



Trace the Traces of Austronesian Culture and Language Families in the Java Sea Area: Connectivity Between Bawean, Rembang, and Sampang

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Abstract. Basically, this research is a multi-year study of the research theme of “Tracking Traces of Austronesian Culture in the North Coast of Java-Madura.” Referring to the results of the research at the Plawangan Site, Rembang Regency, Central Java [2016 and 2017], and the East Tamberu Site, Sampang Regency, East Java [2019 and 2021], the direction and orientation of prehistoric-protolithic tombs estimated to lead to one point, namely the Island of Bawean. Related to the research theme above, the research is proposed based on the hypothesis “Austronesian Triangle in the Java Sea Region”, that Bawean Island was the last terminal before Austronesian immigrants discovered the North Coast area of Rembang Regency, Central Java, and the North Coast of Sampang Regency, East Java Province. To answer the hypothesis, conducting archaeological and linguistic collaborative research on the islands of Bawean, Sampang, and Rembang, with survey and excavation activities, is necessary.

Keywords: Triangle · Austronesian Culture · Rembang · Sampang · Bawean

1 Preliminary

This research is exploratory and based on a hypothesis about language migration and Austronesian language-speaking peoples. The Austronesian family consists of about 1,200 languages spanning half the world. The similarity of the vocabulary of the Austronesian language family shows that the Austronesian language family is descended from a common ancestor, namely the proto-Austronesian languages [Klamer, 2019]. The hypothesis in question is proposed by Peter Bellwood [1984–1985] and Robert Blust [1984–1985], known as the Out of Taiwan theory or the Express Train Hypothesis. The theory or hypothesis states that the languages and peoples of the Austronesian language family originated from Mainland South China which then crossed to the island of Taiwan. From Taiwan, they spread south to New Zealand, east to Easter Island, and west to Madagascar. The book *The Austronesians, Historical And Comparative Perspective* explain that they reached Java (North Coast of Java) around 500 BC [Bellwood, Fox, and

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Tryon, 2006: 103–109]. This data is supported by the results of archaeological research in the North Coast area of Rembang Regency in 2012 based on Carbon dating analysis which found the age of the grave at the Leran Site, Rembang Regency, namely 2640 ± 150 Before the Present [Gunadi et al., 2012].

Some of the scientific papers that have resulted from research on the historical relations of language kinship and traces of Austronesian culture in the North Coast of Java and Madura in the last five years include:

- a. 2021. *Jejak-Jejak Budaya Austronesia di Pantai Utara Jawa*, Yogyakarta: published by Kepel Press.
- b. 2021. *Asal – Usul dan Sejarah Orang Madura: Kajian Arkeologi-Sejarah*, published by Balai Arkeologi D.I. Yogyakarta in collaboration with Mirra Buana Media.
- c. 2020, “Jejak-Jejak Budaya Austronesia di Pantura Jawa: Akar Kebinekaan Bangsa Indonesia”, Prosiding EHPA, Pusat Penelitian Arkeologi Nasional
- d. 2019. “Melacak Jejak Budaya Austronesia Di Kawasan Pantura P. Madura Pada Masa Prasejarah – Protosejarah”, Prosiding Seminar Nasional, Dari Masa Prasejarah Hingga Kini, Balai Arkeologi Provinsi Jawa Barat.
- e. 2018, “Nenek Moyangku Seorang Pelaut: Menengok Kejayaan Kemaritiman Indonesia Masa Lampau”, dalam: *Warisan Budaya Maritim Nusantara*, Prosiding hasil Pertemuan Ilmiah Arkeologi, published by Direktorat Pelestarian Cagar Budaya dan Permuseuman in collaboration with Perkumpulan Ahli Arkeologi Indonesia, ISBN 978-979-8250-61-3
- f. 2017. “Tembikar Prasejarah-Protosejarah di Kawasan Pantura Jawa Tengah: Kajian bahan baku berdasarkan analisis petrografis”, *KALPATARU Majalah Arkeologi*, Volume 26, No. 2, November 2017.
- g. 2016. “Kontribusi Hasil Penelitian Arkeologi dalam Kebhinekaan Sebagai Pemersatu Bangsa: Studi kasus pada Situs Kubur Prasejarah di Pantai Utara Jawa Tengah”, *Berkala Arkeologi*, Volume 36, No. 2, November Edition. Page. 161–172.

According to the researchers’ knowledge, the originality or novelty of this research is collaborative research between linguistics and archeology and was first conducted for objects of the Austronesian language family in the Java Sea Region. In addition, the results of this research are expected to be useful for diversity education in Indonesia.

Prof. Truman Simanjuntak, in an article entitled: “Progress of Austronesian Research in the Archipelago,” states that the breadth of the scope of the Austronesian study and the still limited research leaves various research questions unanswered both in the regional-global and national context (Simanjuntak, 2015, p. 25). Responding to the statements and questions of Prof. Truman above, then on a national scale, the reporter wants to contribute to the Austronesian study in the Java Sea Region. If the study of Austronesian is analogized to a chain of bicycles, then every result of the study of Austronesia from every region in Indonesia is a connection. Therefore, Austronesian studies in Indonesia must be planned on a local, national, and regional scale.

This research on tracing the traces of Austronesian culture started from the North Coast area of Rembang Regency, Central Java Province (Gunadi et al. 2016 and 2017), then continued in the North Coast area of Tuban, Lamongan, and Gresik Regencies, East Java Province (Gunadi et al., 2017), then in 2019 research was conducted in the North Coast area of Madura Island covering Bangkalan, Sampang, Pamekasan, and Sumenep

Regencies. During the research, our reference was data in the form of graves found at the Plawangan Site as a result of research by the National Archaeological Research Center (Prasetyo, 1994/1995: 21–40) and research results from the Yogyakarta Archaeological Center [Gunadi et al. 2016 and 2017].

Although this research is not a multi-year study, it is a continuation of previous studies. Especially research on tracing traces of Austronesian culture on the North Coast of Madura Island began in 2019. The results of excavations at the Pandeyan Site, East Tamberu Village, in 2019 still need to explain the discovery of traces of Austronesian culture, both physically based on human skeletal fragments and culturally based on findings of artifacts and ecofacts. This is because the types of findings are incomplete and limited. Like the findings of human skeletal fragments excavated in TP Box 3 at the Pandeyan Site, Tamberu Timur Village, in the form of parts of the thigh bone (femur) and shin bone (tibia), these skeletal fragments could not be identified, as well as findings of pottery fragments and animal bones that were scattered irregularly.

