

# Towards the Reconstruction of Proto-Japonic Demonstratives: A Conceptual Framework\*

TOMOHide KINUHATA  
*Fukuoka University*

## 1 Introduction

The purpose of this paper is to reconstruct the Proto-Japonic (PJ) demonstrative paradigm and discuss possible pathways to the Proto-Ryukyuan (PR) and Old Japanese (OJ) paradigms. Previous attempts have paid little attention to the systematic nature of demonstratives when presuming changes from PJ. Since demonstratives form a small, closed set within a synchronic grammar, each demonstrative inevitably influences the shape of others. Therefore, predicting these changes requires a theoretical framework that account for their mutual dependence, which this paper also aims to establish.

This paper proceeds as follows. After identifying key issues by reviewing previous studies in Section 2, Section 3 examines prominent morphological changes in demonstrative systems of Japanese and Ryukyuan, which serve as the basis for reconstructing the PJ demonstrative paradigm in Section 4. Section 4 also addresses remaining issues, followed by the conclusion in Section 5.

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## 2 PR and OJ demonstratives

### 2.1 Hattori's (1976) Reconstruction of PJ

Proposing that Eastern Old Japanese (EOJ) is derived from PJ, Hattori (1976) reconstructs the PJ demonstrative morphemes as in (1), based on the data presented in Table 1-a.

- (1)      \*kə      \*sə      \*'ə  
          \*ka      \*sa      \*'a

Shuri	/kuri/	/ʔuri/	/ʔari/		→
Central OJ	/köre/	/söre/	/kare/		
Contemporary Kyoto	/kore/	/sore/	/'are/		
Hachijo	/kore/	/sore/	/'ore/		

a: Data

b: Phonemes

Table 1: Hattori's (1976: Report 65) Data and Extracted Phonemes

Hattori's reconstruction can be seen as a decomposition of demonstrative morphemes attested in four varieties. In each variety listed in Table 1-a, at most three consonants and two vowels are contrasted, as extracted in Table 1-b. Identifying the glottal stop /ʔ/ with the null consonant /' /<sup>1</sup> and assuming /u/, /ö/, and /o/, the first vowel in Table 1-b, trace back to \*ə, six combinations of three consonants and two vowels emerge, as shown in (1).

Since Hattori (1976) focuses solely on concatenating phonemes, the reconstructed morphemes in (1) do not necessarily form a paradigm used by PJ speakers and present several issues.

First, among the six morphemes in (1), \*sa- has no reflex in the data and lacks any justification for being posited in a proto-language. It is therefore overgenerated by the combinatorial approach to consonants and vowels.

Second, the reconstruction of vowels is more complex than Hattori originally envisioned. Although Hattori (1976) identified the distal demonstrative pronoun in Hachijo as /'ore/ through his own fieldwork on the Kashitate dialect (Hattori 1973), data from four other villages in Hachijo exhibit the form /ure/, according to NINJAL (1950: 204–5) and Kibe (2013: 123–4). Moreover, records from *On'in Torishirabesho* (via NINJAL 1950: 331) indicate that /ure/ was used before even in Kashitate. These facts suggest that the proto-form of this distal pronoun is \*ure, which cannot be traced back to PJ \*ə-. Since the ancestor of the OJ vowel /ö/ is \*ə, the decomposition of the forms in Table 1-a results in the extraction of three vowels, leading to an overgeneration of proto-forms beyond those listed in (1).

<sup>1</sup> The vowels with a glottal stop in Shuri Okinawan phonologically correspond to onsetless syllables in OJ, e.g., ʔutu :: oto 'sound', whereas vowels without a glottal stop correspond to syllables with a labial-velar consonant, e.g., utu :: woto 'man, husband'. Since the current discussion involves only the former correspondence, omitting the transcription of glottal stops does not affect the argument in this paper.

## 2.2 Nakamoto's (1983) Reconstruction of PR

Examining various Ryukyuan dialects, Nakamoto (1983) reconstructs the demonstrative paradigm in (2) for PR. A small selection of data from Nakamoto (1983) is provided in Table 2.

- (2) Proximate      Medial      Distal  
       \**ko-*            \**o-*            \**a-/\*ka-*

This paper generally follows Nakamoto's (1983) reconstruction of PR demonstratives. However, from a comparative perspective with OJ, some additional remarks are necessary.

It is not unreasonable to posit two morphemes for the distal series based on the data in Table 2: Generally speaking, *ka-* is confined to Southern Ryukyuan languages, while *a-* tends to appear in Northern Ryukyuan. However, Nakamoto (1983: 179–80) does not base this distinction on geographical distribution but rather on the presence of *a*-series demonstrative manner adverbs, such as *antsi* (Miyako), *andzi* (Ishigaki).<sup>2</sup> In Section 3, I will argue that such adverbials developed through analogy and do not necessarily trace back to PR.

