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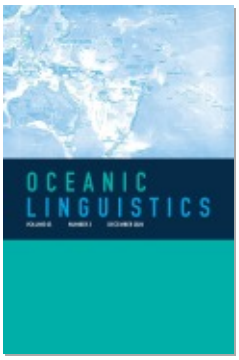

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The phonetic value of Proto-Austronesian *j is a difficult area of research, with a range of proposed reconstructions such as [ɡ], [ɡʲ], [ɟ], [ɣʲ], [j], and more recently, [ɲʲ]. In this paper, yet another proposal for Proto-Austronesian *j is made, this time focusing on mergers, or lack of mergers, to determine both the most likely reconstructed value of *j and the likely sound change paths taken by *j as it evolved to its various reflexes. Based on these considerations, it is proposed that *j was a voiced sonorant palatal consonant, specifically a palatal lateral, [ʎ].

Keywords: Austronesian; Reconstruction; *j

1. INTRODUCTION.[1] Proto-Austronesian *j presents researchers with a unique puzzle in the reconstruction of the Proto-Austronesian sound system due to the great phonetic diversity found in its reflexes. Such reflexes include oral and nasal stop articulations, fricative and affricate articulations, laterals, rhotics, and glides (in addition to zero reflexes). Reflexes are also pronounced throughout a large range of place articulations, including interdental, alveolar, palatal, velar, and glottal reflexes. With such diversity in reflex quality, researchers attempting to reconstruct Proto-Austronesian phonology have understandably devised a similarly diverse range of proposed values for *j. Some of these proposed values, including a recent proposal from Laurent Sagart, are shown here in example (1).

(1) **Various reconstructions of Proto-Austronesian *j**
*j = [ɡʲ] (Dempwolff 1934; Blust 2013)
*j = [ɟ]/[ɣʲ] (Ross 2015)[2]
*j = [ɲʲ] (Sagart 2024)
*j = [ɟ]/[ɟ͡ʝ] (Dahl 1981)
*j = [ɡ] (Wolff 2010)[3]

1. Insights into sound changes and reflexes are informed by data in the "Austronesian Comparative Dictionary" (Blust, Trussel, and Smith 2023). Additional data sources include Mills (1975) for South Sulawesi, Mead (2003) for Celebic, Smith (2017a) for Borneo, Smith (2017b) for languages in western Indonesia, Grimes and Edwards (2025) for languages in the CMP area, and Kamholz (2014) for South Halmahera-West New Guinea. Most of the Formosan insights are from Ross (2015:appendix 1, and the many citations therein). This project was supported by the Singapore Ministry of Education (MOE-T2EP40121-0003).
2. Ross had previously posited a velar fricative value for *j, [ɣ] (Ross 1992), but seems to have abandoned that hypothesis in favor of a palatal or palatalized velar place of articulation. Ross also assumes that *j [ɟ]/[ɣʲ] developed to [z] as an intermediate step.
3. Wolff rejects *j as a distinct phoneme from *g and therefore represents it orthographically as *g*.

At first, Sagart's reconstruction seems the odd one out of the group, since no other reconstruction assumes a nasal (or even sonorant) value for *j. However, there is one major issue that Sagart's reconstruction can account for that the other reconstructions have historically struggled to explain: the merger of *j with *n in several Formosan languages. Nasal-*j languages are sometimes grouped together as the East Formosan subgroup, based primarily on this merger. If *j was something like [gʲ], then a shift to a nasal would be unmotivated, making it phonologically unexpected and typologically rare—that is, unlikely to occur in multiple parallel innovations (Blust 1999). The unmotivated nature of the change is also apparent in its rarity within Austronesian, since the nasal reflexes are found in only a handful of languages in Taiwan and nowhere else in a language family with over 1,200 member languages. Despite the value of a nonnasal reconstruction for subgrouping, a reconstruction that can more reasonably yield the observed reflexes should be viewed as superior to a reconstruction that cannot. This is the fundamental strength of Sagart's proposal, which begins with a reconstruction that has a motivated pathway to both the nasal and nonnasal reflexes.

In this paper, a novel reconstruction for PAN *j is proposed, following in the spirit of Sagart (2024) in that it proposes a sonorant value for *j but differs in the nature of that sonorant. Specifically, it is proposed that PAN *j may have been a palatal lateral [ʎ], rather than a palatal nasal. This proposal is based on several observations. First, an attempt to salvage a non-sonorant reconstruction is undertaken in section 4. In this section, new insights into the evolution of *j in Malayo-Polynesian (MP) are shown to provide a phonetically motivated and attested pathway from a fricative *j [ʝ] to [r] and [l], with some languages further shifting [l] (from *j) to [n]. However, an attempt to extend this analysis to East Formosan languages with nasal reflexes of *j runs into major issues, and as a result, this approach cannot be applied in Taiwan. Since nasalization via the lateral pathway from *j [ʝ] to [n] is not viable in Taiwan, section 5 acknowledges that *j must have been a sonorant in order to explain the East Formosan reflexes and argues that that sonorant was [ʎ]. Before sections 4 and 5, however, section 2 provides some background on certain assumptions about the phonetic properties of PAN phonemes other than *j, and section 3 provides a detailed overview of *j reflexes with a focus on mergers and primary changes (those that affected *j directly rather than those that affected the outcomes of mergers between *j and other phonemes).

Finally, since the East Formosan subgroup relies almost completely on the value of a *j > [n] change, undoing this and arguing for a more phonetically plausible pathway to [n] dramatically lessens the strength of the phonological evidence for the subgroup. This paper is not meant to be a direct challenge of East Formosan and instead is intended to focus only on the likely phonetic value of *j. Despite this, there is certainly an implication here that the phonological evidence for East Formosan is rather weak, and that may have impacts on future analyses of the subgroup. For now, the term "East Formosan" will still

be used to refer to the Formosan languages that undergo the *j > [n] change, Kavalan, Basay, Amis, and Siraya, without taking a strong position on the legitimacy of the subgroup or any potential changes to it.