Research in 2021, carried out in the North Coast Region of the Sokobanah District, Sampang Regency, among others, found several skeletons of adults, adolescents, and children. What is interesting from the research results in 2021 is the discovery of grave marks facing the Northwest grave. Taking into account the direction facing the graves in Sampang to the Northwest and the direction facing the graves in the North Coast Region of Rembang Regency to the Northeast, a hypothesis emerged that the two facing directions both lead to one location point, namely Bawean Island. Suppose this hypothesis can be proven in this 2022 research. In that case, it will become a novelty related to the migration routes of speakers of the Austronesian language family in the Java Sea Region. Likewise, the findings of linguistic data found in Bawean, Sampang, and Rembang support the archaeological research results and can strengthen the novelty resulting from this collaborative research.

Prehistoric humans were *Homo sapiens-sapiens* who reached their peak of life in an era known as the Neolithic period. During this Neolithic era, humans could create various living equipment with advanced technology. They have lived and settled in residential areas, are familiar with social systems and religious systems, the domestication of plants and animals, the technology of making containers from burnt clay, building boats, and mastering navigation systems (shipping). Prehistoric experts know this period of human evolution as the “Neolithic Revolution” [Cole, 1970].

At that time, in mainland South China, namely in the Yellow River valley, several nomads/herders came from West Asia. They occupied the area and drove the natives out of the valley. One of them moved south to leave mainland China, namely to Hainan Island and some to Taiwan Island (Morse, 1908, p. 1). After hundreds of years of occupying Taiwan, some started looking for other areas; they moved south to reach the Philippines, Indonesia, to the Pacific. South to New Zealand, east to Easter Island, and west to Madagascar Island [Bellwood, Fox, and Tryon, 2006:109].

Those who eventually became known as the Austronesian people (speakers of the Austronesian language family) initially inhabited Taiwan and subsequently migrated to the Pacific region, to New Zealand at the southern tip, east to Easter Island, and west to Madagascar, the migration process of speakers of the Austronesian language family. This is known as the “Out of Taiwan” theory, popularized by Peter Bellwood. Based on this

theory, they arrived on the island of Java, estimated at 500 BC. Therefore, this research is proposed to test the theory above. As for the results of this study, to what extent can we test the hypothesis above? This is like the statement of Tanudirjo and Prasetyo (2004) in an article entitled: The “Out of Taiwan” model in the perspective of Indonesian Archeology, reveals the extent to which archaeological data that has been collected in Indonesia recently can strengthen or even weaken the “Out of Taiwan” model. [Tanudirjo and Prasetyo, 2004: 80]. When related to the statements and questions of Tanudirjo and Prasetyo, the results of previous studies seem to tend to support the hypothesis of Peter Bellwood and Robert Blust above.

On the other hand, which is no less important as a framework for this research is Truman Simanjuntak’s statement that the scope of Austronesian studies is very broad. In contrast, the research conducted still needs to be improved. Hopefully, this research can contribute and add to the fragments of the Austronesian mosaic in the archipelago.

Academically, the purpose of this research is to prove the hypothesis above and whether the discovery of data or not supports it. Practically, this research contributes that speakers of the Austronesian language family who inhabit the Java Sea Area, such as on Bawean Island, Sampang Coast, and Rembang Coast, have kinship relations based on language and cultural heritage and artifacts. At the same time, the benefits of the results of this research on a national scale between ethnic groups in the Java Sea Region will strengthen the spirit of integration and the spirit of showing national identity. The emotional ties between the Javanese-Rembang, Madura-Sampang, and Madura-Bawean ethnic groups will melt in one container of Bhineka Tunggal Ika.

2 Method

This research is both quantitative and qualitative, using inductive reasoning. So to get the expected data, this research method begins with data collection, then data analysis, and ends with interpretation as a conclusion from the research results. Although this research is qualitative, it also begins with a hypothesis based on the results of previous research. As stated in the research title on inter-connectivity between Bawean – Sampang – Rembang both artifactually, historically-archaeologically, and linguistically, it is estimated that Bawean Island was a transit island for immigrants speaking the Austronesian language family before they discovered the north coast of Java and Madura. Therefore data collection begins from Bawean Island because, in the context of previous research, it is estimated that Bawean Island is the axis of the Austronesian Triangle Region in the Java Sea.

3 Linguistic Data and Their Discussion

The results of the initial analysis of data on linguistic features concerning the subject of research trace historical kinship relations and cultural traces of the Austronesian language family in the North Coast of Java: Connectivity between Bawean, Sampang, and Rembang can be narrated through lexicostatistical (quantitative) methods, and correspondence processes sound changes (qualitative) that are top-down reconstruction or from top to bottom from Proto-Austronesian (PAN) reflex to the target language of the research object. Presented in the data and analysis are as follows.

1	Bahasa Jawa dialect Plawangan		Fa	=	Kel	(Ru
/	(BJp)/Madura dialect Suka Oneng		mil		3	uar mp
2	(BMso)	= 36	y		6	ga un)

1	Bahasa Jawa dialect		Fa	=	Kel	
/	Plawangan/Madura dialect	=	mi		3	uar
3	Banyuanyar (BMb)	38	ly		8	ga

2	Bahasa Madura dialect Suka Oneng/Madura dialect			=	Kel	
/	Banyuanyar = 78	Family			7	uar
3					8	ga

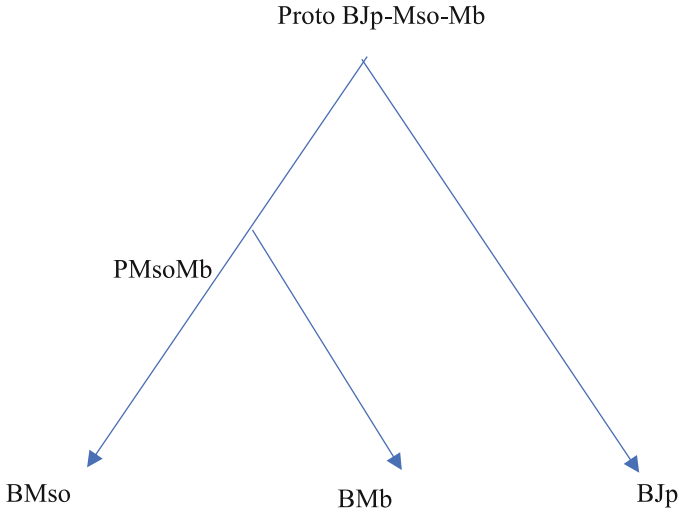
Based on the lexicostatistical calculation of 200 basic Swadesh vocabularies, the following results were obtained