The second point concerns Nakamoto's (1983: 185) remark on the relationship between the PR demonstrative *\*ore* and (i) Hachijo *ure*; (ii) the second person pronoun *öre* in OJ; and (iii) the second person pronoun *ura* in Northern Ryukyuan. However, from a historical perspective, it is not appropriate to treat all three as equivalent. The PR source of Northern Ryukyuan *ura* is *\*ura*, a distinct vowel from *\*ore*, as evidenced by its Southern Ryukyuan cognates *vva* or *waa*.<sup>3</sup> As mentioned at the end of Section 2.1, Hachijo *ure* and OJ *öre* have different PJ origins: While OJ *öre* directly descends from *\*äre*, Hachijo *ure* developed from *\*ore* (or *\*ure*), as summarized in Figure 1 (see Hattori 1978–9, Pellard 2013 for vowel correspondences between PR and OJ). This means that if the PR demonstrative *\*ore* originates from the same PJ root as OJ *öre*, it does not share the same origin as Hachijo *ure*, and vice versa. Resolving this issue is not straightforward. Regardless of which interpretation is correct, Nakamoto (1983: 179) appears to assume a historical shift from demonstratives to personal pronouns. If so, *\*ä-* or *\*o-* would be a

	Proximate	Medial	Distal
Naze Amami	<i>kuri</i>	<i>ʔuri</i>	<i>ʔari</i>
Okutake Okinawa	<i>kuri</i>	<i>ʔuri</i>	<i>ʔari</i>
Hirara Miyako	<i>kui</i>	<i>ui</i>	<i>kai</i>
Ishigaki Yaeyama	<i>kuri</i>	<i>uri</i>	<i>ari</i>
Yonaguni	<i>ku:</i>	<i>u:</i>	<i>kari</i>

Table 2: Nakamoto's (1983) Data

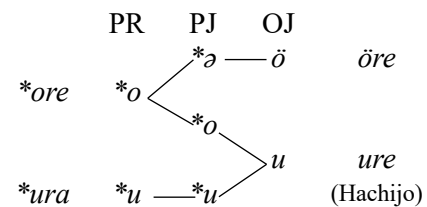


Figure 1: Vowel Correspondences

As mentioned at the end of Section 2.1, Hachijo *ure* and OJ *öre* have different PJ origins: While OJ *öre* directly descends from *\*äre*, Hachijo *ure* developed from *\*ore* (or *\*ure*), as summarized in Figure 1 (see Hattori 1978–9, Pellard 2013 for vowel correspondences between PR and OJ). This means that if the PR demonstrative *\*ore* originates from the same PJ root as OJ *öre*, it does not share the same origin as Hachijo *ure*, and vice versa. Resolving this issue is not straightforward. Regardless of which interpretation is correct, Nakamoto (1983: 179) appears to assume a historical shift from demonstratives to personal pronouns. If so, *\*ä-* or *\*o-* would be a

<sup>2</sup> Nakamoto's (1983) transcription of these words is *antfi* and *andzi*, i.e., with palatalized alveolars. Since transcribing palatalization obscures dialectal correspondences, I will use a notation without it throughout this paper.

<sup>3</sup> While PR *\*u* and *\*o* appear to have merged in most environments in Northern Ryukyuan dialects, they remain distinct in Southern Ryukyuan. For example, before /t/, PR *\*ura-n* [sell-NEG] (and imperative *\*ur-e*) appears as *vva-n* (and *vv-i*) in most Miyako dialects, whereas PR *\*ora-n* [weave-NEG] (and imperative *\*or-e*) appears as *ura-n* (and *ur-i*) (cf. Tomihama 2013, Nakama et al. 2025). Therefore, although the demonstrative *uri* and the second person pronoun *ura* appear similar in Northern Ryukyuan, Southern Ryukyuan data indicate that they originate from different roots.

demonstrative morpheme in PJ,<sup>4</sup> which raises the following question: What is its relationship to OJ *sō*?

### 2.3 Shinzato and Serafim's (2013) Reconstruction of PJ

Contrary to Nakamoto's (1983) assumption, Shinzato and Serafim (2013) argue that PR *\*o-* is an innovation that developed from a reflexive pronoun *\*ə*.<sup>5</sup> Since this assumption implies that the progenitor of *\*o-* was not originally part of the demonstrative paradigm of PJ, they reconstruct an alternative morpheme for the medial demonstrative, as shown in (3) (ibid.: 268).<sup>6</sup>

(3)	Proximate	Medial	Distal
	<i>*kə</i>	<i>*tə</i>	<i>*ka</i>

This reconstruction is nearly identical to the one proposed in this paper, except for the consonant of the medial demonstrative morpheme. Shinzato and Serafim (2013) maintain a strong connection between focus particles—particularly *du* in Okinawan—and demonstratives, which led them to posit /t/ instead of /s/. As this paper does not aim to address this connection in detail, it simply assumes /s/ as the consonant of the medial demonstrative.

More importantly, questions remain regarding the process by which PR *\*o-* was formed. Shinzato and Serafim (2013) propose that *\*tə-* in (3) was replaced with the reflexive pronoun *\*o-*. This assumption further presupposes:

- (a) The elimination of *\*tə-* from the proto-demonstrative system, and
- (b) The semantic shift of *\*o-* from a reflexive pronoun to a demonstrative.

To justify (a), they hypothesize a homonymic clash between the medial demonstrative *\*tə-* and the interrogative word *\*dwo-*<sup>7</sup> [which]. However, this hypothesis requires at least two conditions to be met: (i) the voicing of /t/ in *\*tə-*, and (ii) the reconstruction of *\*idwo-* as the PJ interrogative form. While they argue that *\*tə-* could have undergone voicing due to its association with the focus particle *\*do*, other demonstratives—such as *ka-* in Southern Ryukyuan and *so-* in Japanese—have never been voiced, despite their alleged voiced counterparts, that is, the focus particles, *ga*, and *zo*. This raises doubts on the voicing of *\*tə-*. Additionally, if the PJ interrogative form were reconstructed as *\*idwo-*, its second syllable would be expected to appear as /du/ in Ryukyuan, contrary to attested forms like Shuri *dziru*, Iejima *dziru*, and Irabu *idzi*, though Yoron *iduru* conforms to this reconstruction.<sup>8</sup>

<sup>4</sup> See also Hirako and Pellard (2013) for the view that the demonstrative ancestor of Hachijo *\*u-* should be reconstructed in PJ. However, a potential issue with this view is that no demonstrative use of *\*u-* (or *\*o-*) is attested in OJ, particularly in EOJ (see Kinuhata 2022 for OJ data).