2. PROTO-AUSTRONESIAN PHONOLOGY AND THE VALUES OF *l, *N, *s, AND *S. Throughout this paper, certain reconstructed phonemes are referenced, and although the graphemes representing most reconstructed phonemes are identical to their IPA, many are not. Furthermore, due to disagreements about the phonetic value of some phonemes, it is necessary to establish some of the assumptions that are made in this paper, which will affect the analysis later on.

2.1. *N AND *l. Blust (2013) assumes that *l was an alveolar lateral and that *N was a palatal lateral. The main evidence that he uses for reconstructing *N as a palatal is the strong tendency for *N to merge with *ñ, as well as the Paiwan reflex *l*, which must be a reflex of the original pronunciation under Blust's view. However, the merger of *N with *ñ is by no means widely agreed upon, and there is some opposition to the reconstruction of *ñ to Proto-Austronesian in the first place (Wolff 1993; Sagart 2024). As noted by Ross (1992), the large majority of *N reflexes are in fact alveolar or dental, suggesting that *N was a lateral in the same place category as the dental stops. Ross therefore considers *N to be a dental or postdental lateral, and I follow his insights on this matter here.

The remaining issue, then, is the reconstructed value of *l, which under Blust's analysis is the alveolar lateral. In Taiwan, essentially every known reflex of *l is either a flap, a retroflex, or both (Ross 2015). It therefore makes sense to reconstruct *l as a flap, [ɾ], not a lateral, and possibly one with a retroflexed articulation [ɽ] (it might also have been [l̆], but I leave this issue to future work). This all changed in Proto-MP (PMP), where the evidence suggests that *l [ɾ] shifted to [l] after *N [l] merged with *n as PMP *n.

The implications of this for *j are that if *j was merged with *N, it should be viewed as a merger with the "default" or "least marked" lateral in the PAN system. Merger with *l [ɾ] does not occur, at least not as a primary change (*j may merge with *l after first merging with something else, but these secondary changes are not considered in this reconstruction). The lack of an *l merger is in fact the lack of a merger with a flap or retroflex, not the lack of a merger with a phonetic [l]. In MP, mergers with *l do occur, but these are mergers with [l], not [ɾ], since the MP evidence suggests that PAN *l [ɾ]/[ɽ]/[l̆] had shifted to [l] after *N merged with *n.

2.2. *s AND *S. The "Austronesian Comparative Dictionary" (Blust, Trussel, and Smith 2023) distinguishes between *s and *S, and typical interpretations of these two from Blust are that *s was a post-alveolar or palatal fricative ([ʃ] or [ç]) and *S was an alveolar fricative [s]. Most scholars agree with this interpretation, at least in part. Ross (2012), for example, splits *s into two phonemes: *s [ʃ] and *θ, with *S split into *S [s] and *x. Other scholars have made other

splits to the s-reconstructions, such as Tsuchida (1976) and others. For simplicity, mergers of *j with PAN *s are analyzed with *s as either a palatal or post-alveolar fricative.

Another indication that *s was post-alveolar or palatal is the outcome of Homorganic Nasal Substitution in MP languages, which typically alternate between s and ñ, strongly suggesting that PMP *s was palatal at the time of homorganic nasal substitution innovation and in many languages shifted to an empty alveolar slot after PAN *S merged with *h. Due to the continued alternation between *s and *ñ, even after filling the phonemic slot of alveolar fricative, it is likely that *s retained some of its palatal qualities even later into MP.

3. THE HISTORICAL PHONOLOGY OF *j. The source of disagreement regarding the phonetic value of *j is the diversity of attested reflexes and, therefore, the number of plausible reconstructions that may yield those reflexes. In this section, an overview of *j reflexes is provided in table 1,

TABLE 1. SHIFTS AND MERGERS AFFECTING *j.

Sound change	Language/subgroup
*j > *ð*	Saisiyat
*j > *d*	Paiwan
*j > *z*	South Sulawesi
*j, *N > *ð*	Thao
*j, *N, *y > *ɬ*	Hla'alua
*j, *n > *n*	Amis, Siraya
*j, *n, *N > *n*	Kavalan, Basay
*j, *R > *ɣ*	Atayal
*j, *R > *r*	Tanimbar-Bomberai, Aru
*j, *y, > *ɾ*	Kanakanavu
*j, *y > *y*	Seediq, Celebic, Sula-Buru
*j, *l > *l*	Banda, Boano
*j, *R, *l > *l*	Nuclear Ambon-Seram
*j, *z > *d*	Puyuma
*j, *z > *dz*	Hoanya
*j, *z > *z*/*dʒ*	Flores
*j, *d, > *d*	Most Bornean groups. Most languages of western Indonesia with the exception of Sumatran. Eastern Timor, Sumba-Havu, and Admiralty Islands.
*j, *d, *R > *r*	Southwest Maluku
*j, *d, *z > *d*	Most Philippine groups and North Bornean languages.
*j, *d, *z, *l > *l*	Seti, East Seram
*j, *d, *z, *R, *l > *l*	Helong
*j, (*d, *z), (*l) > *r*, *l*	East Sumbawa
*j, *g > *g*	Rukai, Sumatran, North Luzon
*j, *s > *z*	Pazeh
*j, *s > *s*	South Halmahera–West New Guinea. Eastern Islands, a subgroup within Seram-Tanimbar-Bomberai
*j, *s, *z > *s*	Oceanic (excluding Admiralty Islands)
*j, *q > *ʔ*	Chamorro