BMb	38	
BMso	36	78
	BJp	BMb

The results of the lexicostatistics calculation show that the Javanese dialect of Plawangan and The Madurese language, the Suka Oneng dialect, and the Madurese language, the Banyuanyar dialect, have a kinship relationship with the level of the language family, which is given the Javanese family name Plawangan dialect-Madura dialect Suka Oneng-Banyuanyar Madurese dialect. These three languages have a common ancestor: the Protolanguage, Javanese, Plawangan dialect, Madurese dialect, Suka Oneng, Madurese dialect, Banyuanyar. Madurese dialect each of the two languages with the Javanese Plawangan dialect. Therefore, the Madurese dialect is Like Oneng with the Banyuanyar dialect of Madurese comes from a sub-family called a sub-family Madurese Protolanguage dialect Like Oneng- Madura Banyuanyar dialect.

Thus, this kinship relationship is depicted as a tree diagram between languages. The Madurese dialect of Suka Oneng and the Madurese dialect of Banyuanyar are in one circle, the Protolingual circle.

Madurese dialect Suka Oneng and Madura dialect Banyuanyar (PMsoMB), not circle Protolanguage Javanese dialect Plawangan, Madurese dialect, Suka Oneng, Madurese, Banyuanyar dialect. The following is presented in the form of the following diagram:



Tracking Sound Correspondence in Madurese Dialects Like Oneng (Bawean), Madurese Dilaek Banyuanyar (Sampang), and Javanese Plawangan Dialect (Rembang).

awu
karfu
lɔlɔŋ

The ProtoAustronesian [Abu] concept **abu* of the given realization in the Plawangan (Rembang) Javanese dialect still retains the relic form of the ProtoAustronesian, namely [awu] because it only undergoes a correspondence process of changing the consonant /b/ into a semiconsonant or semivowel /w/ in the inter-vowel position. It can be symbolized as follows

PAN.	Bahasa Jawa Dialec Plawangan (Rembang)
<i>*abu</i>	<i>awu</i>
<i>*b > /w/ #V-V</i>	

As for the Madurese language, the dialect of Like Oneng (Bawean) has a different meaning from the Proto-Austronesian, namely [karfu], and the Madurese language, the dialect of Banyuanyar (Sampang), is [lɔlɔŋ]

baḥu
aɛŋ
aiŋ

The concept of [air] ProtoAustronesian **air* the realization of its linguistic features in the Javanese language with the Plawangan (Rembang) dialect shows a different name

from the ProtoAustronesian, namely [baɦu]. On the other hand, the Madurese dialect Suka Oneng (Bawean) and the Madurese dialect Banyuanyar (Sampang) both retain the relic forms of ProtoAustronesian [aɛŋ] (Madranese dialect Suka Oneng (Bawean)) and [aiŋ] (Madranese dialect Banyuanyar (Sampang)). The realization of the Madurese dialect of Suka Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) can be symbolized in the following sound change correspondence process.

PAN. Bahasa Madura Dialec Suka Oneng (Bawean). Madura Dialek Banyuanyar

(Sampang)

*air.	<i>aɛŋ</i>	<i>aiŋ</i>
*i >	/ɛ / . -K#.	/i/ -K#
*r >.	/ŋ / . -#	/ŋ/ -#

mili

ŋalele

akili

The concept of [alir (me)] Proto-Austronesian *aliR, its linguistic realization in the Javanese dialect of Plawangan (Rembang), shows a different gift from Proto-Austronesian, namely [mili]. Interestingly, the Madurese language dialect, Like Oneng (Bawean), shows that it still retains the relic form of Proto-Austronesian, namely [ŋalele]. Likewise, the Madurese language in the Banyuanyar (Sampang) dialect also retains the relic form of the Proto-Austronesian, namely [akili]. The process of establishing a sound change correspondence in the Madurese dialect of Like Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) can be explained through the following rules.

PAN. Madura Dialek Suka Oneng (Bawean). Madura Dialek Banyuanyar (Sampang)

*aliR	<i>ŋalele</i>	<i>akili</i>
(1) Ø.>	/ŋ/ #	
(2) *i >	/ɛ/ #KVK-	/i/ #VK-
(3) *l >.	// KV-	/k/ #V-
(4) *R >	// . -V#.	// . -V#
(5) Ø >	/ɛ/ -#	/i/ . -#

Proto-Austronesian *aliR experiences zero prefix, but in Madurese, the Like Oneng (Bawean) dialect has the prefix /ɲ/ added to the beginning of words. The second rule is the process of changing the sound *i to /ɛ/ in the initial position of the KVK word for the Madurese language, the Suka Oneng (Bawean) dialect, while for the Madurese language, the Banyuanyar (Sampang) dialect *i becomes /i/ in the initial position after the VK. The third rule, namely *l becomes /l/ in the initial position of the word after KV for the Madurese dialect of Like Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) becomes /k/ in the initial position of the word after V. The fourth rule, namely *R becomes /l/ for the Madurese dialect of Like Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) at the end of a word before V. The fifth rule, namely Proto-Austronesian, has zero suffixes. In contrast, for Madurese, the dialect of Like Oneng (Bawean) has the suffix /ɛ/ and the suffix /i/ in the Madurese dialect of Banyuanyar (Sampang) at the end of words.

anak
ana?
ana?, budu?

The concept of Proto-Austronesian [child] *child manifests as the realization of linguistic features in the Javanese Plawangan dialect (Rembang), keeping the form of the relic as a whole, namely [child]. The correspondence realization of the process of changing the sound *k to a glottal consonant /ʔ/ at the end of a word is experienced by the Madurese dialect of Suka Oneng (Bawean), and the Madurese dialect of Banyuanyar (Sampang), namely Proto-Austronesian *child becomes [anaʔ]. The rules that can be realized for the correspondence of sound changes for the Madurese dialect of Like Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) are as follows.

