

**Relics And Innovation In The Bawean, Sampang,
And Rembang Dialects
(A Collaborative Linguistic And
Archaeological Study)**

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ABSTRACT

This collaborative linguistics and archeology research takes the Bawean and Sampang dialects of Madurese, as well as the Rembang dialect of Javanese, as its research objects. It tests the hypothesis that these dialects are initial stopover places for Austronesian speakers in their post-Kalimantan and Sulawesi migration into the speech areas of Java and its surroundings. As noted by Bellwood, Bawean, Sampang, and Rembang—identified as important by Collins and Blust—have artifacts that show their historic role in the migration of Austronesian speakers to Java and its surroundings. This research investigates two research questions. First, did the post-Kalimantan and Sulawesi migration of Austronesian language families to Java Island and its surroundings originate around Bawean Island and the northern coast of Rembang? Second, to what extent does the evidence provided by linguistic features such as relics and innovations strengthen the hypothesis? This mixed methods research analyzed both linguistic features and archaeological evidence. Data were obtained by interviewing speakers of the dialects using questionnaires regarding their basic vocabulary, cultural vocabulary, movement, and verbs. Archaeological evidence in the three areas was also explored in a prefatory manner. Linguistic features were found in the form of relics, both in the speech areas of the Bawean and Sampang dialects of Madurese and the Rembang dialect of Javanese. It is concluded that post-Kalimantan and Sulawesi Austronesian speakers' migration to Java and its surroundings stopped at Bawean in the east and Rembang in the west. This was confirmed by artifacts, including stone graves in Bawean as well as vessels, kettledrums, and graves in Rembang.

Keywords: Features, Linguistics, Archeology, Bawean, Sampang, Rembang.

INTRODUCTION

This study of the features—relics and innovations—in the Madurese dialect of Bawean and Sampang dialects of Madurese and the Rembang dialect of Javanese can be said to be new research into the post-Kalimantan and Sulawesi migration of speakers of Austronesian languages to Java and its surroundings. Even though this research is

relatively new, it does not neglect the findings of previous researchers. The discussion below provides excerpts from previous studies, which investigated languages (such as Madurese) that use a system marked by a two-way contrast in sounds and a lack of climatic marking of phrases (Arka & Ross, 2005). Such languages include those spoken in all major islands to the west of Sulawesi (e.g., Java, Sumatra, Bali, and Lombok), as well as parts of Sulawesi, Kalimantan, and mainland Southeast Asia (Chen and McDonnel, 2018).

This research, based on a hypothesis about language migration and the speakers of the Austronesian language family, is explorative in nature. The Austronesian family consists of approximately 1,200 languages spanning half the world. Similarities in the vocabulary of these languages show that the family descended from a common ancestor, namely the proto-Austronesian language (Klamer, 2019). This study investigates the Out of Taiwan theory or Express Train hypothesis, which was first proposed by Peter Bellwood and Robert Blust (1984–1985). This theory/hypothesis holds that the languages and speakers of the Austronesian language family originated from mainland South China, from which they crossed to Taiwan before heading southward to New Zealand, eastward to Easter Island, and westward to Madagascar.

The book *The Austronesians: Historical and Comparative Perspectives* explains that Austronesians reached the north coast of Java in approximately 500 BCE (Bellwood, Fox, & Tryon, 2006: 103 – 109). This dating is supported by the results of an archaeological study conducted in 2012 along the northern coast of Rembang Regency; carbon dating put graves at the Leran Site, Rembang Regency, at 2640 ± 150 BPE (Gunadi et al. 2021). Other supporting evidence found that most non-Oceanic Austronesian languages show a nasal + obstruent sequence that must be analyzed as a consonant cluster (Tabaina a, et al. 2022: 2).

This research also cites the concept of linguistic proximity, which has been supported (among others) by an investigation of Estonian and Finnish by Anniste, Pukkonen, and Paas (2017). The widely held notion that these countries are “brother nations”, which is built on the popular understanding of significant shared similarities in historical and cultural heritage, is reflected in the relatively higher social status of Estonians in a survey of Finnish attitudes (Haavisto, 2019).

As a cultural resource, language necessitates learning various aspects of the language of the host country while maintaining one's own language. In the case of Estonia and Finland, attitudes towards language—as a form of cultural capital acquired in the host country—play in two ways. First, learning Finnish is regulated and expected by the Finnish state. Secondly, language learning has a strong cultural basis in attitudes towards language learning in previous migrants' environments of origin (Sippola, Markku, et.al. 2022).