but certain steps are taken to more accurately describe these changes. Rather than listing every attested reflex, only those sound changes that can be attributed directly to *j are included, not those that arose as secondary changes. For example, if a language merged *j and *d and later shifted *d to r, this is interpreted as a witness to the change *j > *d*, not to the change *j > *r*. It is not helpful for the task of reconstruction to try and explain changes that did not affect the original phoneme, especially when that phoneme merged with something less marked. Changes to *j post-merger should be interpreted as changes to whatever the outcome of that merger was. Also, attention is given to the value of mergers in offering insights into the phonetic properties of the consonants that took place in those mergers. Both the original quality of the consonants involved in merger and the outcome of the merger hold important clues as to the quality of *j. However, mergers can sometimes cause issues for tracking historical sound change as well. For example, if *j merged with *N, as it did in Thao, what was the outcome of that merger? Both are reflected as *ð* in Thao, but was this a merger whose immediate outcome was *ð* (suggesting that *j and *N independently shifted to *ð*), or was *ð* the outcome of a secondary change post-merger (suggesting that *j and *N merged as something else, perhaps through the change *j, *N > *N, with only a single shift to *ð* thereafter). These cases can be difficult to analyze, so the following list distinguishes between the outcomes of shifts (*x > *z*) and the outcomes of mergers (*x, *y > *z*).

Several items in this table need some clarification. Kanakanavu may also merge *j and *y with *l, but numerous cases of *l are actually deleted, so it is unclear that *l should be included in this merger (Tsuchida 1976). The Kanakanavu flap is written orthographically as *l*, but it is not a lateral. Regarding the Flores reflexes, an alternative analysis of these data is that Flores languages constitute another example of *j, *d, *z > *d*, with subsequent palatalization and some irregularity in *d reflexes (see Grimes and Edwards 2025). Some of the languages that have merged *j and *d as d further shift d (from *j, *d) to *r*, but most such cases are likely secondary. The exception is Admiralty Islands languages, where it is possible that *d had shifted to [r] before merger with *j. Southwest Maluku may constitute another example of *j, *d > *d* with secondary merger with *R to *r*. Helong and East Sumbawa present a complex series of mergers that make it difficult to determine ordering and what the original outcome of changes affecting *j was. In Seti, however, it is likely that *d and *z merged as [r] before later merging with *j and *l. In Rukai, the merger of *j with *g was affected by a condition on *j reflexes: *j deleted before a front vowel but merged with *g as *g* everywhere else. It is possible that Saisiyat and Pazeh form a single witness of *j > *z*, with separate developments thereafter: merger of [z] and *s in Pazeh and shift of [z] to *ð* in Saisiyat. This would instantiate two witnesses of *j > *z* when combined with the Proto-South Sulawesi reconstruction.

In tables 2 and 3, the various reflexes and mergers of *j are split into Formosan and MP columns to give a better understanding of the similarities

TABLE 2. FORMOSAN AND MP *j REFLEXES.

*j reflexes	Formosan	MP
[ʤ]	✓	
[ɬ]	✓	
[ɾ]	✓	
[n]	✓	
[ð]	✓	
[d]	✓	✓
[z]	✓	✓
[g]	✓	✓
[j]	✓	✓
[l]		✓
[r]		✓
[s]		✓
[ʔ]		✓

TABLE 3. FORMOSAN AND MP *j MERGERS.

*j mergers	Formosan	MP
*j, *n	✓	
*j, *n, *N	✓	
*j, *N	✓	
*j, *y, *N	✓	
*j, *y	✓	✓
*j, *g	✓	✓
*j, *s	✓	✓
*j, *z	✓	✓
*j, *R	✓	✓
*j, *R, *l		✓
*j, *l		✓
*j, *s, *z		✓
*j, *z, *d		✓
*j, *d		✓
*j, *d, *R		✓
*j, *d, *z, *l		✓
*j, *d, *z, *l, *R		✓
*j, *q		✓

and differences between the two. Keep in mind that these tables attempt to exclude secondary changes.

Both Formosan and MP languages have mergers with laterals and rhotics. For the sake of analysis, mergers with *N in Taiwan and with *l in MP are considered roughly equivalent: merger of *j with the least marked lateral. Merger with *R is considered merger with an alveolar trill [r]. Both groups also have mergers with *y, *g, *s, and *z, although the MP witness of *j, *z merger depends on analysis, and some may consider it another example of a three-way merger of *j, *d, *and z. Mergers with *s may have been via [z] (*j > [z] > [s])

or from something like [ʝ] if *s was palatal or palatalized (*j > [ʝ] > [s]). Differences between the two groups include the following: (i) MP languages frequently merge *j and *d, either with only one another (*j, *d > *d*) or with other phonemes. Merger with *d is unattested in Taiwan, and although some languages in Taiwan do have /d/ reflexes of *j, they are never the result of merger with *d. (ii) Formosan languages have mergers with *n, while MP languages do not have such mergers, except in cases where such mergers are obviously secondary after *j had first merged with something else, lateralized, then shifted to *n*.

4. RHOTACISM AND LATERALIZATION IN AUSTRONESIAN.

Virtually all scholars agree that *j was voiced, so no time will be spent addressing this. There is also a near consensus that *j was palatal or palatalized. A palatal position of articulation lends itself to both the dental/alveolar and velar outcomes as well as the sibilant outcomes. If *j was a palatal stop of some kind, palatal stops tend to spirantize due to the physical complexity of creating full closure at the palate (Ladefoged and Disner 2012). There is also good cross-linguistic evidence suggesting that depalatalization can yield both the alveolar and velar outcomes found in Austronesian. The depalatalization of [ɲ] in Romance, for example, yields alveolar, palatalized alveolar, and velar outcomes in French (Colantoni, Kochetov, and Steele 2023) and depalatalization outcomes of both [ɲ] and [ʎ] in Spanish tend to be alveolar (Bessett and Colina 2017). These findings are consistent with the Austronesian data, where depalatalization favors alveolar or dental outcomes but where some less common velar outcomes are also attested. So, the literature on *j tends to agree that it was a voiced palatal or palatalized consonant, and the disagreements of *j therefore tend to revolve around narrowing down the possibilities from there.