<sup>5</sup> Shinzato and Serafim (2013) use an umlaut notation for the PJ vowel that later developed into B-type (*otsurui*) in OJ. In contrast, this paper restricts the use of umlauts solely to OJ vowels. Specifically, *o* and *ö* represent the A-type (*kōrui*) and B-type (*otsurui*) distinction in OJ, whose ancestral forms in PJ are *\*ua* (or *\*o*) and *\*ə*, respectively.

<sup>6</sup> (3) presents a simplified version of Shinzato and Serafim's (2013) reconstruction by omitting their parenthesized segments. They reconstruct the proximal as *\*kə ~ (\*i)* and the medial as *\*t(y)ə*, where *\*i* accounts for the relationship with the Middle Korean proximal *i* (ibid.: 266–8; cf. Frellesvig & Whitman 2008: Section 3.4) and /y/ accounts for the affrication of /t/ to /s/ (Shinzato & Serafim 2013: 138).

<sup>7</sup> /wo/ in *dwo* represents a counterpart of an OJ *kōrui* vowel in Old Okinawan, according to their notation.

<sup>8</sup> The Ryukyuan examples are cited from *Dai Ryukyugo Jiten* (accessed February 11, 2025 from <https://ryukyulang.lang.lab.u-ryukyu.ac.jp>).

Cross-linguistic evidence does not support the change in (b), either. As Diessel (2006: 475) states, ‘demonstratives have emerged very early in the evolution of language’ and ‘their roots are generally so old that they cannot be traced back to other types of expressions’. Although Heine et al. (2020) have recently challenged Diessel’s (2006) thesis, the reflexive-to-demonstrative shift has not been documented even in their work.<sup>9</sup> In Section 4, we will argue that the development of the medial demonstrative followed a direct path from (3), without involving replacement by reflexive \**o*.

## 2.4 Systematic Correspondence Between OJ and PR

Reconstructing a PJ demonstrative paradigm presupposes some degree of semantic correspondence between the systems of OJ and PR. This subsection briefly addresses this issue.

Hashimoto (1966) observed that *kō-* and *sō-* in OJ refer to objects in a complementary manner: While *kō-* refers to objects in deictic space, *sō-* has no clear examples of deictic use and is primarily used anaphorically. Based on this, he concluded that the OJ system was divided into ‘sensible’ *kō-* and ‘insensible’ *sō-*, considering *ka-* to be underdeveloped. However, Kinuhata (2022) pointed out the possibility that *ka-* functioned as a distal demonstrative. Although there are not many examples of *ka-* in OJ, as noted by Hashimoto (1966), there are also few instances of *kō-* referring to distant objects, contradicting Hashimoto’s (1986: 235) prediction. If *ka-* is indeed part of the OJ demonstrative paradigm, the system can be represented as shown in Table 3-a.

Deictic			Deictic		
Proximate	Distal	Anaphoric	Proximate	Distal	Anaphoric
<i>kō-</i>	<i>ka-</i>	<i>sō-</i>	* <i>ko-</i>	* <i>a-/*ka-</i>	* <i>o-</i>
a: OJ			b: PR		

Table 3: Comparison Between OJ and PR

Kinuhata (2021) proposed the semantic components of PR demonstratives as shown in Table 3-b, which closely resemble those of OJ. The morphemes in this reconstruction follow Nakamoto’s (1983) proposal. One of the main reasons for positing this system is the presence of many Ryukyuan dialects that feature only two distinctive demonstrative morphemes (Uchima 1984; Nagoshishihensan’iinkai 2006). These two-way demonstrative systems draw their morphemes from those in Table 3-b. Thus, there appears to be a semantic tendency in Ryukyuan to distinguish between proximate and distal referents, despite the existence of three proto-morphemes, making the system in Table 3-b a fitting representation.

Given the two comparable paradigms, the main issues lie in reconstructing the distal and anaphoric series. Furthermore, the comparison suggests that considering \**o-* as a proto-demonstrative, as suggested in Section 2.2, creates a competition with \**sō-*. The same issue arises when attempting to reconstruct \**sō-*. These questions will be explored in the following sections.

<sup>9</sup> A slightly different shift from reflexive-to-demonstrative may have played a role in the development of demonstratives. Shirata (2020) reported that in some Kikai dialects, first and second person pronouns support the reference of proximal demonstratives, reinforcing them, morphologically. See Diessel (2006: 474) and Heine et al. (2020: Section 3.1.1) for ‘reinforcement’. This development is suggestive because some authors have linked the function of OJ *ō* to the second person (Nakamoto 1983: 185). However, in OJ, *ō* is used as a diminutive second person form, and there is no clear reason why the second person should contribute to the anaphoric function of \**sə*.

Before proceeding, two additional demonstrative morphemes in OJ should be considered. One is the anaphoric pronoun *si*, which functions similarly to *sō-*. In (4), *si* is anaphorically bound by NPs such as old persons, women, and children.