In the past five years, studies that have investigated language kinship and the traces of Austronesian culture in Madura and the northern coast of Java have included:

1. "Kontribusi Hasil Penelitian Arkeologi dalam Kebinekaan Sebagai Pemersatu Bangsa: Studi kasus pada Situs Kubur Prasejarah di Pantai Utara Jawa Tengah" [The Contribution of Archaeological Research Results to Diversity Serving to Unite the Nation: Case Studies at Prehistoric Grave Sites on the North Coast of Central Java]. (2016). *Berkala Arkeologi*, 36(2): 161–172.
2. "Tembikar Prasejarah-Protosejarah di Kawasan Pantura Jawa Tengah: Kajian Bahan Baku Berdasarkan Analisis Petrografis" [Prehistoric–Protohistoric Pottery in the Northern Coast of Central Java: A Study of Raw Materials Based on Petrographic Analysis] (2017), *KALPATARU: Majalah Arkeologi*, 26(2).
3. "Nenek Moyangku Seorang Pelaut: Menengok Kejayaan Kemaritiman Indonesia Masa Lampau" [My Ancestors were Seafarers: Seeing Past Indonesian Maritime Glory], in *Warisan Budaya Maritim Nusantara, Prosiding hasil Pertemuan Ilmiah Arkeologi*, diterbitkan Direktorat Pelestarian Cagar Budaya dan Permuseuman bekerja sama dengan Perkumpulan Ahli Arkeologi Indonesia [Maritime Cultural Heritage of the Archipelago, Proceedings from the Archaeological Scientific Meeting, published by the Directorate for the Preservation of Cultural Heritage and Museums in collaboration with the Association of Indonesian Archaeologists], (2018). ISBN 978-979-8250-61-3
4. *Penyebaran bahasa Austronesia di Pulau Asia Tenggara: Temuan dan Perdebatan Saat Ini* [Distribution of Austronesian Languages in the Islands of Southeast Asia: Current Findings and Debates] (2018). Universitas Leiden.
5. "Melacak Jejak Budaya Austronesia di Kawasan Pantura P. Madura

Pada Masa Prasejarah – Protosejarah" [Following the Traces of Austronesian Culture in the Coastal Region of Madura Island in the Prehistoric–Protohistoric Period], Proceedings of the National Seminar "From Prehistoric Times to the Present" (2019). Balai Arkeologi of West Java.

6. "Jejak-Jejak Budaya Austronesia di Pantura Jawa: Akar Kebinekaan Bangsa Indonesia" [Traces of Austronesian Culture on the Northern Coast of Java: The Roots of the Diversity of the Indonesian Nation] (2020), Prosiding EHPA, published by the National Archeological Research Center.
7. Jejak-Jejak Budaya Austronesia di Pantai Utara Jawa [Traces of Austronesian Culture on the Northern Coast of Java] (2021), Yogyakarta: Kepel Press.
8. Asal-Usul dan Sejarah Orang Madura: Kajian Arkeologi–Sejarah [Origins and History of the Madurese: Archaeological–Historical Studies] (2021), Balai Arkeologi D.I. Yogyakarta in collaboration with Mirra Buana Media.
9. Austronesian Linguistics and Culture History. 2022. Southern Illinois University.

The novelty of this research lies in its combination of linguistics and archeology to understand the Austronesian language family in the area surrounding the Java Sea. The results of this research are expected to be useful for diversity education in Indonesia.

In an article titled Progres Penelitian Austronesia di Nusantara [The Progress of Austronesian Research in the Archipelago], Prof. Truman Simanjuntak states that the broad scope of Austronesian studies and the limited research in the field has left various research questions unanswered in both regional/global and national contexts (Simanjuntak, 2015: 25). He argues that, to address these limitations, researchers in Indonesia should contribute to Austronesian studies in the Java Sea. If Austronesian studies are likened to a bicycle chain, then every related research is a link in the chain. This is the main problem regarding Austronesian studies in Indonesia and should be considered at the local, national, and regional levels.

In the context of Indonesia, research into the influence of Austronesian culture began with the northern coast of Rembang Regency, Central Java Province (Gunadi et al., 2016 & 2017), then

continued with the northern coast of Tuban, Lamongan, and Gresik Regencies, East Java Province (Gunadi et al. 2018). In 2019, further research was conducted on the northern coast of Madura Island (covering Bangkalan, Sampang, Pamekasan, and Sumenep Regencies). Data were sourced from graves found at the Plawangan Site, research results from the National Archaeological Research Center, and research results from the Yogyakarta Archaeological Center (Gunadi et al. 2021).