Both Ross (2015) and Dahl (1981) reconstruct *j with some fricative component. Ross assumes that *j had a purely fricative realization as either [ʝ] or [ɣʲ], while Dahl reconstructed *j as either a stop [ɟ] or a stop with a fricative release [ɟʝ], but how does one get a nasal merger from a voiced palatal fricative? A fricative *j actually does provide a viable pathway from [ʝ] to [n], involving either rhotacism or lateralization (or both) to first shift [ʝ] to a more sonorant articulation before merging that output with *n. The assumption that *j [ʝ] underwent rhotacism or lateralization first before becoming nasal is supported by numerous examples of both rhotic and lateral outcomes from both *y and *j in the family. Reflexes of *y are important here because the process of y-rhotacism typically involves spirantization, and both *y and *j behave similarly with respect to rhotacism and lateralization.

4.1. RHOTIC AND LATERAL DEVELOPMENTS FROM *y. Apparent y-lateralization occurs in several instances in Austronesian. In some varieties of Rukai, *y merges with *l as *ɭ*. A similar change occurs in Sangir, where *y and *l merge as *l*. In Yami, *y, *l, and *R all merge as l, and in several Oceanic

languages, *y merges with *R, *l, and *d as either *l* or *r*. In all cases, lateralization of *y is restricted to the intervocalic position. In the final position, *y never lateralizes.[4]

In Yami, y-lateralization probably happened as a secondary change after *y merged with *R, since *y and *R merge in all Bashiic languages, but all three, *y, *R, and *l, merge only in Yami. The Oceanic languages also all involve merger of *y and *l with other consonants, which likely occurred via [r], with the lateral reflexes happening via r-lateralization, not y-lateralization.

Sangir is the best example of direct lateralization of *y, but since Sangir *R shifts to *h*, it is also possible that lateralization occurred secondarily, with *y first shifting to something like [z] before rhotacizing and only later shifting to a lateral. Thus, several cases of y-lateralization in Austronesian languages may be a secondary product of rhotacism, a process that affected *y after it had shifted to a voiced fricative, with a smaller number possibly reflecting a direct shift of *y to *l*. This rhotacism pathway is similar to well-described cases in, for example, Latin, where *s* is reflected as *r* in intervocalic environments after first voicing ($s > z > r$; see Roberts 2012). Additional evidence for this analysis comes from the numerous examples of sibilant reflexes of *y, which appear as [z] or [ʒ] in Bintulu, several Dusun and Kadazan varieties in north Borneo, Kajang languages in central Borneo, Rembong and other Central MP (CMP) area languages, and as [s] in several Oceanic languages such as Lau, Sa'a, and Arosi. Fortition of *y to [z] therefore "sets the stage" for rhotacism and, in some cases, further lateralization.

4.2. RHOTIC AND LATERAL DEVELOPMENTS FROM *j. In MP, lateralization also affects *j, but never as the result of merger with *y. Lateral reflexes are largely confined to the CMP area, but here too, many cases seem to have undergone rhotacism before lateralization.

One such case is in Ambon-Seram (A-S) languages, which have complicated mergers involving *j, *d, *z, *R, and *l. Thanks to the detailed analysis of Grimes and Edwards (2025), we now have a fine-grained description of the histories involving these phonemes. Before any changes involving *j took place, *d and *z had merged as r. Proto-A-S therefore distinguished between *r (from PMP *d, *z) and *R. Although the nature of that distinction is unclear, PAM probably had two rhotics. In Nuclear A-S (NAS), PMP *j, *R, and *l merge as *l*, and *r either also merges as *l*, is retained as [r], or deletes (via [h]). In Seti, on the other hand, *j, *r (from *d/*z), and *l merge as *l*, with *R splitting between merger as *l* or lenition to *h*. Table 4 shows the outcomes of these mergers in both NAS and Seti.

These changes can be modeled as a three-step process. Step one involves the merger and rhotacism of *d and *z, shared by all A-S languages. In a pre-NAS stage, *R and *j merge as R (table 5), whereas in a pre-Seti stage, *r (*d/*z) and

4. Historically, word-final *y may lateralize, but only after word-final vowel epenthesis: *-Vy → *-VyV. This may then feed various intervocalic changes to *y.

TABLE 4. NAS AND SETI RHOTIC AND LATERAL MERGERS.

PMP	NAS mergers	Seti mergers
*d	r	l
*z		
*l	l	
*j		
*R		R

TABLE 5. PROPOSED HISTORICAL DEVELOPMENT OF NAS /r/ AND /l/.

PMP	Step 1 A-S	Step 2 pre-NAS	Step 3 NAS
*d	r	r	r
*z			
*l	l	l	l
*j	j	R	
*R	R		

TABLE 6. PROPOSED HISTORICAL DEVELOPMENT OF SETI /l/.

PMP	Step 1 A-S	Step 2 pre-Seti	Step 3 Seti
*d	r	r	l
*z			
*j	j		
*l	l	l	
*R	R	R	l, h

*j merge as r (table 6). In the final step, lateralization eliminates one of the rhotics in both groups, yielding the NAS system (table 5) and the Seti system (table 6).