- (4) oi pitō=mō womina warapa=mō si=ga negapu kökōrō darapi-ni  
 old person=also woman child=also DEM=NOM expect heart satisfy-ADV  
 ‘From old men to girls, (the Emperor) satisfied their expectations.’ (MYS, 4094)

Although it is difficult to distinguish the function of *si* from that of *sō-* due to the limited number of attested instances of the former, their relationship will be discussed in Section 4.2.

The second additional morpheme is the manner adverb *ka-*, which is usually translated as ‘this way’, as in (5).

- (5) **ka** jukë-bapitō=ni itöp-aje kaku jukë-ba pitō=ni  
 this.way go-COND person=DAT dislike-PASS this.way go-COND person=DAT  
 nikum-aje  
 hate-PASS  
 ‘If I went this way, I was disliked by someone. If I went in such a way, I was hated by others.’ (MYS, 804)

Although this adverb shares the same form as the distal demonstrative, their functions differ, not only syntactically but also in terms of demonstrative distance. Cognates of this adverb are found throughout Ryukyuan dialects and can thus be traced back to PJ. Examples include Naze Amami *kasi*, Koniya Amami *ka:*, Shidooke Kikai *hasi*, Tamina Okinoerabu *hansi*, Mugiya Yoron *hassi*, Hirara Miyako *kantsi*, Kurima Miyako *kantsi:*, Ishigaki *kandzi*, and so forth (cited from Nakamoto 1983), all of which denote a manner proximate to the speaker.

Including *si* and *ka-* provides the following correspondences between OJ and PR, which will serve as the basis for the discussion in subsequent sections.

	Noun			Adverb
	Deictic Proximate	Deictic Distal	Anaphoric	Proximate
OJ	<i>kō-</i>	<i>ka-</i>	<i>sō-, si</i>	<i>ka</i>
PR	<i>*ko-</i>	<i>*a-/*ka-</i>	<i>*o-</i>	<i>*ka</i>

Table 4: Comparison Between OJ and PR Revised

## 2.5 Summary

We have examined one hypothesis on PR demonstratives (Nakamoto 1983) and two on PJ demonstratives (Hattori 1976, Shinzato & Serafim 2013). All of these hypotheses share the same problem regarding the reconstruction of the progenitor of PR *\*o-*: It remains uncertain whether it is genealogically related to Hachijo *\*u-* or OJ *ō-*. Additionally, assuming *\*o-* to be the older form raises the issue of how OJ *\*sō-* emerged. Shinzato and Serafim’s (2013) proposal, which considers *\*o-* an innovation, circumvents these problems. However, their scenario remains hypothetical. With the two additional OJ morphemes introduced in Section 2.4, we will now examine general trends in the morphological change of demonstratives, aiming for the solution of these problems.

### 3 Historical Change of Demonstratives: A Theory for Reconstruction

#### 3.1 Analogy

The most influential mechanism driving changes in demonstrative forms is analogy. Because of their property to form a paradigm, each morpheme aligns with others and is influenced by them, either proportionally or nonproportionally. To illustrate this process, we examine the formation of demonstrative manner adverbs in Japanese.

Table 5 summarizes the changes in Japanese demonstrative morphemes (Ri 2002: Chapter 3, Okazaki 2010: Chapter 3). The anaphoric *sō-*, introduced in Section 2.4, is labeled here as ‘medial’ since our focus is on its formal property. Demonstrative nouns serve as the prototypical categories, and their influence on the shape of adverbs is indicated by the shaded cells in the table. In OJ, the adverbial form in the medial series is the irregular *sika*, a derivative we will revisit in Section 3.2. In Early Middle Japanese (EMJ), however, this form changes to *sa*, which is correctly predicted by four-part proportional analogy, as shown in (6).<sup>10</sup>

Period	Category	Prox.	Med.	Dist.
OJ 8 <sup>th</sup> -	Noun	<i>kō-</i>	<i>sō-</i>	<i>ka-</i>
	Adverb	<i>ka/kaku</i>	<i>sika</i>	—
EMJ 9 <sup>th</sup> -	Noun	<i>ko-</i>	<i>so-</i>	<i>ka-(/a-)</i>
	Adverb	<i>kaku(/ka)</i>	<i>sa</i>	—
LMJ 13 <sup>th</sup> -	Noun	<i>ko-</i>	<i>so-</i>	<i>a-</i>
	Adverb	<i>kaku &gt; kau</i>	<i>sa</i>	—
LMJ 16 <sup>th</sup> -	Noun	<i>ko-</i>	<i>so-</i>	<i>a-</i>
	Adverb	<i>kau</i>	<i>sau(/sa)</i>	—
EModJ 18 <sup>th</sup> -	Noun	<i>ko-</i>	<i>so-</i>	<i>a-</i>
	Adverb	<i>ko:</i>	<i>so:</i>	<i>a:</i>

Table 5: Morphological Change from OJ to ModJ

$$(6) \quad kō\text{-}_{[\text{noun, proximate}]} : ka\text{-}_{[\text{adverb, proximate}]} :: sō\text{-}_{[\text{noun, medial}]} : X\text{-}_{[\text{adverb, medial}]} = sa$$