This research was conducted over several years. It is thus a continuation of previous studies, particularly those investigating the traces of Austronesian culture along the northern coast of Madura. Excavations conducted at the Pandeyan Site, East Tamberu Village, in 2019, cannot yet explain the discovery of traces of Austronesian culture, be they human skeletal fragments or cultural artifacts and ecofacts. This is because available findings are very fragmentary and limited. Take, for example, the skeletal fragments excavated from TP Box 3 at the Pandeyan Site, East Tamberu Village. The same holds for pottery fragments and animal bones that were scattered irregularly.

Research carried out along the northern coast of Sokobanah District, Sampang Regency, in 2021 found several skeletons of adults, adolescents, and children. An interesting finding was the discovery of grave marks facing the northwest. Taking into account the northwest orientation of the graves in Sampang and the northeast orientation of the graves in Rembang Regency, it was hypothesized that both focused on one location: Bawean Island. If this hypothesis can be proven, it will provide a novel contribution to the literature on Austronesian migration in the Java Sea region. Likewise, linguistic data from Bawean, Sampang, and Rembang—supported by the results of archaeological research—can improve the quality of our understanding.

Prehistoric humans were *homo sapiens-sapiens* who peaked during an era known as the Neolithic period. It was during this era that humans were able to first develop various advanced technologies. They lived and settled in residential areas, were familiar with social systems and religious systems, and domesticated plants and animals. They made containers from burnt clay, built boats, and mastered navigation (shipping) systems. This period is known by prehistoric experts as the "Neolithic Revolution" (Cole, 1970).

At that time, in the Yellow River Valley of mainland South China, several groups of nomads/herdsmen came from West Asia. They occupied the valley and drove out the indigenous population. Several such groups migrated outward, some to Hainan and some to Taiwan (Morse, 1908: 1). After hundreds of years of occupying Taiwan, some of them began looking for other areas. These people, who eventually became known as the Austronesian people (speakers of the Austronesian language family), moved southwards, reaching what is now the Philippines and Indonesia. Such migrants reached as far south as New Zealand, as far east as Easter Island, and as far west as Madagascar Island (Bellwood, Fox, & Tryon, 2006: 109).

This is the "Out of Taiwan" theory popularized by Peter Bellwood. According to this theory, the Austronesians arrived in Java c 500 BCE. Echoing the argument put forth by Tanudirjo and Prasetyo (2004) in their article "The 'Out of Taiwan' Model in the Perspective of Indonesian Archeology", this research holds that recent archaeological data collected in Indonesia can strengthen or weaken the "Out of Taiwan" model. Previous studies seem to have supported Peter Bellwood and Robert Blust's theory. At the same time, and no less an important framework for this research, is Truman Simanjuntak's statement that the scope of Austronesian studies is broad yet existing research remains limited. Taking into account these various frameworks, it is hoped that this research can contribute to the mosaic of Austronesian studies in the Indonesian Archipelago.

Academically, the purpose of this research is to ascertain whether the above hypothesis is supported by the data. Practically, this research uses cultural and artifactual evidence to contribute an understanding of the speakers of Austronesian languages who inhabit the Java Sea (i.e., on Bawean Island and along the coasts of Sampang and Rembang), including whether they have a kinship relationship. As for the benefits of this study, at the national level, it will strengthen the integration and shared national identity of the ethnic groups living near the Java Sea. The Javanese of Rembang, Madurese of Sampang, and Madurese of Bawean will become one in the spirit of *Bhinneka Tunggal Ika* (unity in diversity).

CONCEPTUAL FRAMEWORK

As its conceptual framework, this research draws from several expert opinions—cited by Klamer (2019)—on the Austronesian language family and its migration to Indonesia.

- (1) 5500 BPE: an Austronesian language was spoken in Taiwan.
- (2) 4500–4000 BPE: economic changes in Taiwan triggered the migration of Austronesian speakers to Southeast Asia.
- (3) 4500–3500 BPE: descendants of Austronesian speakers crossed the Batanes Strait to Luzon, northern Philippines.
- (4) 3500–2500 BPE: descendants of Austronesian speakers migrated to Kalimantan, Sulawesi, Java, Sumatra, and Peninsular Malaysia.
- (5) ~3500 BPE: arrival of Austronesians in Timor.
- (6) 4500–3500 BPE: descendants of Austronesian speakers migrated through North Maluku and northern Papua New Guinea to the Bismarck Archipelago.
- (7) ~3300 BPE: the Lapita cultural complex existed in the Bismarck Archipelago.