PAN. Madura Dialec Suka Oneng (Bawean). Madura dialec Banyuanyar (Sampang)

*anak.	[anaʔ].	[anaʔ]
*k >	/ʔ/ /- #	/ʔ/ /- #

The correspondence explanation for the sound change process in [child], namely Proto-Austronesian *child becomes [anaʔ] for the Madurese dialect of Suka Oneng (Bawean), and the Madurese dialect of Banyuanyar (Sampang) is *k. becomes a glottal consonant /ʔ/ at the end of the word.

aŋIn (jalaran)
aŋen
aŋin

The Proto-Austronesian [angin] concept *haŋin forms the realization of linguistic features for the Javanese dialect of Plawangan (Rembang) retains the form of relics,

namely [aŋIn], the Madurese language dialect of Like Oneng (Bawean) also retains the form of relics, namely [aŋɛn], and the Madurese dialect Banyuanyar (Sampang), namely [aŋin]. The process of sound change correspondence for Proto-Austronesian [wind] *haŋin can be explained through the following rules.

PAN. Jawa Plawangan (Rembang) Madura Suka Oneng (Bawean). Madura Banyuanyar (Sampang)

<i>*haŋin.</i>	<i>aŋIn.</i>	<i>aŋɛn</i>	<i>aŋin</i>
(1) *h >	Ø / # -	Ø / # -	Ø / # -
(2) *i >	/ɪ / - K #	/ɛ / - K #	/i / - K #

The rule explains that for the first rule, giving [aŋin] Proto-Austronesian *haŋin, *h in the Javanese dialect of Plawangan (Rembang) becomes [aŋIn] experiencing zero prefixes as well as the realization of [aŋɛn] in the Madurese dialect of Like Oneng (Bawean) occurs zero prefixes. The realization of [aŋin] in the Madurese dialect of Banyuanyar (Sampang) also has zero prefixes. The second rule is that the phoneme *i is realized in the correspondence process where the sound changes to /ɪ/ in the final word position before K uantuk in the Javanese dialect of Plawangan (Rembang), becomes /ɛ/ in the Madurese dialect of Like Oneng (Bawean) in the final word position before K, and became /i/ for the Madurese dialect of Banyuanyar (Sampang).

These rules explain that for the first rule, giving [aŋin] Proto-Austronesian *haŋin, *h in the Javanese dialect of Plawangan (Rembang) becomes [aŋIn] experiencing zero prefixes, as well as the realization of [aŋɛn] in the Madurese dialect Like Oneng (Bawean), occurs zero prefixes, and the realization of [aŋin] in the Madurese dialect of Banyuanyar (Sampang) also has zero prefixes. The second rule is that the phoneme *i is realized in the correspondence process of changing the sound to /ɪ/ in the word ending position before K for the Javanese Plawangan (Rembang) dialect, to /ɛ/ in the Madurese dialect Like Oneng (Bawean) in the word ending position before K, and became /i/ for the Madurese dialect of Banyuanyar (Sampang).

asu

patɛ?

patɛ?

The concept of [dog] ProtoAustronesian *asu is the realization of linguistic features in the Plawangan dialect of Javanese (Rembang) which holds a relic form from Proto-Austronesian, namely [asu]. The realization of the Madurese dialect of Suka Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) has different meanings; that is, both are realized in the form [patɛ?].

opo

(continued)

(continued)

apa, apan

apa

The concept of [what] Proto-Austronesian *is the realization of linguistic features for the correspondence process of sound changes in the Javanese Plawangan dialect, which becomes [ɔpɔ]. At the same time, it is construed into two rules as follows.

PAN.	Bahasa Jawa Dialec Plawangan (Rembang)
*apa.	ɔpɔ
(1) *a >	/ɔ/ / # -
(2) *a >	/ɔ/ / - #

The rule explains that the Proto-Austronesian phoneme *a becomes /ɔ/ in the Javanese dialect of Plawangan (Rembang) at the beginning and end of the word. The Madurese dialect Suka Oneng (Bawean) and Madurese dialect Banyuanyar (Sampang) keep the form of the relic intact or without a corresponding sound change process, namely [what].

gəni

apɔy

apɔy

The concept of Proto-Austronesian [fire] *api, the realization of linguistic features in the Javanese dialect of Plawangan (Rembang), underwent a different realization; namely, it became [gəni]. On the other hand, the Madurese dialect of Suka Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) both have the form of relics, namely [apɔy] which can be equated as follows.

PAN (Sampang)	Madura Dialek Suka Oneng (Bawean) dan Dialek Banyuanyar
*api.	apɔy
*i >	/ɔy/ / - #

The explanation for this rule is the ProtoAustronesian *api for the realization of the phoneme *i into a diphthong phoneme /ɔy/ in the Madurese language, Suka Oneng dialect (Bawean) and Madurese dialect Banyuanyar (Sampang) at the end of the word.

məndurɔy

(continued)

(continued)

awan

ɔndəm

The concept of [cloud] ProtoAustronesian *awan, the realization of linguistic features in the Javanese Plawangan dialect (Rembang), experiences a different realization from the ProtoAustronesian, namely [mənduŋ]. Likewise, the Madurese dialect of Banyuwanyar (Sampang) experiences a different realization from its Proto-Austronesian language, namely [ɔndəm]. The specific characteristics and preservation of the form of relics from ProtoAustronesian are precisely shown by the Madurese dialect of Suka Oneng (Bawean), namely [cloud].

bapa?

bapa?

bapa?

The Proto-Austronesian [father] concept **mamah* forms the realization of linguistic features in the Javanese dialect of Plawangan (Rembang), the Madurese dialect of Suka Oneng (Bawean), and the Madurese language of the Banyuwanyar dialect (Sampang) experience morpheme and phoneme innovation, namely [father?] which can be assigned as follows.