The reason why *ka*, instead of *kaku* (see (5)), serves as the bases in this analogy remains unclear. Despite *kaku* being overwhelmingly more frequent than *ka*, *\*saku* never emerged. However, in the later period of Late Middle Japanese (LMJ, 16<sup>th</sup>-), the form *sau* appeared. This development can only be explained by proportional analogy, as shown in (7), since the equivalent sound change for *kaku > kau* does not hold.

$$(7) \quad kō\text{-}_{[\text{noun, proximate}]} : kau\text{-}_{[\text{adverb, proximate}]} :: sō\text{-}_{[\text{noun, medial}]} : X\text{-}_{[\text{adverb, medial}]} = sau$$

In Early Modern Japanese (EModJ), the ternary opposition in the nominal series (*ko-*, *so-*, *a-*) extended to the adverbial series. The emergence of *a:* may be attributed to proportional analogy, but it is more plausibly the result of extension or leveling. If we consider that the ternary opposition applied to the adverbial morpheme (vowel lengthening), thereby creating a new alternation, we

<sup>10</sup> Bybee (2015: Chapter 5) argues that analogical change generally does not follow a proportional pattern, citing examples of the application of *-ed* to English irregular verbs. The creation of *dreamed* (cf. *dreamt*), for instance, can be analyzed as the verbal stem *dream* combining with the past-tense morpheme *-ed*. However, the emergence of *sa-* in EMJ must be attributed to proportional analogy, as it is impossible to extract medial or adverbial features from preexisting forms. One might suspect that /k/ represents the proximate feature, given its presence in *kō-* and the adverbial *ka-*, but /k/ also appears in the distal noun form. Likewise, analyzing /ō/ and /a/ as markers of nominal and adverbial features, respectively, is untenable, as /a/ is also present in the distal noun. Since demonstratives constitute a very small, closed class—unlike verb morphology—four-part analogy is indispensable for explaining their historical changes.

would call this ‘extension’. Alternatively, if we assume that vowel lengthening (:) spread from proximate and medial forms to distal forms, thereby eliminating irregularity, we would call this ‘leveling’. I prefer the former interpretation, as it emphasizes the creation of a new opposition in demonstrative adverbs.

Ryukyuan also exhibits proportional and nonproportional analogy. In most dialects of Miyako Island, there are three nominal and two adverbial series, as shown in Table 6 (based on my own fieldwork). While the nominal forms *ku-* and *u-*, as well as the adverbial *ka-*, can be traced back

	Prox.	Med.	Dist.
Noun	<i>ku-ri</i>	<i>u-ri</i>	<i>ka-ri</i>
Adverb	<i>ka-ntsi</i>	<i>a-ntsi</i>	

Table 6: Shinzato, Miyako

to PR, there is no clear evidence for the existence of an adverbial *a-* in PR. Given the pattern observed in the other three forms, the development of *a-* can be straightforwardly explained through proportional analogy, as shown in (8)

$$(8) \quad ku\text{-}_{[\text{noun, proximate}]} : ka\text{-}_{[\text{adverb, proximate}]} :: u\text{-}_{[\text{noun, medial}]} : X_{[\text{adverb, medial}]} = a\text{-}$$

Table 7, which presents data from the Amagi dialect of Tokunoshima (cited from Nakamoto 1983), clearly demonstrates a correlation between the nominal and the adverbial series, suggesting that the adverbial forms originated from an extension of the nominal forms. In other Tokunoshima

	Prox.	Med.	Dist.
Noun	<i>ku-ri</i>	<i>u-ri</i>	<i>a-ri</i>
Adverb	<i>ku-ssi</i>	<i>u-ssi</i>	<i>a-ssi</i>

Table 7: Amagi, Tokunoshima

dialects, it is the proximate form that resists this extension, retaining a reflex of PJ *\*ka*. For instance, in the Inokawa dialect (Uchima 1984: 68), the adverbial series consists of *ka-si*, *u-gasi*, and *a-gasi*, while in the Isen dialect (Kato 2022: 348), it consists of *ka-ssi*, *u-ssi*, and *a-ssi*. Since the adverbial morphemes *u-* and *a-* do not trace back to PJ, at least one of them must have arisen through a process other than proportional analogy.

### 3.2 Compounding

A less prominent but still operative mechanism for creating demonstrative morphemes is compounding. As mentioned in Section 3.1, the medial manner adverb in OJ is the irregular form *sika*. This form evidently consists of the anaphoric pronoun *si* (as shown in (4)) and the adverbial function of *ka* (from (5)). In (9), *sika* anaphorically relates to the preceding sentence.

$$(9) \quad \begin{array}{cccccc} \text{titöse=ja} & & \text{inuru ...} & \text{are=ja} & \text{sika} & \text{mopu} \\ \text{thousand.year=TOP} & & \text{pass} & \text{1SG=TOP} & \text{DEM.ADV} & \text{feel} \\ \text{'Have a thousand years passed? Or, is it just that I feel that way?'} & & & & & \text{(MYS, 3470)} \end{array}$$

In OJ, there are no adverbial words ending in *-ka* except for demonstrative adverbs. The other proximate adverb, *kaku* (see Table 5), is an analogically derived form from adjectives: The adverbial form of adjectives ends in *-ku*, as in *tōpo-ku* ‘far’, and *kanasi-ku* ‘sadly’. Thus, it is plausible that *sika* originated as a compound predating OJ, inheriting the anaphoric function of *si* and the adverbial function of *ka*.