In their book *The Austronesians, Historical And Comparative Perspective* (2006), Bellwood, Fox, and Tryon explain that the Austronesians reached the northern coast of Java c. 500 BCE. This is supported by the results of archaeological research along the northern coast of Rembang Regency in 2012; carbon dating found graves at the Leran Site, Rembang Regency, were erected 2640 ± 150 BPE (Gunadi et al. 2012).

Next, citing the arguments of Angela et al. (2023) regarding the interference of foreign languages, an unbalanced trilingualism may suppress those who are proficient in their native language more so than those who are less proficient in their non-native language. This, in turn, reduces interference from the native language.

Until now, the most widely accepted explanation for the spread of language speakers is the Blust-Bellwood Model, which was developed through the collaboration of historical linguistics and archeology. Based on linguistic evidence, Blust (1985) hypothesized that the speakers of Javanese were descended from people who lived near the Barito River in the southern part of Borneo. Linguistic analysis suggests that the protolanguages of the Javanese, Balinese, Sasak, and West Sumbawa probably emerged around 2,500 BPE (Noerwidi, 2014).

RESEARCH METHOD

This inductive research is both quantitative and qualitative. Based on the results of previous research, this research hypothesizes interconnectivity between the dialects spoken in Bawean, Sampang, and Rembang. Based on artifactual, historical, archaeological, and linguistic data, it is suggested that Bawean was a transit island for speakers of Austronesian languages, after which they discovered the north coasts of Java and Madura. Previous research identified Bawean as the axis of the Austronesian Triangle Region in the Java Sea; data collection thus began in Bawean.

DISCUSSION OF LINGUISTIC DATA

Initial data analysis used linguistic features to trace the historical kinship and cultural contacts of Austronesian-language speakers in the Java Sea. The link between the Bawean, Sampang, and Rembang dialects can be narrated through lexicostatistical (quantitative) and sound change processes (qualitative). It provides a top-down reconstruction of the links between Proto-Austronesian (PAN) and the target languages of the research. Sources of data are presented below:

1/2 Javanese (Plawangan dialect, Bjp), Madurese (Suka Oneng dialect, BMso) = 36 families

1/3 Javanese (Plawangan dialect, Bjp), Madurese (Banyuanyar dialect, BMb) = 38 families

2/3 Madurese (Suka Oneng dialect, BMso), Madurese (Banyuanyar dialect, BMb) = 78 families

Based on the lexicostatistical calculations using the Swadesh list, the following results are obtained.

BMb 38

BMso. 36. 78

Bjp. BMb

Lexicostatistic calculations show that the Plawangan (Rembang) dialect of Javanese, the Suka Oneng (Bawean) dialect of Madurese, and the Banyuanyar (Sampang) dialect of Madurese have a kinship relationship at the language family level and are thus united by a common ancestral language—the Javanese Protolanguage. The two dialects of Madurese are closely connected; therefore, the Suka Oneng

(Bawean) and Banyuanyar (Sampang) dialects of Madurese belong to a subfamily—the Madurese Protolanguage.

Tracing Sound Correspondence between the Suka Oneng (Bawean) Dialect,

Banyuanyar (Sampang) Dialect, and Plawangan (Rembang) Dialect

abot “heavy”

bərə? “heavy”

bərə? “heavy”

The concept [weight] (Proto-Austronesian: *abot “heavy”) is retained, as [abot], in the Plawangan (Rembang) dialect of Javanese and the Banyuanyar (Sampang) dialect of Madurese. In the Suka Oneng (Bawean) dialect of Madurese, this linguistic feature undergoes a complete morpheme innovation, becoming [bərə?].

ŋlanjɪ “to swim”

æŋ æŋɔn “to swim”

æŋ æŋɔn “to swim”

The concept [swimming] (Proto-Austronesian: *laNuj, see Dempwolf) is realized as a linguistic feature in the Suka Oneng (Bawean) dialect of Madurese through an innovative form, [æŋ æŋɔn]. Retention or relics are evident in the Plawangan (Rembang) dialect of Javanese, which uses [ŋlanjɪ], and in the Banyuanyar (Sampang) dialect of Madurese, which uses [aluŋɔy]. This can be understood through the following sound change correspondence process.