PAN.	Jawa (Plawangan, Rembang), Madura (Suka Oneng (Bawean) dan Banyuwanyar
	(Sampang)
* <i>mamah</i> .	<i>bapa?</i>
(1) *m >	/b/ / # -
(2) *m >	/p/ / V - V
(3) *h >	/ʔ/ / - #

The explanation of these rules can be narrated as follows. The first rule of the Proto-Austronesian phoneme *m becomes the phoneme /b/ in the Javanese dialect of Plawangan (Rembang), the Madurese dialect of Suka Oneng (Bawean), and the Madurese language of Banyuwanyar (Sampang) dialect at the initial position of a word. The second rule of the Proto-Austronesian phoneme *m becomes /p/ for the Javanese dialect of Plawangan (Rembang), the Madurese dialect of Suka Oneng (Bawean), and the Madurese language of Banyuwanyar (Sampang) in the middle position between vowels. The third rule of the Proto-Austronesian phoneme *h becomes a glottal phoneme /ʔ/ for the Javanese dialect of Plawangan (Rembang), the Madurese dialect of Suka Oneng (Bawean), and the Madurese language of Banyuwanyar (Sampang) at the end of words.

ape?
bəkus
bagus

The concept of [good] Proto-Austronesian *good, the realization of linguistic features in the Javanese dialect of Plawangan (Rembang), has a different realization from its Proto-Austronesian, namely [what?]. The Madurese dialect of Suka Oneng still retains the relic form of the Proto-Austronesian; there are only a few phoneme innovations, namely [bakus], while the Madurese language of the Banyuanyar (Sampang) dialect retains the same relic form of the Proto-Austronesian, namely [good]. The process of sound change correspondence can be explained through the following rules.

PAN.	Bahasa Madura Dialek Suka Oneng (Bawean)
* <i>bagus</i> .	<i>bakus</i>
*g >	/k/ / # V – V

This rule explains that the Proto-Austronesian phoneme *g becomes the phoneme /k/ in the Madurese dialect of Like Oneng in the initial inter-vowel position.

bale?
tabəli?
abəli?

The concept of [back] Proto-Austronesian *balikes is the realization of linguistic features in the Javanese Plawangan dialect, retaining the relic form with only a slight innovation of phonemes, namely [bale?]. The Madurese language dialect Like Oneng (Bawean) also retains the form of relics with a few innovations, namely [tabəli?], and the Madurese language dialect Banyuanyar (Sampang) also retains the form of relics with a few phoneme innovations, namely [abəli?]. The process of correspondence to changes in sound can be explained through the following rules.

PAN.	Jawa Plawangan	Madura Suka Oneng (Bawean).	Madura Banyuanyar (Sampang)
* <i>balikes</i> .	<i>bale?</i>	<i>tabəli?</i>	<i>abəli?</i>
(1) *{-es} >	Ø / - #	Ø / - #.	Ø / - #
(2) *a. >	/a/ / # K -	/ə/ / # KVK-	/ə/ / # VK -
(3) Ø >	Ø/ # -	{ta-} / # -	/a/ / # -
(4) *k >	/ʔ/ / - #	/ʔ/ / - #	/ʔ/ / - #

The explanation of these rules is as follows. The first rule of Proto-Austronesian suffixes or endings *{-es} becomes zero or no endings in the Javanese Plawangan dialect (Rembang), the Madurese dialect Like Oneng (Bawean), and the Madurese language, the Banyuanyar dialect (Sampang). The second rule, namely Proto-Austronesian *a in the Javanese dialect of Plawangan (Rembang), retains the phoneme /a/ in the initial position after K. Madurese in the Suka Oneng (Bawean) dialect becomes /ə/ in the initial position of words after KVK. The Madurese dialect of Banyuanyar (Sampang) becomes /ə/ in the initial position of the word after VK. The third rule, Proto-Austronesian zero or without prefixes or prefixes, is also realized to be zero or without prefixes in the Javanese Plawangan (Rembang) dialect. The Madurese dialect of Like Oneng (Bawean) experiences a form of innovation with the prefix {ta-} at the beginning of a word. The Madurese language in the Banyuanyar (Sampang) dialect has also experienced innovation with the appearance of the prefix {a-} at the initial position of a word. The fourth rule, namely Proto-Austronesian *k becomes a glottal phoneme /ʔ/ in the Javanese Plawangan dialect (Rembang), the Madurese dialect of Suka Oneng (Bawean), and the Madurese language Banyuanyar dialect (Sampang) at the end of words.

aħar
ki?, puru
aħar

The concept of [new] Proto-Austronesian *kik is realized to be equally different from the linguistic features of Proto-Austronesian in the Javanese dialect of Plawangan (Rembang) and the Madurese language of Banyuanyar (Sampang), namely [aħar]. An interesting thing needs to be explained; namely, the Madurese language dialect, Like Oneng (Bawean), retains the Proto-Austronesian relic form with a little innovation of the consonant phoneme [kiʔ]. The form of relics in the Madurese dialect of Like Oneng (Bawean) can be equated as follows.

PAN.	Bahasa Madura Dialek Suka Oneng (Bawean)
*kik	kiʔ
*k >	/ʔ/ / - #

This rule explains that the Proto-Austronesian phoneme *k becomes a glottal phoneme at the end of a word for the Madurese dialect of Like Oneng (Bawean).

tələs
bəsa
bacca

The Proto-Austronesian concept of [basah] *basa experienced a different realization from its Proto-Austronesian, namely the realization of linguistic feature innovation [tələs]. What is interesting is that the Madurese dialect of Suka Oneng (Bawean)

still retains the relic form of Proto-Austronesian with a slight correspondence process of changing the sound of one of its phonemes, namely [basa] and the Madurese dialect of Banyuanyar (Sampang) becoming [bacca]. The two forms of relics with the correspondence process of sound changes can be described as follows.

PAN.	Madura Suka Oneng (Bawean).	Madura Banyuanyar (Sampang)
<i>*basa.</i>	<i>basa.</i>	<i>bacca</i>
(1) *a >	/ə/ / # K-	/a/ / # K-
(2) *s >	/s/ / V-V #.	/cc/ / V-V #

The explanation of these rules is as follows. The first rule of the ProtoAustronesian phoneme *a becomes /ə/ for the Madurese dialect of Suka Oneng (Bawean). It maintains the phoneme /a/ in the Madurese dialect of Banyuanyar (Sampang) at the initial position of the word after K. The second rule, the ProtoAustronesian phoneme *s, maintains the phoneme /s/ in the Madurese dialect of Suka Oneng (Bawean) and becomes a series of consonants /cc/ in the Madurese dialect of Banyuanyar (Sampang) at the end of the inter-vowel word.

watu
bətɔ
bətɔ?