Multiple cases of *j-rhotacism are also attested in MP, lending support to the idea that some *l* reflexes of *j, particularly those that involve mergers with rhotics, are themselves secondary changes that occurred after rhotacism. In both Tanimbar-Bomberai and Aru, two distinct groups in the CMP area, *j and *R merge, and the output of that merger is *r*, providing direct evidence for *j-rhotacism. In other cases, *j has rhotic outcomes, but it is not clear if rhotacism directly targeted *j or if rhotacism was secondary. In Southwest Maluku, for example, *j, *R, and *d merge as *r*, and several more CMP languages, including at least those of East Timor and Sumba-Havu, as well as Admiralty Island languages, *j and *d merge to *r*. These cases are ambiguous and therefore do not reveal much about the merger pathways affecting *j. A possible exception is found in Admiralty Island languages, which, like other Oceanic languages, may have already shifted *d to *r* before the merger with *j. In the

Admiralty Islands, then, rhotacism likely targeted *j directly. There are thus numerous cases of merger with rhotics that yield rhotic outcomes that were almost certainly the product of direct rhotacism of *j, that is, *j > [r]. In MP, this includes Tanimbar-Bomberai and Aru. In Taiwan, where Atayal merged *j and *R as *g* [ɣ], ambiguity once again makes it difficult to determine if the merger was the result of *j merging with *R as [r] and later shifting to g, or if both *j and *R shifted to *g* separately.

Not all *l* reflexes of *j can be modeled as lateralization via rhoticism, however. In the CMP area, there are at least two cases where *j and *l seem to merge as l with no intermediate stage, suggesting a direct *j > *l* sound change. These are Boano and Banda, where complex conditions on *j and *l outcomes mean that they must have merged separately from other languages where the merger included *d, *z, and *R. Boano's position is difficult to determine, with Grimes and Edwards placing it as a first-level isolate within A-S. This could mean that all A-S languages reflect the merger of *j and *l, or it could mean that this merger occurred independently. Banda is treated by Grimes and Edwards (2025) as an isolate within the CMP region (and, by extension, an isolate within MP). It shares some features with both A-S and with Seram-Tanimbar-Bomberai. For the present research, Banda's historical phonological development can be treated separately from other languages.

The picture painted here is that *j-lateralization, like *y-lateralization, is often the product of a two-step process that first involved rhotacism of a voiced fricative that was later lateralized. The fact that so many of the examples of *j and *y lateralization involve mergers with rhotics, as well as the numerous "missing link" examples demonstrating a pathway from *j and *y to r via [z] (or some other voiced fricative), makes it clear that *j was prone to rhotacism via similar pressures that affect *y. However, it is also possible, although less common, for *y and *j to lateralize directly without an intervening stage of rhotacism.

Finally, we can look to CMP again for interesting *j reflexes that further challenge our assumptions about *j's evolution post-PAN. In Nuaulu, part of the A-S group where *j underwent a two-step rhotacism to lateralization change, reflexes of *j and its merger partners *R and *l have further shifted to *n*, yielding such reflexes as *nima* 'five' (PMP *lima) next to *nana* 'name' (PMP *ŋajan) and *wani* 'younger sibling (PMP *huaji). Clearly, there is a viable (and attested) pathway from *j to [n] that involves rhotacism, lateralization, or both and ends with nasalization, assuming a voiced fricative starting point. This may impact how other nasal reflexes of *j, namely those in the Kavalan, Basay, Amis, and Siraya, are analyzed.

4.3. EXTENDING THE LATERALIZATION AND RHOTACISM ANALYSIS. In Taiwan, as noted earlier, the merger of *j with *n causes headaches for comparative analysis. Blust used this change to argue that it can only represent a single sound change, since it is unmotivated and rare, while

Sagart proposed a new reconstruction of *j that begins with a nasal in order to try and solve the problem of nasal *j reflexes. As Nuaulu has shown, however, it is not only possible but also attested that *j may nasalize through a process that roughly follows the following trajectory, as shown in example (2):

(2) *j [j̰] > ([r] >) [l] > [n]

The obvious question that arises from this is whether such an analysis can be extended to Kavalan, Basay, Amis, and Siraya. Such an extension requires careful consideration of the expected merger pathways associated with such a chain of sound changes. PAN *j must have a clear rhotic and lateral path before merger with *n occurs. The observed mergers should affirm that path. For example, if *j merges with only *n and not with *N [l], *l [ɾ], or *R [r], then those phonemes must have shifted beforehand, so that the change *j > [r] > [l] does not result in merger.

In Amis, *l, *R, and sometimes *d are reflected as [ɾ] (written as <*l*>). *N has multiple reflexes depending on the variety: it may be [d], [ð], [ɮ], or [ɬ]. In Proto-Amis, it probably shifted away from [l] and may have been produced as a lateral fricative [ɮ]. The merger pathway for *j and *n in Amis, then, does not involve *N, and that is expected since the evidence suggests that *N had shifted away from [l] before changes to *j took place. Regarding *j, it was free to both rhotacize and lateralize without any mergers before further nasalizing to *n. The various steps necessary for this process to play out in Amis are shown in table 7. Important mergers are bolded. In stage one, *l and *R merge as [ɾ] and *N shifts to [ɮ]/[ɬ]. In stage two, *j undergoes rhotacism, and in stage three, lateralization, avoiding merger because of the changes that took place in stage one. Finally, *l* and *n* merge as /n/, yielding modern-day Amis.

The lateralization via rhotacism analysis works well in Amis, since a clear pathway through the rhotic and lateral spaces was available for *j. The utility of this analysis ends here, however, since Kavalan and Basay probably kept *R as [r] and *l as [ɾ] or [l̝] until rather recently. Reflexes of *l and *R in Basay are [ʦ] and [l], respectively. In Kavalan, *l is reflected as [ɾ] and *R as a uvular fricative [ʁ]. So, a typical reconstruction of their immediate ancestor involves *l and *R at positions that are "blocking" *j's path through the rhotic space. If *j nasalization was inherited in Kavalan and Basay from a parent language, then it must have entered an already crowded rhotic space without merger in order to yield the observed reflexes as shown here in tables 8 (Basay) and 9 (Kavalan).

TABLE 7. RHOTACISM PATHWAY TO NASAL MERGER IN AMIS.