Ryukyuan data also support the compounding of demonstrative morphemes. Table 8 presents data from the Naze dialect of Amami Ryukyuan (Nakamoto 1983, Suyama 1997). The three distinct forms *ku-*, *u-*, and *a-* are typical demonstrative nouns of Northern Ryukyuan. Additionally, an extension from the nominal to the adverbial series is observed in the medial and distal columns, whereas the proximate adverb retains PJ *\*ka*, differing from the Amagi dialect data in Table 7. Another difference from Amagi is the adverbial suffixes: While *-ssi* in the Amagi dialect originates from the infinitive form of ‘doing’, *-gasi* in Naze contains an additional morpheme beyond *si* ‘doing’. The compounding hypothesis provides a straightforward explanation for the origin of *-gasi*: The initial voicing (*rendaku*) suggests that /kasi/, the proximate adverb, was compounded with the demonstrative morphemes *u-* and *a-*.

	Prox.	Med.	Dist.
Noun	<i>ku-ri</i>	<i>u-ri</i>	<i>a-ri</i>
Adverb	<i>ka-si</i>	<i>u-gasi</i>	<i>a-gasi</i>

Table 8: Naze, Amami

### 3.3 Reduction

The third mechanism driving demonstrative change is reduction. The demonstrative system of the Yuwan dialect (Table 9, Niinaga 2014) resembles that of the Naze dialect, both of which are dialects of the Amami language. The primary difference between them lies in their adverbial series.

	Prox.	Med.	Dist.
Noun	<i>ku-ri</i>	<i>u-ri</i>	<i>a-ri</i>
Adverb	<i>ka-nsi</i>	<i>gansi</i>	<i>a-gansi</i>

Table 9: Yuwan, Amami

As in Naze, Yuwan appears to recycle the proximate adverbial form as an adverbializer in the medial and distal series. While this is straightforward in the distal series, the medial series seems to have undergone reduction, specifically omitting the initial syllable /u/—a change that still signal its former compounding through the presence of a voiced obstruent. The motivation for this reduction becomes clear when comparing the adverbial forms. While *\*u-gansi* and *a-gansi* are distinguished by their initial demonstrative morphemes, the initial /u/ in *\*u-gansi* becomes redundant when compared to the proximate *ka-nsi*, since voicing alone can differentiate them. On the other hand, the reduced form *gansi* remains distinct from the distal *a-gansi*, provided that the latter retains *a-*. Taking into consideration the contrast between *ka-nsi* and *a-gansi*, the three adverbial forms maintain distinct identities with minimal phonological cost, as summarized in (10).

#### (10) Constraint on Reduction

Demonstrative morphemes can be reduced as long as at least one phoneme remains to distinguish them from other morphemes.<sup>11</sup>

This constraint will play a crucial role in reconstructing PJ forms in Section 4.

Lastly, let us consider the relationship between reduction and reanalysis. The reduced form *gansi* is naturally construed as consisting of a demonstrative component *ga-* and an adverbial part *-nsi* since the comparison with *ka-nsi* served as the motivation for the reduction of *\*u-gansi*. This

	Prox.	Med.	Dist.
Noun	<i>φu-ri</i>	<i>u-ri</i>	<i>a-ri</i>
Adverb	<i>ha-ssi</i>	<i>ga-ssi</i>	<i>a-ssi</i>

Table 10: Mugiya, Yoron

<sup>11</sup> If even a single phoneme failed to differentiate two morphemes, they would become homonyms and could potentially merge into a single morpheme. However, morphemes with distinct meanings tend to resist such mergers. For instance, it is frequently observed that homonymic clashes lead to modifications in the older form to preserve distinctiveness. Therefore, it is reasonable to assume that two demonstrative forms will tend to become differentiated from each other unless their convergence is driven by a semantic merger.

reanalysis is the result of reduction, as the original form would have been *\*u-gansi*. However, reanalysis can, in turn, motivate further reductions, as seen in the opposition found in the Mugiya dialect of Yoron (Table 10, Kiku & Takahashi 2005). While the proximate and medial adverbs in Mugiya structurally resemble those of Yuwan, the former crucially differs from the latter in undergoing the reduction from *\*a-gassi* to *a-ssi*, which presumably occurred due to alignment with the reanalyzed structure *ga-ssi*. Therefore, the relevant reduction is concluded to have resulted in the reanalysis *\*u-gassi* > *-gassi* > *ga-ssi*.

Although reanalysis can serve as a driving force for change, it does not alter surface strings: Rather, it modifies their underlying structure. Since our focus here is the historical change of surface forms, we will not incorporate reanalysis into our theory for reconstruction.

### 3.4 Summary

We have examined three types of mechanisms that alter the surface forms of demonstratives: analogy, compounding, and reduction. These mechanisms are not unique to demonstratives but are widely observed in other areas of language change. However, the close and highly structured nature of demonstratives makes these processes particularly effective: Analogy generates new forms by drawing comparison with existing morphemes; compounding unites at least two existing word-forms; and reduction works as long as distinctiveness within the paradigm is preserved. While other phonological processes occasionally affect the surface forms of demonstratives, their impact is relatively limited.<sup>12</sup> Given this, we will incorporate these three mechanisms as the core component of our theory.