The concept of [stone] ProtoAustronesian *watu is realized as a linguistic feature of the embodiment of a relic from ProtoAustronesian in the Javanese dialect of Plawangan (Rembang), namely [watu]. The Madurese dialect of Suka Oneng undergoes a correspondence process of changing phoneme sounds, namely to [bətɔ] and the Madurese dialect of Banyuanyar (Sampang) to [bətɔ?]. The waiver of the correspondence process for the sound change can be explained as follows.

PAN.	Madura Suka Oneng (Bawean).	Madura Banyuanyar (Sampang)
<i>*watu.</i>	<i>bətɔ.</i>	<i>bətɔ?</i>
(1) *w >	/b/ / # -	/b/ / # -
(2) *a >	/ə/ / # K-	/ə/ / # K-
(3) *u >	/ɔ/ / - #	/ɔ/ / - #
(4) Ø.	Ø.	/?/ . - #

The explanation of these rules can be narrated as follows. The first rule is that the ProtoAustronesian phoneme *w becomes /b/ in the Madurese dialect of Suka Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) in the initial position

of the word. The second rule is that the ProtoAustronesian phoneme *a becomes the phoneme /ə/ in the Madurese dialect of Suka Oneng (Bawean) and the Madurese dialect of Banyuanyar (Sampang) at the initial position of the word after K. The third rule, the ProtoAustronesian phoneme *u becomes the phoneme /ɔ/ in the Madurese dialect Suka Oneng (Bawean) and Madurese dialect Banyuanyar (Sampang) at the end of the word position. The fourth rule is the Proto-Austronesian phoneme zero or zero in the Madurese dialect of Suka Oneng (Bawean) and undergoing an innovative process of adding the glottal phoneme sound /ʔ/ at the end of the word.

higar
εεbəʔ
bələ

The concept of [split (me)] Proto-Austronesian *split was realized into innovations of different forms in the Javanese Plawangan (Rembang) dialect, namely [higar] and [εεrbəʔ] in the Madurese dialect of Like Oneng (Bawean). The realization of the Madurese language in the Banyuanyar dialect (Sampang) retains the relic form of the Proto-Austronesian. It is just that there are several correspondence processes of sound changes that can be equated as follows.

PAN.	Madura Dialek Banyuanyar (Sampang)
(1) *e >	/ə/ / # K -
(2) *a >	/ə/ / - #
(3) *h >	Ø. / - #

The correspondence process rules for sound changes from Proto-Austronesian phonemes to the language of the research object can be explained as follows. The first rule is that the Proto-Austronesian phoneme *e becomes /ə/ in the Madurese dialect of Banyuanyar (Sampang) in the initial position of the word after K. The second rule, namely the Proto-Austronesian phoneme *a corresponds to the phoneme /ə/ in the Madurese language Banyuanyar (Sampang) dialect in the position of the final word. The third rule is that the Proto-Austronesian phoneme *h corresponds to zero or no phoneme in the Madurese dialect of Banyuanyar (Sampang) at the end of a word.

bibit
bənlh
bibit

The ProtoAustronesian [seed] concept is realized as a linguistic feature in the form of retention of the relic form of ProtoAustronesian [seed] in the Javanese dialect of Plawangan (Rembang) and the Madurese language of the Banyuanyar dialect (Sampang). The Madurese dialect Suka Oneng (Bawean) has undergone a complete morpheme innovation to become [bənlh].

4 Archeological Data and its Discussion

The surface survey on Bawean Island was initiated from the Tambak sub-district, located in the northern part. The North Coast area of Bawean Island is suspected of being a residential area for immigrants who speak the Austronesian language family, especially in the form of a bay or an estuary with sandy beaches. The bay, with its sandy beaches and river mouths, is an ideal place to dock the outrigger sailboats belonging to Austronesian immigrants. Beach sand acts as a brake that can stop the wind-powered sailboat. Meanwhile, the Bay and Estuary are used by the area's residents to park their boats safely from the West or East winds [Kasnowihardjo, 2021a, pp. 31–38].

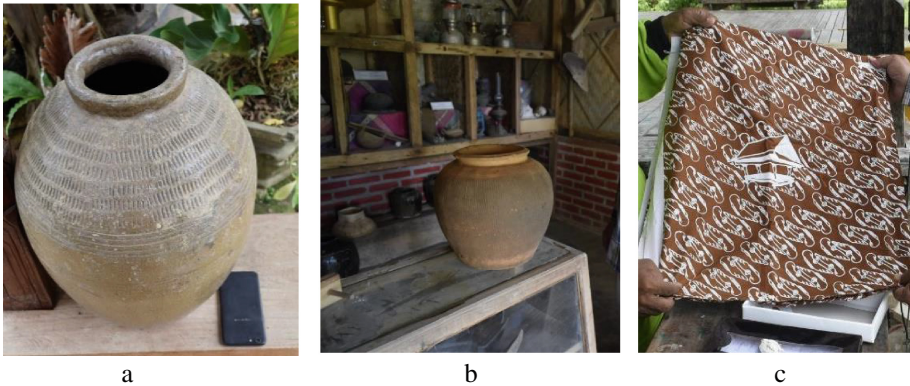
Entering Sukaoneng Village, Tambak District, the border between northern Bawean and southern Bawean, the research team found an activity of making red stone or bricks (Javanese: brick). For us (archeological researchers), this finding is an exciting starting point because the location is certain to have a source of clay that can be used as raw material for making pottery. To continue the survey around Sukaoneng Village, we first met with the Village Head to convey our aims and objectives. From Mr. H. Abdul Hayi, we were advised to meet with Kyai Mustafa because the Penaber Islamic Boarding School leader is known as a Picture who understands archaeological objects and has a collection of objects that are thought to be cultural heritage objects.

The interview with Kyai Mustafa (Picture 1) explained that in the Tambak sub-district, there was no ethnographic data for the pottery or pottery artisans, although clay resources were abundant. He further explained that pottery artisans were found in the Sangkapura District, Southern Bawean.