	PAN Dempwolf	Plawangan Dialect	Banyuanyar Dialect
1.	Ø.	/ŋ/ / # -	/a/ / # -
2.	*l.	/l/ / # C-	/l/ / # V -
3.	*N.	/ŋ/ / V-V.	/ŋ/ V-V

- | | | | |
|----|-----|-----------|-------------|
| 4. | *u. | /i/ / - # | /ɔ/ / - V # |
| 5. | *j. | /∅/ - # | /y/ / - # |

The first sound change correspondence rule is that the zero phoneme in Proto-Austronesian becomes /ŋ/ in the initial position of a word in the Plawangan (Rembang) dialect of Javanese and /a/ in the initial position of a word in the Banyuanyar (Sampang) dialect of Madurese. The second rule is that the Proto-Austronesian phoneme *l becomes /l/ in the initial position of a word after a consonant in the Plawangan dialect of Javanese (Rembang) as well as in the Banyuanyar (Sampang) dialect of Madurese. The third rule is that the Proto-Austronesian *N undergoes a correspondence process whereby the sound changes to /ŋ/ at the end of the inter-vocal word, both in the Plawangan (Rembang) dialect of Javanese and the Banyuanyar (Sampang) dialect of Madurese. The fourth rule is that the Proto-Austronesian *u corresponds to /i/ at the end of a word in the Plawangan dialect of Javanese (Rembang) and becomes /ɔ/ at the end of a word before a semi-vowel in the Banyuanyar dialect of Madurese (Sampang). The fifth rule is that the Proto-Austronesian phoneme *j becomes /∅/ in the final word position in the Plawangan (Rembang) dialect of Javanese and becomes /y/ in the final word position in the Banyuanyar (Sampang) dialect of Madurese.

menehi (kE?i) "to give"

abəri? "to give"

abəri "to give"

The concept [give] (Proto-Austronesian *bəRəy, see Dempwolf) is realized as a linguistic feature through an innovative form [menehi (kE?i)] in the Plawangan (Rembang) dialect of Javanese. Specific evidence is shown by the Suka Oneng (Bawean) dialect of Madurese, which uses [abəri?], and the Banyuanyar (Sampang) dialect of Madurese, which uses [abəri]. This proves the retention or preservation of relics from the Proto-Austronesian through a process of correspondence/sound change, as follows.

	PAN Dempwolf	Bawean Dialect	Banyuanyar Dialect
	*bəRəy	abəri?	abəri
1.	∅.	/a/ / # -	/a/ / # -
2.	*R.	/r/ / - VC #	/r/ / - V #
3.	*əy.	/i?/ / - #	/i/ / - #

The third rule of the sound change correspondence process can be explained as follows. First, the zero phoneme in Proto-Austronesian becomes /a/ in the initial position of the word in both the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese. The second rule is that the Proto-Austronesian phoneme *R becomes /r/ (before VC) in the word ending position in the Suka Oneng (Bawean) dialect of Madurese and becomes /r/ (before V) in the final word position in the Banyuanyar (Sampang) dialect of Madurese. The third rule is that the Proto-Austronesian phoneme series *əy becomes /i?/ in the word ending position in the Suka Oneng dialect of Madurese (Bawean) and /i/ in the word ending position in the Banyuanyar dialect of Madurese (Sampang).

mlaku “walking”

ajələn “walking”

ajələn “walking”

The concept [walking] (Proto-Austronesian: *laku?, see Dempwolf) is realized through the innovative form [ajələn] in both the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese. Interestingly, retention is evident in the Plawangan (Rembang) dialect of Javanese, which uses [mlaku]. This can be interpreted as follows.

	PAN Dempwolf	Plawangan (Rembang) Dialect
	*laku?	mlaku
1.	∅. >	/m/ / # -
2.	*? >	/∅/ / - #

The rules for the correspondence process/sound changes from Proto-Austronesian to the Plawangan (Rembang) dialect of Javanese can be explained as follows. The first rule is that the zero prefix of Proto-Austronesian is manifested in the Plawangan (Rembang) dialect of Javanese through the phoneme prefix /m/ at the initial position of a word. The second rule is the reverse: in the final position of the word, the Proto-Austronesian phoneme /ʔ/ corresponds to a sound change to zero in the Plawangan (Rembang) dialect of Javanese.

gəde “big”

rajə “big”

rajə “big”

The concept [big] (Proto-Austronesian *besa/r/ and *rayah, see Dempwolf) is realized as an innovative linguistic feature, [gedə], in the Plawangan (Rembang) dialect of Javanese. Retention with minimal sound change is evident in the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese, both of which use [rajə]. The correspondence process for sound changes from Proto-Austronesian to the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects is described through the following rules.

