Eastern Polynesian: The Linguistic Evidence Revisited

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For the past fifty years, historical linguistics and archaeology have provided seemingly mutually corroboratory evidence for the settlement of east Polynesia. However, more recent findings in archaeology have shifted this relationship out of balance, calling previous conclusions into question. This paper first reviews the generally accepted archaeological and linguistic theories of east Polynesia’s settlement, then describes the recent archaeological findings, highlighting the areas where the evidence from the two disciplines is now discordant. In sections four and five, I examine the linguistic data from Eastern Polynesian languages and propose a new, contact-based model for the region. The new linguistic model ultimately demonstrates that the settlement of east Polynesia and the development of the Eastern Polynesian languages occurred in one major period of dispersal, with subsequent spheres of contact among central Polynesian communities, producing the pattern of cultural and linguistic traits we see today.

1. INTRODUCTION.1 Archaeological evidence for the settlement of east Polynesia, and the recognition of an Eastern Polynesian subgroup, have for some time coincided, sharing a view that settlement of the east Polynesian islands occurred in stages, with separate homelands for each individual protoculture.2 While the precise timing and sequence of the east Polynesian expansion have been intensely debated, the archaeological evidence was thought to show the following: (1) there was a movement from western Polynesia to somewhere in central-east Polynesia; (2) from central-east Polynesia, the group ancestral to Rapa Nui broke off first; (3) the group that remained in central-east Polynesia remained cohesive until (4) dispersing to the outer island chains, (5) moving further to the more remote archipelagos (Kirch 2000:230). No matter where the east Polynesian homeland was located, archaeologists have consistently theorized that there was a period of migration

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into central-east Polynesia, followed by a pause of several hundred years and a gradual dispersal to all other islands from multiple centers within this region.

The linguistic subgrouping of the Eastern Polynesian branch played a central role in constructing this archaeological model. The subgrouping, first developed by Green in 1966, has been perpetuated by Polynesian historical linguists since, and remains the prevailing model. The tree in figure 1, taken from Marck (2000:3), demonstrates the current standard subgrouping of Eastern Polynesian languages.3

**FIGURE 1. EASTERN POLYNESIAN LANGUAGES**

What this tree implies is that from Proto-Eastern Polynesian “there was a first division between Easter Island and a Central Eastern Polynesian subgroup; a division of Central Eastern Polynesian into Marquesic, consisting of Mangarevan, Hawaiian and Marquesan, and Tahitic. Tahitic includes NZ Māori, Rarotongan (= Cook Islands Māori), Tuamotuan, and Tahitian” (Biggs 1971:485).4 This branching structure would have required time and pause for each individual language group to develop in relative isolation (Marck 2000:235). Until recently, these pauses appeared to fit well with the radiocarbon dates that put the outer islands of east Polynesian settlement in a compatible chronological order.

2. This imbalance is rooted in many years of circular argumentation, where both archaeology and linguistics have based their ideas of the settlement of east Polynesia on the other discipline’s findings. When the archaeological evidence from Wilmshurst et al. (2011) emerged, it immediately raised concern for me, as it did not support the long-standing theory that accounts for “pauses” between the settlement of the Society Islands, the Marquesas, and the farther reaching outer islands. This previous theory, upheld for many years in both fields, prompted me to investigate the linguistic subgrouping in greater depth, through analysis of primary-source data (dictionaries) of individual Eastern Polynesian (EP) languages, in hopes of proving the linguistic evidence stronger and the new archaeological evidence flawed. However, my research proved quite the opposite, as this paper demonstrates.