PAN	1	2	3	Amis
*j [j̰]	j̰	r	l	**n**
*n [n]	n	n	n	**n**
*N [l]	**ɮ/ɬ**	ɮ/ɬ	ɮ/ɬ	ɮ/ɬ
*l [ɾ]	**ɾ**	ɾ	ɾ	ɾ
*R [r]	**ɾ**	ɾ	ɾ	ɾ

TABLE 8. RHOTACISM PATHWAY TO NASAL MERGER IN BASAY.

PAN	1	2	3	Basay
*j [j]	**r?**	l	n	n
*N [l]	l	l	n	n
*n [n]	n	n	n	n
*l [ɾ]	ɾ	ɾ	ɾ	ts
*R [r]	**r?**	r	r	l

TABLE 9. RHOTACISM PATHWAY TO NASAL MERGER IN KAVALAN.

PAN	1	2	3	Kavalan
*j [j]	**r?**	l	n	n
*N [l]	l	l	n	n
*n [n]	n	n	n	n
*l [ɾ]	ɾ	ɾ	ɾ	ɾ
*R [r]	**r?**	r	r	ʁ

Since rhotacism cannot explain these reflexes, *j must have become sonorant via direct lateralization. Independently attested direct lateralizations of *j that do not involve an intermediate merger with *y are found in the CMP area in Boano and Banda, so it is therefore possible, although somewhat rare, that *j [j] lateralized directly to [l] in Kavalan and Basay before merging with *n. That process is shown here in tables 10 (Basay) and 11 (Kavalan).

So far, the MP lateral reflexes seem to parallel the proposed histories of East Formosan languages just shown. However, Siraya poses other unique problems for this analysis. First, the phonetic values of its phonological system are obscured by the fact that the only resources that linguists have are translations made by Dutch missionaries. Modern Siraya, which is an awakening language, has undergone massive changes in pronunciation due to the extended period of dormancy that the language experienced. Although Adelaar (2011) provides valuable insight into the phonology of Siraya, the values of orthographic <*l*> and <*r*> remain troublesome, and they just happen to be critical for the present analysis. Second, despite the phonetic ambiguities, there are fundamental issues that remain, since Siraya should have merged *j and *N if *j became a nasal through an intermediate lateral stage. Table 12 demonstrates that if *j first shifts to *r*, it clashes with *l.

TABLE 10. DIRECT LATERALIZATION PATHWAY TO NASAL MERGER IN BASAY.

PAN	1	2	Basay
*j [j]	**l**	**n**	n
*N [l]	**l**	**n**	n
*n [n]	n	**n**	n
*l [ɾ]	ɾ	ɾ	ts
*R [r]	r	r	l

TABLE 11. DIRECT LATERALIZATION PATHWAY TO NASAL MERGER IN KAVALAN.

PAN	1	2	Kavalan
*j [j]	**l**	**n**	n
*N [l]	**l**	**n**	n
*n [n]	n	**n**	n
*l [ɾ]	ɾ	ɾ	ɾ
*R [r]	r	r	ʁ

TABLE 12. RHOTACISM PATHWAY TO NASAL MERGER IN SIRAYA.

PAN	1	2	3	Siraya
*j [j]	j	**r?**	l	n
*n [n]	n	n	n	n
*N [l]	l	l	l	l
*l [ɾ]	r	**r?**	r	r
*R [r]	x	x	x	x

One may resolve this issue by asserting that the phonetic value of *l* was distinct from the proposed intermediate stage of *j. Perhaps *l = [ɾ] and *j → [r]. However, such speculation on phonetic values should be avoided. Nevertheless, the issues with Siraya do not end with the phonetic value of *l*. If we instead posit direct lateralization of *j [j] to [l] as must be posited in Kavalan and Basay, we still must contend with the expected merger of *j and *N, a merger which does not occur in Siraya, where *j, *N, *l, and *R are all kept distinct from one another, with *N retaining a lateral pronunciation. This clash is shown here in table 13.

Although MP examples of lateral and rhotic reflexes of *j can be explained phonetically, and even though some cases of *j lateralization have resulted in modern-day [n] reflexes of *j even in MP, the pathway from fricative to nasal via either rhotacism, lateralization, or both fails in Taiwan. A lateralization via rhotacism pathway can fit with the Amis facts, and Kavalan and Basay may be explained as direct lateralization of *j, but even so, the Siraya data are incompatible with an analysis where *j was a fricative because the pathway to a nasal reflex runs straight through [l], and since *N is reflected as [l] in Siraya, one

TABLE 13. DIRECT LATERALIZATION PATHWAY TO NASAL MERGER IN SIRAYA.

PAN	1	2	Siraya
*j [j]	j	**l?**	n
*n [n]	n	n	n
*N [l]	l	**l?**	l
*l [ɾ]	r	r	r
*R [r]	x	x	x

expects a merger to have occurred. It did not, so in Siraya, *j must have merged directly with *n as [n], with no obvious intermediate stage or phonetic motivation.

5. THE PALATAL LATERAL RECONSTRUCTION. In the previous sections, it was shown that (i) *j was a palatal and has an evolutionary pathway that shares several characteristics with *y. Those characteristics are spirantization, often followed by rhotacism, and lateralization, with lateralization often occurring via rhotacism but also attested as direct lateralization. (ii) In the CMP area, lateralization, be it via rhotacism or direct, sometimes results in nasal reflexes of *j and its merger partners. The likely history of these reflexes, assuming a fricative *j, is *j [ʝ] > *r* > *l* > *n* with lateralization via rhotacism, or *j [ʝ] > *l* > *n* with direct lateralization. These changes provide a solid phonetic grounding on which to analyze Formosan nasal-*j reflexes as having arisen through similar processes.