PAN Dempwolf Suka Oneng (Bawean) and Banyuanyar (Sampang)

*Rayah rajə

1. *R > /r/ / # -
2. *y > /j/ / - V #
3. *a > /ə/ / - #
4. *h > /∅/ / - #

The correspondence process follows five rules, as follows. First, in the initial position of the word, the Proto-Austronesian phoneme *R becomes /r/ in both the Suka Oneng (Bawean) dialect of Madurese and the Banyuanyar (Sampang) dialect of Madurese. Second, the Proto-Austronesian phoneme *y becomes /j/ in both the Suka Oneng

The above-mentioned sound change is realized in the Suka Oneng (Bawean) and the Banyuanyar (Sampang) dialects of Madurese through two rules. First, the Proto-Austronesian phoneme *a becomes /ə/ at the end of words in both Madurese dialects. Second, the Proto-Austronesian phoneme *h becomes a zero phoneme at the end of the word in both the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese.

mbulan (sasi) “month”
 bulən “month”
 bulən “month”

The concept [month] (Proto-Austronesian: *bulan) is realized as a relic in the Plawangan (Rembang) dialect of Javanese, namely [mbulan]; the Suka Oneng (Bawean) dialect of Madurese, namely [bulən]; and the Banyuanyar (Sampang) dialect of Madurese, namely [bulən]. The sound change correspondence process follows two rules:

PAN	Plawangan (Rembang)	Madura (Bawean)	Madura (Sampang)
*bulan	mbulan	bulən	bulən
1. ∅ >	/m/ / # -	∅	∅
2. *a >	/a/ / - K #	/ə/ / - K #	/ə/ / - K #

Narratively, the sound change correspondence process can be explained as follows. First, in the initial position, the Proto-Austronesian zero phoneme becomes /m/ in the Plawangan (Rembang) dialect of Javanese; in the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese, the zero phoneme is retained. Second, at the end of a word before a consonant, the Proto-Austronesian phoneme *a corresponds to /a/ in the Plawangan (Rembang) dialect of Javanese. In the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese, it corresponds to /ə/ when in the same position.

wulu “fur”
 bulu “fur”
 buluh “fur”

The concept [fur] (Proto-Austronesian: *bulu and *buluh) is realized as a relic with some sound change in the Plawangan (Rembang) dialect of Javanese (as [wulu]), the Suka Oneng (Bawean) dialect of Madurese (as [buli]), and the Banyuanyar (Sampang) dialect of Madurese (as [buluh]). The sound correspondence process can be described as follows.

PAN	Plawangan (Rembang)	Suka Oneng (Bawean)	Banyuanyar (Sampang)
*bulu/ *buluh		wulu	bulu buluh
1. *b	/w/ / # -	/b/ / # -	/b/ / # -
2. *h	∅ / - #	∅ / - #	/h/ / - #

The correspondence process can be narrated as follows. First, at the initial position of the word, the Proto-Austronesian phoneme *b is realized as /w/ in the Plawangan (Rembang) dialect of Javanese; in the Madurese dialects of Suka Oneng (Bawean) and Banyuanyar (Sampang), it becomes /b/. Second, at the end of words, the Proto-Austronesian phoneme *h corresponds to the zero phoneme in both the Plawangan (Rembang) dialect of Javanese and the Suka Oneng (Bawean) dialect of Madurese. In the Banyuanyar (Sampang) dialect of Madurese, the Proto-Austronesian phoneme *h becomes /h/.

manu? "bird"

mano? "bird"

mano? "bird"

The concept [bird] (Proto-Austronesian: *manuk) is realized as a relic with a sound change process; it becomes [manu?] in the Plawangan (Rembang) dialect of Javanese and [mano?] in the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese. The sound change correspondence process follows the rules below:

PAN	Plawangan (Rembang)	Suka Oneng (Bawean)	Banyuanyar (Sampang)
*manuk.	manu?	mano?	mano?
1. *u >	/u/ / - K #	/o/ / - K #	/o/ / - K #

2. *k > /ʔ/ / - # /ʔ/ / - # /ʔ/ / - #

The correspondence process is narrated below. First, the Proto-Austronesian phoneme *u corresponds to /u/ in the Plawangan (Rembang) dialect of Javanese when it occurs before a consonant at the end of words; in this position, it becomes /o/ in both the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese. Second, the Proto-Austronesian phoneme *k corresponds to the sound /ʔ/ in the Plawangan (Rembang) dialect of Javanese, the Madurese dialect of Suka Oneng (Bawean), and the Madurese language Banyuanyar and the Suka Oneng (Bawean) and Banyuanyar (Sampang) dialects of Madurese.

DISCUSSION OF ARCHEOLOGICAL DATA

Entering Sukaoneng Village, Tambak District, which straddles the border between North Bawean and South Bawean, the research team found red stone/brick manufacturing activities. This offered an encouraging starting point, as the location was confirmed to have a source of clay that could be used as raw material for pottery. To continue the survey of Suka Oneng Village, we first conveyed our intentions and goals to the Village Head. We were advised to meet Kyai Musatafa, the leader of the Penaber Islamic Boarding School, who is known locally for his understanding of ancient artifacts and ownership of objects suspected of having a cultural heritage.