The interview results with Kyai Mustafa revealed that Kyai Mustafa is one of the collectors of antique objects that are now rare. Unfortunately, these items are not professionally documented, so the origin of the goods is not recorded. Kyai Mustafa, as a teacher and a boarding school leader, aspires to his students to have more knowledge in the field of cultural preservation. Such as efforts to build a museum and Batik workshop, and will be followed by other workshops intended to make the Penaber Islamic Boarding School appear different from other Islamic boarding schools on Bawean Island (Picture 2a, b, and d).



Picture 1. Interview with Kyai Mustafa. (Source: Research and technology private collection, BRIN 2022)



Picture 2. (a) Chinese ceramic jars, (b) clay pottery, and (c) Batik Penaber. (Source: Documentation of the Austronesian Language and Culture Research Team, BRIN 2022).

The collection of the Penaber Islamic Boarding School Museum by Kyai Mustafa is used as teaching aids in local content subjects. In addition, household appliances and past technology have local wisdom values that the millennial generation needs to know and understand because those values contribute to nation-building character. From a small object, the Bawean people call Ranggehpan (Picture 3. the Javanese call it an *ani-ani*), rice-cutting tool women use during the rice harvest. Since the 1980s, this tool has been rarely used and is almost extinct. Likewise, we can no longer find rice yields using the Ranggehpan cutting system, as shown in Picture (4), both on Bawean Island and elsewhere in Indonesia, because agricultural technology is getting more sophisticated.

Another rare item collected by Kyai Mustafa is the “*Durung*”, a small, four-posted Bawean traditional building placed in the front yard and serves as a place to store rice (Picture 5). Until now, some people in Bawean still use the “*Durung*” building on the ceiling to store rice, the floor functions for the Koran, or a relaxing place to sit. The model and setting for this “*Durung*” was found in Toraja called “*Alang*,” which means a rice barn placed in front of the Tongkonan (Picture 6).



Picture 3. Ranggehpan (Ani-ani). (Source: Documentation collection of Austronesian Language and Culture Research Team, BRIN, 2022)



Picture 4. Untingan rice, Penaber Museum collection. (Source: Documentation collection of Austronesian Language and Culture Research Team, BRIN, 2022)



Picture 5. During The rice barn of the Bawean community (Source: Doc. Collection of Austronesian Language Cultural Research, BRIN)



Picture 6. Tongkonan and Alang in Toraja. (Source: Kompasiana.com).

Theoretically, the geographical environment of the North Coast of the Tambak District has potential such as a bay with sandy beaches that can be used by outrigger sailboats to dock at that location. A location like “Labuhan” Bay is ideal, but the survey results of the research team did not find any artifacts, either intact or fragmentary objects. Objects suspected of being archaeological objects collected by the Penaber Islamic Boarding School in Sukaoneng Village, Tambak District, none of which were informed were found in the Tambak District area.

Several residents of Teluk Labuhan informed that so far, they had never heard of archaeological objects being found or objects suspected of being of cultural heritage. The results of our surface survey around the coast of Labuhan Bay (Picture 9) did not find any ceramic or pottery shards.

As informed by Kyai Mustafa, that old graves and pottery artisans in Bawean were found in the southern part, namely the Sangkapura District area. After obtaining information about the location where the “Long Grave” was found in Tanjung Anyar Hamlet, Lebak Village, Sangkapura District, the National Agency for Research and Innovation research team immediately visited the location. The weather, which has entered the rainy season on Bawean Island, is quite hampering our journey. Arriving at the location of the Long Grave, we were quite surprised because we saw a cupola building with an elongated shape with a tiled roof and tiled floors (Picture 7). While we were observing the building, which the community believed was the location of Doro’s grave, we found an information board about the Long Grave made by KKN students from the local university. One of the interesting pieces of information is the condition of the “Doro” Grave before it was restored (Picture 8).



Picture 7. Cungkup M P “Doro”



Picture 8. Makam Panjang “Doro” before restoration



Picture 9. MP “Sembodo” original

We are trying to find information about where the student got the photo of “Doro”’s grave before it was restored. The results of an interview with the caretaker of the Long Grave “Doro” revealed that the photo was from Amin, a resident of Tanjunganyar, the nephew of the caretaker of the tomb. In addition to information about photos, we also received important information about the existence of a similar Panjang grave that has not received any treatment from the Tanjunganyar community (Picture 9). They call it the grave “Sembada” which the Bawean community believes. Both were students of Ajisaka who were sent to Bawean and died together and were buried in Tanjunganyar, Lebak Village, Sangkapura District, Bawean.

Some other information is written on the Long Tomb Site “Doro” information board, which has been officially designated as a tourist destination in Sangkapura Bawean, namely the story of Ajisaka and his two students who were sent to a place, namely Bawean Island. With an illustration of the New Javanese alphabet, a total of 20 letters are divided into four groups, each composed of one sentence as follows:

ha na ca ra ka, which means there are two envoys, namely “Doro” and “Sembodo”
da ta sa wa la, the two people who cannot escape fate and have to do it
pa dha ja ya nya, that is, both are dialectically superior to each other and equally strong

they both “sampyu” die together. Is it true that the two Pictures, Doro and Sembodo, who were buried in Tanjunganyar Hamlet, Lebak Village, Sangkapura District, were indeed the messengers of Ajisaka who created the New Javanese alphabet in the early days of the entry of Islam to Java?

4.1 Archaeological Data in the North Coast Area of Sampang, Madura

Along the North Coast of the Sokobanah District, Sampang Regency, East Java Province, several grave sites were found, which are thought to be the graves of immigrants who speak the Austronesian language family. The shape of the grave, composed of rectangular mountain stones, has a uniqueness: an unusual facing direction like an Islamic grave, which is north-south. However, after azimuthal measurements, it leads a few degrees to the Northwest (Kasnowihardjo, 2021b, pp. 44–50). The results of research exploration:



Fig. 10. Plotting of Sites in the North Coast Region of Kec. Sokobanah, Kab. Lacquer. (Source: Doc. Gunadi et al. Researchers of the former Center for (Archeology, DIY, 2021)

tracing traces of Austronesian culture in the North Coast Region of Java – Madura, as illustrated in Picture 10. Why is it that on Madura Island, the concentration of graves that we suspect are the graves of speakers of the Austronesian language family are concentrated in the North Coast Area of Sampang, especially in the Sokobanah District area?