Although there are phonetically plausible pathways from *j [ʝ] to [n], the analysis just provided demonstrates that there is no viable pathway for *j [ʝ] to become [n] via either rhotacism or lateralization in Siraya. The only alternative for Siraya, that *j [ʝ] shifted directly to [n], is not considered valid since such a change is otherwise unattested and unmotivated by any known phonetic or perceptual pressure. It seems that in order to motivate all attested reflexes of *j, PAN *j needs to begin as a sonorant and go through a process of spirantization in most languages, but not in those languages where it remains sonorant. The only question, then, is about the exact nature of that sonorant *j. Sagart's (2024) proposal in favor of a palatal nasal reconstruction is the first proposal to take the nasal reflexes seriously. Indeed, such a reconstruction can easily account for the East Formosan data. In this section, however, a novel alternative proposal for the phonetic value of *j is proposed, namely, that *j was a palatal lateral, [ʎ], that occupied the position normally held by Blust's reconstruction for *N, which is here reinterpreted as an alveolar or dental lateral. The purpose of this proposal is not to directly challenge Sagart's reconstruction but to add what I view as a plausible alternative to the discussion, one that follow's Sagart in reconstructing *j as sonorant but differs in how it treats the nasal reflexes.

The strengths of a lateral *j are the observed lateral and nasal mergers that occur in Formosan languages, as well as some of the lateral outcomes of other mergers, and a viable pathway to delateralization that mirrors the yeísmo phenomenon in Spanish, whereby Spanish <*ll*> [ʎ] is delateralized, often merging with <*y*> as [j], [ʝ], or [ʝ͡ʝ] (see Penny 2000 and also Coloma 2011 for more on the distribution and realization of Spanish yeísmo). These typical palatal and fricative outcomes of palatal delateralization, in the Austronesian setting, may then follow the same trajectory of Ross's [ʝ] reconstruction or Dahl's [ɻ]/[ɻɻ] reconstruction.

In the *j, *y merger languages, for example, a palatal lateral readily captures the observed sound changes. In Seediq, the [j] outcome of this merger is a typical product of yeísmo-like ʎ-delateralization. In Kanakanavu and Hla'alua,

TABLE 14. MERGERS OF *j [ʎ] WITH *y AND *N.

Merger details	Processes	Language
*j [ʎ], *y [j] → [j]	Delateralization.	Siraya
*j [ʎ], *y [j] → [ɾ]	Delateralization, followed by glide fortition and rhotacism.	Kanakanavu
*j [ʎ], *y [j], *N [l] → [ɬ]	Lateral merger (*j [ʎ], *N [l] → l → ɬ) followed by glide fortition.	Hla'alua
*j [ʎ], *N [l] → [ð]	Lateral merger (*j [ʎ], *N [l] → l) followed by spirantization.	Thao

there are two additional instances of *j merging with *y. Kanakanavu yields *l* [ɾ] from this merger and may ultimately reflect any number of potential paths toward [ɾ]. In Hla'alua, on the other hand, *j, *y, and *N all merge as [ɬ]. Since this merger involves *N and has a lateral output, a simple explanation is that *j [ʎ] and *N [l] merged first, with *y merging later as a product of fortition.

Thao's merger of *j and *N is also explained with a palatal lateral reconstruction, assuming the merger occurred before the shift to *ð*. If *j and *N merged before a subsequent shift to *ð*, then this constitutes a merger of two laterals, *j [ʎ] and *N [l], similar to that found in Hla'alua. This makes the initial merger trivial, with only the later shift to *ð* in need of further explanation. These mergers are well motivated by a palatal lateral *j and defined by either delateralization, yielding merger with *y, or depalatalization, yielding merger with *N. Table 14 shows how this may have played out.

A lateral *j also avoids the issues of *j and *n merger in East Formosan. Whereas *j [j] requires either rhotacism, lateralization, or both to affect *j before merger with *n (and with an improbable situation in Siraya that forces *j [j] to shift directly to [n]), a lateral *j [ʎ] requires no such stage. Rather, the merger with *n is modeled as a more direct nasalization of the lateral *j. This means that the direct *j [j] > [l] change in Basay and Kavalan, as well as the direct *j [j] > [n] change in Siraya, are no longer necessary. In Amis, *j [ʎ] shifts to [l], then merges with *n as in table 15. In Basay and Kavalan, *j [ʎ] merges with *N as [l], then with *n as in tables 16 and 17. Finally, the critical analysis is in Siraya, where *j [ʎ] undergoes nasalization to [ñ] followed by merger with *n as in table 18.

As this discussion has made clear, the specifics of *j's merger with *n in Siraya do not support a palatal fricative *j reconstruction, despite good phonetic motivation for a *j, *n merger in other East Formosan languages. The palatal

TABLE 15. PALATAL ALTERAL PATHWAY TO NASAL MERGER IN AMIS.

PAN	1	2	Amis
*j [ʎ]	ʎ	l	**n**
*n [n]	n	n	**n**
*N [l]	ɮ/ɬ	ɮ/ɬ	ɮ/ɬ/d/ð
*l [ɾ]	ɾ	ɾ	ɾ
*R [r]	ɾ	ɾ	ɾ

TABLE 16. PALATAL ALTERAL PATHWAY TO NASAL MERGER IN BASAY.

PAN	1	2	Basay
*j [ʎ]	**l**	**n**	n
*N [l]	**l**	**n**	n
*n [n]	n	**n**	n
*l [ɾ]	ɾ	ɾ	ʦ
*R [r]	r	r	l

TABLE 17. PALATAL ALTERAL PATHWAY TO NASAL MERGER IN KAVALAN.

PAN	1	3	Kavalan
*j [ʎ]	**l**	**n**	n
*N [l]	**l**	**n**	n
*n [n]	n	**n**	n
*l [ɾ]	ɾ	ɾ	ɾ
*R [r]	r	r	ʁ

TABLE 18. PALATAL ALTERAL PATHWAY TO NASAL MERGER IN SIRAYA.