During an interview, Kyai Mustafa explained that, despite the abundance of clay, no ethnographic data were available regarding pottery or potters in the Tambak District. He noted that potters were instead found in the Sangkapura District, in the southern part of Bawean. This interview also indicated that Kyai Mustafa was a collector of antiquities, but the origins of his collection had gone undocumented. As an educator, Kyai Mustafa aspired for his students to gain additional knowledge, including in the field of cultural preservation. This was realized through the development of a batik museum and a series of workshops; as such, the Penaber Islamic Boarding School was quite different than other institutions on Bawean Island.

Kyai Mustafa's collection, held at the Penaber Islamic Boarding School Museum, is used as an aid when teaching local content. Household appliances and past technologies are held to have value as local wisdom that must be known and understood by younger generations, as these values contribute to nation- and character-building. One small object, known in Bawean as *rangghepan* and on the Javanese mainland as *ani-ani*, is a rice-cutting tool used by women during the rice harvest. Rarely used since the 1980s, this tool has become almost extinct in Bawean and elsewhere due to advances in agricultural technology.

Another rare object collected by Kyai Mustafa is the *durung*, a small, four-posted traditional structure that is erected in the front yard and provides space to store rice. Today, some residents of Bawean still use the *durung* to store rice, with the floor area providing a space for relaxation or reciting the Koran. A similar model and setting for the placement of the *durung* is found in Toraja, where it is known as *alang* ("rice barn") and erected in front of the *tongkonan* (customary home).

The geography of the northern coast of the Tambak District has bays with sandy beaches, which could potentially be used for docking by outrigger sailboats. Although locations such as Labuhan Bay are ideal—indeed, the Indonesian word *labuhan* translates to "port"—, the research team's survey did not identify any artifacts, be they intact or fragmentary. Of the suspected archaeological objects held by the Penaber Islamic Boarding School, none were identified as coming from the Tambak District. Several residents of Labuhan Bay informed the team that they had yet to hear of archaeological objects being found in the area. Likewise, a surface survey that we conducted around the coast of the bay did not find any ceramic or pottery shards.

Kyai Mustafa advised the team that ancient graves and potters were found in the southern part of Bawean, in the Sangkapura District. After obtaining information about the location of the "Long Grave" in Tanjung Anyar Hamlet, Lebak Village, Sangkapura District, the research team from the National Agency for Research and Innovation immediately departed. The rainy season greatly hampered our journey. Arriving on site, we were quite surprised, as we found an elongated building with a tiled roof, tiled floors, and a cupola. While we were observing the structure, which the community held to be the grave of Doro, we found an information board that had been produced by local university students as part of their community service

program. One interesting photograph depicted the condition of the grave before it was restored. Seeking further information, we interviewed the caretaker of the "Long Grave" and learned that the image was taken by the caretaker's nephew, Amin, a resident of Tanjunganyar. In addition, we also obtained important information about the existence of similar long graves that had not been restored by members of the Tanjunganyar community. These graves, known locally as "Sembada", are believed to belong to students of Ajisaka who were sent to Bawean, where they died and were buried together in Tanjunganyar, Lebak Village, Sangkapura District, Bawean.

Among the information written on the information board at the "Doro" Long Grave Site, which has been officially designated as a tourist destination, was the story of Ajisaka and the two students who were dispatched to Bawean Island. This story was accompanied by an illustration of the New Javanese alphabet (20 letters). These were divided into four groups, each of which formed one sentence as follows: ha na ca ra ka, referring to two envoys named "Doro" and "Sembodo"; da ta sa wa la, "two people could not escape fate"; pa dha ja ya nya, "of equal strength and renown"; ma ga ba tha nga, "they both died together". It is speculated that these two messengers, Doro and Sembodo, were buried in Tanjunganyar Hamlet, Lebak Village, Sangkapura District; in other words, the two bodies buried in these graves are believed to be the messengers of Ajisaka, who created the New Javanese alphabet in the early days of Islam's arrival in Java.

2. Archaeological Data along the Northern Coast of Sampang, Madura

Along the northern coast of the Sokobanah District, Sampang Regency, East Java Province, there are several grave sites that are thought to have belonged to immigrants who spoke languages in the Austronesian family. The shape of these rectangular graves, which are composed of mountain stones, are unique in their orientation; similar to Islamic graves, they are oriented north-south, but azimuthal measurements show a slight northwestward orientation (Gunadi, 2021). Why is it that, on Madura Island, the graves that are suspected to have belonged to speakers of languages in the Austronesian family are concentrated along the northern coast of Sampang—especially in the Sokobanah District?