## 4 Reconstruction

### 4.1 Distal and Anaphoric Nouns

We begin by comparing the forms presented in Table 3. Based on the three processes discussed in Section 3, both distal and anaphoric demonstrative morphemes could have undergone phonological reduction from *\*ka-* > *a-* and *\*sə-* > *ə-* (> *o-*) respectively. These reductions adhere to the constraint in (10), preserving the distinctiveness of morphemes. In contrast, our theory does not predict the reverse changes (*\*a-* > *ka-* or *\*ə-* > *sə-*). Adding /s/ to *\*ə-* is implausible, as there is no /s/ in the paradigm to serve as an analogical model or to facilitate concatenation. Similarly, one might hypothesize that *\*a-* analogized with the proximate morpheme *\*kə-* to produce *\*ka-*. However, this scenario is unlikely, as, given proximate *\*kə-* versus anaphoric *\*sə-* (or *\*ə-*), /k/ signals proximity, which should contrast with the distal demonstrative.

Moreover, the reduction *\*ka-* > *a-* receives support from at least three pieces of empirical evidence. First, as noted in Section 2.2, Ryukyuan branches motivate the use of *ka-* or *a-*: While all Southern Ryukyuan dialects have *ka-* as the distal demonstrative morpheme,<sup>13</sup> all Northern Ryukyuan dialects use *a-*. Despite this geographical division, there is minor evidence suggesting that

<sup>12</sup> For example, in many Northern Ryukyuan dialects, *u-ma* ‘medial–place’ undergoes assimilation, reduction, and compensatory lengthening, resulting in *mma* and further *ma:*. However, this change is restricted to this specific pattern. For instance, in the Okutake dialect, *mma* denotes place, while other medial demonstratives, such as *u-ri* ‘thing’ and *u-nu* ‘adnominal’, remain unchanged (Nakamoto 1983: 169–70).

<sup>13</sup> Some Yaeyama dialects exhibit variation between *a-* and *ka-* for distal pronouns. For example, both forms are attested in Taketomi (Maeara 2011) and Shiraho (Urabe 2022).

*\*ka-* was once present in Northern Ryukyuan as well. Uchima (1984: 137–42), a native speaker of the Sesoko dialect, reports that *ha-ri* and *ha-ma* function identically to *a-ri* and *a-ma* in this dialect. This coexistence implies that the onset of the proto demonstrative morpheme *\*ka-* underwent lenition and debuccalization, leading to the reduction *\*ka- > ha- > a-*. Second, this geographical difference in *\*ka-* reduction can be attributed to regional variation in /k/ weakening across Ryukyuan. For instance, the first syllable of *\*kaze* [wind] appears as /ha/ in 37 dialects in Northern Ryukyuan—particularly in Kikai, Okinoerabu, Yoron, and northern Okinawa—while only one dialect exhibits this lenition in Southern Ryukyuan, according to Nakamoto (1981: 264–5). This suggests that /k/ had already weakened in Proto-Northern Ryukyuan (PNR) independently of other words. Third, historical data from Japanese support this reduction. As discussed in Section 2.2, the distal demonstrative morpheme in OJ was *ka-*, but the examples of *a-* gradually increases through EMJ, with some authors using both forms interchangeably (see Hashimoto 1986: 242–5, Ri 2002: Chapter 3, Section 3.1). If we assume that /k/ was weakening at that time, it naturally explains this coexistence and eventual replacement within the same speech community. The weakened /k/, realized as [χ] or [h], would have been written using the kana か,<sup>14</sup> the same one as [ka], while the further loss of frication would have led writers to adopt the kana あ, the one for [a], instead.

Regarding the reduction *\*sə- > ə-*, evidence from Ryukyuan is scarce. However, debuccalization of /s/ in demonstratives is widespread in many Japanese dialects. According to *Grammar Atlas of Japanese Dialects* (GAJ, NINJAL 1989), among 855 surveyed dialects in Japanese, the first syllable of the medial demonstrative *\*sore* appears as /ho/ in 22 dialects (*sore=yori* ‘than it’, Map 31), and that of *\*sonna* as *ho-* or *hu-* in 52 dialects (*sonna koto* ‘such a thing’, Map 8). Table 11 presents the distribution of these debuccalized forms across different regions. Moreover, free variation between *so-* and *ho-* is attested in some dialects, which suggests that the number of affected dialects may be underestimated. For example, Matsukura (2022: 11) reports that, in the Ikeda dialect of Fukui, *so-* and *ho-* are freely interchangeable, yet all examples given are transcribed as *so-*. This raises the possibility that GAJ consultants provided *so-* as their response despite also using *ho-* in daily speech.

	<i>hore</i>	<i>honna</i>
Tohoku	12	31
Chubu	4	7
Kinki	1	6
Shikoku	5	8

Table 11: Debuccalization of *\*so-* in Japanese dialects

Another key observation from Matsukura (2022) is that the /s/ ~ /h/ alternation in this dialect is confined to grammatical words, including demonstratives. This suggests that demonstratives underwent morphophonological change independently of lexical items. Consequently, it is reasonable to assume that /k/ and /s/ reductions occurred exclusively in demonstrative morphemes.

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## 4.2 Interpretation of *si* in OJ

We now turn to the issue presented in Table 4. The reconstruction of the PJ adverb *\*ka* is straightforward, as mentioned earlier. However, the status of *si* in OJ remains problematic. There are two possible interpretations of *si*. The first hypothesis suggests that *si* predates *sō-* and that analogy with *kō-* led to a vowel shift, that is, *si > sō-*. This explanation is not unreasonable, as the reverse change (*sō- > si*) seems unlikely; there is no /i/ in the demonstrative paradigm with which *sō-* could

<sup>14</sup> The kana は, representing [ha] in Modern Japanese, could not have been used to transcribe [ha] in EMJ, as its phonetic value at the time was [pa] or [ɸa]. Instead, the kana か was used to represent the Chinese reading of the *kanji* 海, i.e., かい, which corresponds to [hai] in Chinese.

have analogized. However, this hypothesis raises a key issue: What motivated the analogy of *si* with *kō-* when the distal form *ka-* was also present? A comparison of *kō-* and *ka-* suggests that *ō* indicates proximity, which has no direct connection to *si*.