PAN	1	2	Siraya
*j [ʎ]	ʎ	ñ	**n**
*n [n]	n	n	**n**
*N [l]	l	l	l
*l [ɾ]	r	r	r
*R [r]	x	x	x

lateral reconstruction solves this issue and provides a well-attested and strongly motivated pathway for *j [ʎ] to change to [j], yielding many of the attested reflexes outside of Siraya, especially in MP, discussed more in the next section.

6. PMP *j. The reflexes of *j in MP, although still complex, are fundamentally different than the Formosan reflexes because of a lack of both nasal and lateral reflexes, except in cases where they occur as secondary changes after mergers with other consonants.[5] By far, the most typical outcome in MP is merger with *d, a merger that is absent in Taiwan, but merger with *g, *y, and *s is also common. Without an MP equivalent of Siraya, which provides the sole motivation for a more sonorant PAN *j, the attested reflexes of *j in MP can all be readily explained as following from a palatal fricative, PMP *j [ʝ].

5. And even in those cases, there are often complex conditions acting on the nasal outcomes. In Banda, for example, n reflexes of *j are conditioned by high vowels or by nasal assimilation. As noted earlier, however, Nuaulu does provide a case where the shift to *n* was not conditioned, although it still occurs after multiple intermediate stages of merger.

TABLE 19. EVOLUTION OF *j TO PMP.

PAN	1	2	PMP
*j [ʎ]	ʝ	ʝ	ʝ
*n [n]	n	**n**	n
*N [l]	l	**n**	n
*l [ɾ]	ɾ	ɾ	l
*R [r]	r	r	r

TABLE 20. PMP AND EAST FORMOSAN REFLEXES OF *j, *n, *N, *l, *R, AND *y.

Language	*j [ʎ]	*n [n]	*N [l]	*l [ɾ]	*R [r]	*y [j]
PMP	ʝ	**n**	**n**	l	r	y
Kavalan	**n**	**n**	**n**	ɾ	ʁ	y
Basay	**n**	**n**	**n**	ts	l	y
Siraya	**n**	**n**	l	r	x	y
Amis	**n**	**n**	ɮ/ɬ/ð/d	ɾ	ɾ	y

A palatal fricative both yields these outcomes and follows naturally from a more sonorant palatal reconstruction at the Proto-Austronesian level. Mergers with *y follow the natural pathway [ʎ] → [ʝ] → [j] found in numerous cross-linguistic examples, as well as the mergers with *s, which may have had a post-alveolar or palatal realization, as discussed earlier. The mergers with *d and *g also follow naturally from a palatal fricative. Therefore, the major phonetic shift affecting PAN *j at PMP was a yeísmo-like delateralization with a retention of voicing and palatal features. Table 19 demonstrates the changes between PAN and PMP with mergers in bold, and table 20 compares PMP to the East Formosan languages with nasal reflexes of *j, *n, and *N also bolded.

A potential competitor for PMP *j is the full stop [ɟ], which can also yield both plosive and sibilant outcomes. If the original value for *j was [ʎ], then lenition to a sibilant [ʝ] is the cross-linguistically more attested evolutionary path, and since both [ʝ] and [ɟ] could explain MP reflexes, the reconstruction proposed here, [ʝ], must appeal to the lateral reconstruction for justification. Sagart's reconstruction supposes that *j [ɲʲ] shifted to [ɲɟ] then to [ɟ], and that may be the preferred value for PMP *j for those that favor the nasal-*j reconstruction.

7. CONCLUSION. The phonetic value of PAN *j remains elusive, but as our understanding of its historical trajectory in previously less understood languages becomes more sophisticated, so too will our reconstructions of *j improve. This paper looked at the behavior of *j in MP and compared that behavior to *j in Taiwan. It also focused on mergers and probable merger pathways to compile evidence for a new palatal lateral reconstruction for *j.

The development of *j in MP, especially in comparison to parallel processes affecting *y, definitively shows that *j has undergone rhotacism, lateralization (both direct and via rhotacism), and nasalization (but only after first becoming a

lateral). These observations breathe new life into palatal fricative reconstructions of *j, particularly Ross's *j [j], which now has a phonetically motivated path to nasalization.

Although these insights make a palatal fricative reconstruction more viable, Siraya remains a persistent sticking point. The details of how *j merged only with *n in Siraya, while *l and *N remained as [r] and [l], mean that *j must have merged *directly* with *n and could not have gone through a rhotacism or lateralization process. This is troubling, since there is no phonetic motivation for a direct change of *j to [n] as well as no attestation of such a change outside of Siraya. In this research, rhotacism, lateralization, or both are considered necessary intermediate steps to get from [j] to [n].

A palatal-lateral reconstruction is one way to resolve these conflicts. The majority of *j reflexes seem to follow a palatal fricative, and spirantization is a very common change that targets palatal laterals. Such a reconstruction fits well with the Siraya data and also with a shift from *j [ʎ] to *j [j] in PMP. Although a competing reconstruction has been advanced here, one must acknowledge the difficulty associated with reconstructing the phonetic value of *j. The reality of phonetic reconstruction in this case is that there is more than one reasonably plausible reconstruction that can yield the various *j outcomes. Various reconstructions for *j are likely to persist in the literature for some time, and a consensus on this issue can at times seem beyond reach. Nevertheless, the data do seem to point to certain truths about PAN *j. It was a voiced, sonorous, and palatal consonant at the PAN level that weakened to a fricative at PMP, an observation that is supported by both the present reconstruction as well as the reconstruction from Sagart (2024). The palatal fricative reconstruction is able to explain all but one language's reflex of *j. In order to salvage that reconstruction, a viable explanation for the Siraya reflexes will need to be proposed.

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