Excavations at the Bandaran Timur Site, Tamberu Timur Village, Sokobanah District, Sampang Regency, found the graves of one adult, one adolescent, and one child in an excavation box measuring 2 m x 2 m. A physical anthropology analysis suggested that these three individuals were female. Although DNA testing was not conducted, it was estimated that they were of the Mongolian race (Gunadi et al. 2021). In addition to these human skeletons, archaeological excavations also found pottery fragments.

3. Archaeological Data from the Northern Coast of Rembang

The Plawangan site, located in Plawangan Village, Kragan District, Rembang Regency, has been dated to the paleometallic period—approximately 500 BCE (Bellwood, et al. 2006). Carbon 14 analysis of charcoal samples unearthed in excavations at the Leran Site, Sluke District, Rembang Regency, dated the samples to 2640 ± 150 BPE. As the "present era" is set at 1950, the human skeletons at the level where the charcoal samples were excavated were interred as early as 540 BCE ($2640 - 1950 = 690 - 150 = 540$ BCE) (Results of C14 dating analysis by the P3G Laboratory, Bandung in 2013).

Figures found through excavations at the Plawangan site were believed to represent cultural traces of speakers of Austronesian languages. Human skeletons, as grave data, tend to be found in coastal environments; meanwhile, household artifacts (residential data) tend to be found on land.

The timeline of the cultural development of speakers of Austronesian languages is lengthy and complex, and this allowed various problems to emerge. There are thus interesting data that provide endless study material (Simanjuntak, 2015). Along the northern coast of Rembang, traces of Austronesian culture include not only human skeletons with Mongoloid features, but also household utensils from the protohistoric or paleometallic periods. The discovery of an ancient boat in Punjulharjo Village, Rembang City District, Rembang Regency, in 2009 also provided archaeological data related to the cultural traces left by speakers of languages in the Austronesian family.

DISCUSSION OF LINGUISTICS AND ARCHEOLOGY

Academically, a hypothesized "Austronesian Triangle" in the Java Sea connecting Bawean, Sampang, and Rembang can be justified.

Archaeological and ethnographic data found in the southern part of Bawean Island indicate that speakers of languages in the Austronesian language likely crossed to Sampang, where the long graves were found, while pottery craftsmen followed the western route from Sumatra to Java and from Java to Bawean. The finding of two long graves, which are believed by the Bawean people to belong to people from Java, emphasizes Java's influence on Bawean. However, the orientation of the graves along the northern coasts of Rembang and Sampang implies routes directly connecting Bawean with Rembang and Bawean with Sampang.

Linguistic and archaeological findings, both made during an investigation of the post-Kalimantan and Sulawesi Austronesian migration hypothesis, are quantitatively related to the three research objects: the Bawean and Sampang dialects of Madurese and the Rembang dialect of Javanese, which exhibit a kinship percentage of 36–78%. Next, linguistic features—both relics and innovations—have provided new evidence that the three dialects alternately retain relics/original forms of Proto-Austronesian. Based on quantitative and qualitative evidence, it is reasonable that the post-Kalimantan and Sulawesi migration of the Austronesian language families to Java and its surroundings involved an initial stopover on Bawean and the northern coast of Rembang. These linguistic findings are strengthened by archaeological evidence and findings, including artifacts on Bawean (long graves, pottery, and physical remains) and in Rembang (boats, graves, and specific artifacts). Both offer strong evidence of the transit of Austronesian speakers.

CONCLUSION

Quantitative and qualitative analysis of physical and linguistic evidence shows that the three research objects—the Plawangan (Rembang) dialect of Javanese and the Suka Oneng (Bawean) and Banyuwang (Sampang) dialects of Madurese—are part of one language family and linked by a kinship percentage of 36–78%. Therefore, the initial conclusions of this research prove that the three research objects belong to the same extended family: the Austronesian family.

Regarding the migration of the Austronesian language family to the northern coast of Java, based on evidence of linguistic features, including relics that are still preserved from the Proto-Austronesian language as well as the consistent alternating correspondence of

sound changes between the three research objects, the initial conclusions of this research is that the post-Kalimantan and Sulawesi migration of the Proto-Austronesian language involved an initial stopover on the northern coast of Java: in Rembang in the west and Bawean in the east. This is reinforced by convincing archaeological evidence, showing the power of collaborative archaeological and linguistic research.

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