Licensing constraints captured both Tokyo and Owari Japanese lexical inventories. Nuclear Left to Right government which has been previously proposed for English, German Diphthongs and Palestinian Arabic is also applicable in Japanese, negating the need to refer to nuclear fusion. Vocalic coalescence was recast as a process where in a nuclear governing relation, [I] is merged into a vocalic expression in the governing Nucleus which then is followed by demotion of [I] to operator. Owari Japanese creates the derived novel vowels through the head reorganization process - they do not violate the lexical licensing constraints as it is post-lexical as discussed in 3.1. The point of coalescence is to resolve a dispute between constituents and the elements in governing relations - further cases in Japanese and other languages remain to be discussed and conditions on government remain to be proposed. Failure to produce full long coalesced vowels can be seen as a phonetic target failure or an interpretation error. Phonetic production of the underlying representation falters at times for younger speakers, though there is evidence that coalescence still occurs due to extra palatalization. In addition, this supports Imanishi et al (2006) and the assertion that phonetic production in younger generations is indeed different from that of older generations, though they can produce the vowels.

Further work remains to be done. Deeper examination of other dialects and the status of diphthongs in SJ and OJ is necessary. Coalescence as diphthong governance satisfaction is an avenue of research that deserves exploration. In addition, the application of intranuclear governance and its conditions in other languages besides English and Japanese should be discussed.

Acknowledgments

* First and foremost my thanks are due to Rihito Shirata and Tatsuya Hirako of Kyoto University for their assistance, introductions, advice and support in undertaking this fieldwork. I would like to thank my Ichinomiya consultants most of all: Mr. Yamaguchi, Ms. Emori, Mr. Teranishi, Ms. Horio and Mr. Iriyama. Lastly, thanks are necessary for Kansai and Tokyo informants M. Matsuoka, I. Matsuoka, K. Matsuoka, R. Yano, K. Matsui and M. Umatani for their recordings needed to confirm previous research. 皆様にお礼を申し上げます. This fieldwork would have been impossible without financial support from the Philological Society, the SOAS Small Fieldwork grant and my family. Lastly, my thanks to Monik Charette, John Harris, Lutz Marten and Kirsty Rowan for their comments, advice and support on this work in progress. Any errors or inconsistencies are mine alone.

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Appendix 1: Data Collection and Methodology

Data was collected in the city of Ichinomiya, north of Nagoya in Aichi Prefecture, Japan. 5 consultants in total were recorded, three above 65 years old (TY, 79/M; EE, 77/F; YA, 70/M) and two speakers in the 25-30 age group (H, 27/F; I 29/M). Consultant YA served as a sociolinguistic consultant and had written his own works on the dialect. (Yamaguchi, n.d.) Any tokens produced by YA are excluded above due non-participation in the word elicitation task. Sessions included a comparative word list and older speakers were recorded in a group. Younger speakers were also recorded together. While consultants showed some hesitance at times to speak using the variety in questions, ease of usage increased as recording continued. Younger speakers did note that they rarely use the dialect with friends due to fears of miscommunication. However, the dialect is used at home with family members.

Data for the word list was chosen on the basis of the consonants preceding vowels (alveolars, velars, etc.), vowel pairs (e.g. /ai/ /ei/ /oi/ etc.), and word initial, medial and final contexts. In addition items from differing lexical categories were chosen, namely Yamato Japanese words, Sino-Japanese words and loanwords to see to what extent the phonological processes applied across the lexicon.

It is important to note that the words were not elicited directly but were elicited in a question-based format in Tokyo Japanese e.g. “What is the opposite of hot (*atsui*)?” rather than “Can you please say cold (*samui*) in the dialect? etc. Respondents tended to answer in Tokyo Japanese at first and then gave dialect forms. All speakers could clearly differentiate between the two. Some words had no equivalent in Owari Japanese such as *tatoeba* ‘for example’. At times there were no words available for a specific (C)VV context that speakers actually used (e.g. Sino-Japanese words like *eidan* or ‘decision’), in which case an alternative was looked for though it was not available for every (C)VV combination.