The second hypothesis proposes apophonic alternation, similar to forms like *kōnure* ~ *ki* ‘treetop ~ tree’ and *wotōtupi* ~ *woti* ‘the day before yesterday ~ remote’. These vowel alternations are generally conditioned by the position of the syllable within a word—for example, word internal *tō-* versus word final *ti* (Arisaka 1944). However, this positional restriction does not necessarily apply to the *sō-* ~ *si* alternation: While *si* appears word finally as in (4), except for the compounded form *sika*, *sō-* can be used in both initial and medial positions as seen in *sō-re=wo* versus *sō=wo* ‘DEM=ACC’. Moreover, it is unclear why only *sō-* exhibits this alternation, while the proximate *kō-* and distal *ka-* do not have corresponding apophonic variants (*\*kī* and *\*ke*, respectively).

Both hypotheses have significant problems, making it difficult to determine which is correct. However, if a cognate of OJ *si* could be identified in Ryukyuan, it would support the hypothesis that the alternation *sō-* ~ *si* originated in PJ: Reconstructing the progenitor of *si* independently in PJ would require the above problematic shift (*si* > *sō-*) to have occurred in both Japanese and Ryukyuan. Unfortunately though, clear Ryukyuan counterparts of OJ *si* are difficult to identify. A possible candidate is the anaphoric demonstrative adverb, not noun, *i-* in the Irabu dialect in Miyako (Table 12), assuming /s/ was reduced similarly to *\*sə-*. In (11), an example from my fieldwork, *i-* refers to the previously uttered sentence.

	Prox.	Med.	Dist.
Noun	<i>ku-ri</i>	<i>u-ri</i>	<i>ka-ri</i>
Adverb	<i>ki-sii</i>	<i>i-sii</i>	—

Table 12: Irabu, Miyako

- (11) A: Nanka-dzitsi=nu undookai=gajaa asubi=tu junuguu  
 July.7th-season=GEN sports.festival=TOP play=as same  
 ‘The sports festival of July 7<sup>th</sup> is like child’s play.’  
 B: *i-sii=du duu=ja umuu=suga=du* ...  
 DEM-ADV=FOC REFL=TOP think=but=FOC  
 ‘I think so, but ...’ (Irabu, Miyako)

Although Irabu appears to be the only dialect that uses /i/ in isolation, some Southern Ryukyuan dialects seem to incorporate it into adverbial demonstratives. Examples include *kai* and *ai* in Taketomi (Maeara 2011), and *ke-ni* (< *\*kai-ni*) and *e-ni* (< *\*ai-ni*) in Hateruma (Aso 2020) and Shiraho (Urabe 2022). If these forms can be linked to OJ *si*, the *sō-* ~ *si* alternation in OJ may trace back to PJ *\*sə-* ~ *səi*, leading to the tentative reconstruction in Table 13.

	Deictic		Anaphoric
	Proximate	Distal	
Noun	<i>*kə-</i>	<i>*ka-</i>	<i>*sə-~səi</i>
Adverb	<i>*ka-</i>	—	—

Table 13: Reconstruction of PJ Demonstratives

### 4.3 Summary

Based on the proposed theory of morphological change in demonstratives, we predicted that anaphoric *\*sə-* and distal *\*ka-* are the older forms, with PR *\*o-* and *\*a-* being their reduced counterparts. Empirical evidence from both Ryukyuan and Japanese varieties supports this prediction. However, the relationship between OJ *si* and *sō-* remains an intricate issue, as both diachronic and synchronic analyses present challenges. Additionally, no clear Ryukyuan counterpart of *si* has

been identified. As a tentative solution, I proposed that *i-* in the Irabu dialect of Miyakoan may be a cognate of *si*, leading to the reconstruction of PJ *\*sə- ~ səi* as the ancestor of the OJ ablaut alternation *sō- ~ si*.

## 5 Conclusion

After reviewing previous studies in Section 2, I constructed a framework for the morphological changes of demonstrative morphemes in Section 3 and reconstructed the PJ demonstrative paradigm in Section 4. While the reconstructed paradigm is not drastically different from those proposed in previous studies, the reconstructed development from PJ to PR is unique in that it does not assume an additional etymology for PR *\*o-*. Instead, our theory adequately predicts the formation of PR *\*o-* through the reduction of PJ *\*sə-*. Additionally, by considering the possibility that *\*sə-* alternated with *\*səi* in PJ, we have arrived at the conclusion presented in Table 13.

Demonstratives form a small, closed set in every language. Therefore, they are not free from the influence of other items in the paradigm, necessitating a theory of change that accounts for this property. In this regard, analogy, compounding, and reduction should form the core part of the theoretical framework, as they all operate in relation to other items in the paradigm. Although further research is needed to fully elucidate the synchronic state of PJ and the changes it underwent, any comprehensive analysis must integrate these theoretical mechanisms with the diverse demonstrative paradigms observed in Japanese and Ryukyuan.

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