3. An anonymous reviewer suggested that a clarification of what historical linguists mean when they are referring to prehistoric “languages” may be important for nonlinguists in the audience. This reviewer suggested that when historical linguists are discussing different “languages” of the past, they are often (certainly in the case of Eastern Polynesian languages) speaking of only slight differences in speech, sometimes involving hardly one or two minor phonetic differences, the occasional instance of semantic variation in shared lexical items, and the even rarer instance of lexical replacement in basic vocabulary. It is due to these intricate definitions of languages that, in my reviewer’s words, “once there is some reasonable certainty that two such ‘languages’ demonstrate shared characteristics, they tend to get assigned their own protolanguage even if they involve only the wisps and threads of things whose elegant exposition is the subject of historical linguistic enquiry.”
2. **RAPID DISPERAL: NEW FINDINGS IN ARCHAEOLOGY.** While archaeology and linguistics seem to have aligned quite well in the past, new dates have recently emerged in archaeology that disrupt this cohesion. In efforts to establish a more accurate time depth for the settlement of east Polynesia, Wilmshurst et al. (2011) assembled nearly 1,500 radiocarbon dates from over 45 islands in all of the major island groups. These dates were categorized into “reliability classes” to “derive the most precise estimate for the age of initial colonization on all east Polynesian island groups” (Wilmshurst et al. 2011:1817). This method differs from those previously used to provide the basis for much of the east Polynesian settlement arguments, because the data for the new dates are based on short-lived plants, which yield more reliably dated materials. As Wilmshurst et al. wrote, “… widely accepted, longer chronologies for the region have been founded on materials that are inappropriate for precise radiocarbon dating of a relatively recent event” (2011:1819).

These findings are dramatically different from previous east Polynesian chronologies. In summary, east Polynesian islands were settled in one major pulse, with the Society Islands showing evidence for settlement approximately 150 years earlier than any other sampled site. Wilmshurst et al. wrote, “using our models, we can show a robust and securely dated two-phase sequence in colonization for east Polynesia: earliest in the Society Islands A.D. ~1025–1120, four centuries later than previously assumed, and significantly before all ... of the remote island groups” (2011:1817). Furthermore, all of the islands outside of the Societies appear to have been settled in a rapid pulse of migration, spanning only about 100 years between AD 1190 and 1293. This settlement period included even the more remote islands of Hawai‘i, New Zealand, and Rapa Nui.

These findings are compelling and clearly inconsistent with previous chronologies of east Polynesia. The implications of these findings for linguistics are equally monumental, primarily because they do not allow much by way of space or time for the development of Proto-Eastern Polynesian (PEP), Proto-Central Eastern Polynesian (PCEP), or either Central Eastern Polynesian subgroup. In essence, the linguistics and archaeology no longer align, and since the latter has seemed persuasive, this apparent discordance suggests a fresh look at the linguistic situation, including, in the first instance, a reexamination of the present subgrouping argued for Eastern Polynesian—the subject of the rest of this report.

3. **RAPID DISPERAL: NEW ISSUES IN LINGUISTICS.** In considering a rapid colonization for east Polynesia, two main issues arise for east Polynesian linguistics:

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4. It should be noted that “Tuamotuan” represents a number of individual dialects spoken in the region in French Polynesia referred to as the Tuamotus. Rather unfortunately, these numerous dialects are quite under-studied on an individual basis, and have thus been historically grouped together as shown here. Regarding my inclusion of Tuamotuan data in this paper, my main sources for Tuamotuan lexical data come from Stimson and Marshall’s (1964) dictionary of Tuamotuan and from POLLEX, neither of which necessarily accounts for specific dialectal variations. As such, my data state “Tuamotuan” or “dialect(s) of Tuamotuan” in absence of knowing the precise dialect.

5. Further explanation of this is offered by Terry Hunt (pers. comm.): “the ‘horizon’ formed by the dates reveals an ‘event’ that cannot be explained as an artifact of sampling or visibility. The fact that small and large islands show the same chronology argues against visibility—i.e., that it took centuries for people to be visible on islands as different in size (and complexity) as Rapa Nui and New Zealand.”
(1) the location of the PEP homeland, and (2) the strength of the traditionally recognized Eastern Polynesian subgroups. We must now ask ourselves, can the PEP homeland still be in central-east Polynesia, given the very short time period possible for development? Also, how could there have been isolated developments between different Eastern Polynesian speaker groups if all of the islands were settled around the same time?

3.1 THE PEP HOMELAND. Wilmshurst et al.'s findings propose a first settlement of east Polynesia in the Societies, which would still allow for a PEP homeland in the central zone of east Polynesia. However, if the PEP homeland was in the Societies, the innovations that distinguish PEP from Proto-Nuclear Polynesian (PNP) must have taken place between arrival somewhere around AD 1025–1120, and dispersal to the outer east Polynesian islands between AD 1190 and 1293 (Wilmshurst et al. 2011:1816). This conflicts with the widely held notion that a long period of unity was needed for the development of PEP (Marck 2000:135–38). The changes from PNP to PEP are significant, morphologically and lexically, and would require an extended “period of unified development after its divergence” (Marck 2000:135). Another option would be to place the homeland further west, allowing for more time for these differences to develop. However, it becomes equally difficult to place the PEP homeland in western Polynesia because there is no clear modern remnant of PEP there.