Excavations at one of the graves at the Bandaran Timur Site, Tamberu Timur Village, Sokobanah District, Sampang Regency, found the graves of adults, teenagers, and children in an excavation box measuring 2 m × 2 m. From the analysis of physical anthropology, it is estimated that the three individuals are female. Even though a DNA test has not been carried out, they are estimated to be of the Mongolian race (Gunadi et al., 2021). In addition to the human skeleton, the archaeological data from the excavation results in 2021 are pottery fragments (Pictures 11 and 12).

4.2 Archaeological Data on the North Coast of Rembang

The Plawangan site, in Plawangan Village, Kragan District, Rembang Regency, is a site from the paleometallic period of approximately 500 years Seb. AD [Bellwood, Fox, and Tryon. 2006: 103–109]. This follows the results of the analysis of Carbon 14 taken from charcoal samples found from excavations at the Leran Site, Sluke District, Rembang Regency, which found the year 2640 ± 150 BP. If what is meant by present is the 1950s, then the age of the human skeleton is at the level of finding charcoal samples, which is approximately $2640 - 1950 = 690 - 150 = 540$ BC (The results of the analysis dating C14 by the P3G Laboratory, Bandung in 2013).

The results of excavations from the Plawangan site, which are estimated to be cultural traces of speakers of the Austronesian language family, include human skeletons as grave data (Picture 13), which tend to be placed in coastal environments, and household utensils artefacts (occupancy data) found in areas that tend to be located in coastal areas. are in land (Pictures 14a & b).

The period of the cultural development of speakers of the Austronesian language family is very long and very complex, so various problems from various periods have



Fig. 11. Findings of the Sampang human skeleton. (Source: Doc. Gunadi et al. Researchers of the former Center for (Archeology, DIY, 2021)



Fig. 12. Sampang pottery fragments. (Source: Doc. Gunadi et al. Researchers of the former Center for (Archeology, DIY, 2021)

emerged and are very interesting for endless study materials (Simanjuntak, 2015, pp. 25–44). In the North Coast Region of Rembang, traces of Austronesian culture are not only human skeletons from the Mongoloid Race and their household utensils dating back to the Protohistoric or Paleometallic period. The discovery of an ancient boat in Punjulharjo Village, Rembang City District, Rembang Regency, in 2009 included archaeological data related to cultural traces and speakers of the Austronesian language family (Picture 15).



Fig. 13. . (Source: Gunadi et al. LPA, DIY Archeology Center, 2017) (Source: Doc. BRIN Research Team, 2022)



Fig. 14. a & b. (Source: Gunadi et al. LPA, DIY Archeology Center, 2017) (Source: Doc. BRIN Research Team, 2022).



Fig. 15. (Source: Gunadi et al. LPA, DIY Archeology Center, 2017) (Source: Doc. BRIN Research Team, 2022)

5 Discussion

The results of the survey in the coastal and coastal areas of Bawean Island, it is known that the potential for archeology and ethnography that characterizes the remains of speakers of the Austronesian language family found in the Tambak sub-district is a traditional building that the Bawean community calls “*Durung*”, namely a rectangular building with a stage model. The upper part of the ceiling is a place to store rice, while the wooden floor is used for daily activities such as reading the Qur’an or chatting with family members. Rice barn buildings are found in various ethnic groups in Indonesia, such as Toraja, Bali, and other ethnic groups with different models and architectures, but stem from the common idea and unified concept that comes from the ancestors of speakers of the Austronesian language family.

Although not listed neatly, the findings of loose artifacts such as rice cutting tools (Rangghapan), plowshares, pots, and rice strands from the Penaber Museum’s collection still have added value information about the existence of the ancestors of Austronesian language speakers on Bawean Island. *Potential archaeological remains* are the Long Grave which by the Bawean community is believed to be the tomb of Doro and Sembodo, both of whom were students of Ajsaka who came from India. The position and location of the two Long Graves in Tanjunganyar Hamlet, Lebak Village, Sangkapura District. Likewise, the remains of pottery artisans in the hamlet of Dissalam, Patar Spirit Village, Sangkapura District, there are signs of connectivity between Bawean - Rembang and the connectivity of Rembang - Bawean.

Academically, the “Austronesian Triangle” hypothesis in the Java Sea area between Bawean - Sampang - Rembang can be justified. Archaeological and ethnographic data found in the southern part of Bawean Island implies that the migration route for supporters of the Kubur Panjang culture and their pottery artisans passed through the West from Sumatra to Java and from Java to Bawean (?) The finding of 2 units of the Panjang grave, which the Bawean people believe to be the graves of two Pictures depicting Pictures from Java (Utusan Aji Saka), confirms the influence from Java to Bawean. However, the direction towards and orientation of the graves in the northern coastal areas of Rembang and Sampang is one data that implies the existence of an arrival route from Bawean to Rembang and from Bawean to Sampang.

6 Conclusion

6.1 Migration of Austronesia Language Speakers in the Java sea Area

Based on evidence and analysis of linguistic features, both quantitative and qualitative analyzes show that the three research objects are Javanese in the Plawangan (Rembang) dialect, Madurese in the Suka Oneng (Bawean) dialect, and Madurese in the Banyuanyar dialect (Sampang) are in the category of one language family which is linked to the percentage of kinship 36–78%. Therefore, the initial conclusions of this research prove that the three objects of the research study, both the Javanese dialect of Plawangan (Rembang), the Madurese dialect of Suka Oneng (Bawean), and the Madurese language of Banyuanyar (Sampang) belong to the same extended family, namely the Austronesian family.

Regarding the migration process of the Austronesian language family in the North Coast of Java, based on evidence of linguistic features, both the form of relics that are still preserved from the Proto-Austronesian as well as the alternating consistent correspondence of sound changes between the Javanese dialect of Plawangan (Rembang), the Madurese dialect of Like Oneng (Bawean), and the Madurese dialect of Banyuwang (Sampang) in the initial conclusions of this research it can be stated that the post-Kalimantan and Sulawesi Austronesian language migration process was the initial stopover on the North Coast of Java, namely in the West-Central around Plawangan (Rembang) and in the east at Suka Oneng (Bawean Island). This is reinforced by convincing archaeological evidence as a form of collaborative research between linguistics and archaeology.

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