If we place the homeland in the Societies, we can achieve at least some isolation, which may account for the substantial linguistic change in PEP. Rolett wrote of an “innovation in isolation” model for the PEP homeland, where the PEP population developed in complete isolation from western Polynesia (1996:531). Marck, furthermore, suggested that, if there was not a long period of unity, there must have been a “profound founder effect” (2000:138). If the ancestors of Proto-Eastern Polynesian left west Polynesia and settled in the Societies, it would fit such a model of isolation and founder effect. Unfortunately, there is no definitive way of identifying this through any linguistic evidence.6

3.2 THE STRENGTH OF THE EASTERN POLYNESIAN SUBGROUPS. A more critical issue that arises from the new dates in archaeology is the evidence for a single wave of settlement in east Polynesia beyond the Societies, including the most remote islands.7 What this rapid colonization theory implies for the development of Eastern Polynesian languages is that all language groups settled on their respective islands at about the same time, which does not allow sufficient time for development of the primary EP subgroups. This renews interest in the strength of data for the EP subgrouping, and pushes the linguist to reevaluate how compelling the evidence for the current tree model is. This is not to say that a change in our linguistic perspective is needed in order to support the archaeology. The archaeological data simply prompt the linguist to reconsider...

6. Cf. Wilson (2012) for a more in-depth discussion on the possibilities for an EP homeland.
7. It is critical to note that Wilmshurst et al.'s shorter chronology (later dates) is not fully accepted by all archaeologists. There has been some debate among archaeologists as to the precise dates of initial settlement in east Polynesia (namely Kirch et al. 2010; Molle and Conte to appear); and there is further debate as to where the first settlement may have been (Molle and Conte to appear). Regardless of exactly when and where archaeologists believe first settlement to have occurred, they do tend to agree on a rapid colonization of the settlement of the east Polynesian region. Thus, the linguistic issue persists regarding the strength of the Eastern Polynesian subgroups (CEP, Marquesic, and Tahitic).
why there are differences in conclusions between the two fields, and to more closely examine linguistic theory in light of new developments in other fields. It is only through careful reevaluation of primary data in such revised contexts that we as linguists can argue for our position, or change our perspectives.

4. RECONSIDERING EASTERN POLYNESIAN SUBGROUPING. This section will address the defining characteristics of PCEP, Proto-Marquesic (PMQ), and Proto-Tahitic (PTA), as outlined by Green (1966, 1985) and later discussed by Marck (1996, 2000). I will first outline the shared features proposed for each group, focusing on shared innovations, then discuss the weight of each group’s shared features. The following subsections will refer to regular sound changes thought to define these groups. Table 1 represents the regular sound changes that occurred from Proto-Polynesian (PPN) to PCEP, adapted from Marck (2000:24–26). This table also shows the sound changes proposed for the further developments within CEP. The shaded areas are the subgroups that I have found to be in general question. 8

4.1 PROTO-CENTRAL EASTERN POLYNESIAN. Green (1966) originally outlined two lexical innovations and one “major phonological” innovation defining PCEP (1966:17–18). The two lexical innovations were *tahito ‘old, ancient’ and *kite ‘to know, understand’. PCEP *kite appears to be a solid innovation, not found in Rapa Nui, and attested in the Eastern Polynesian languages in table 2.9

PCEP *tahito is actually a semantic innovation, where meaning shifted from Proto-Polynesian *tafito ‘base of a tree; foundation, origin, beginning, root, basis’ (Greenhill, Clark, and Biggs 2012) to PCEP *tahito ‘old, ancient’. This innovation proves equally as strong as PCEP *kite, as there are reflexes of PCEP *tahito meaning ‘old, ancient’ found in all Eastern Polynesian languages other than Rapa Nui, as shown in table 3. Rapa Nui does show a form tahito (Fuentes 1960). However this is clearly a reflex of PPN *tafito, as its meaning is ‘base of a tree’.

8. Abbreviations of protolanguage names used here and elsewhere are PPN, Proto-Polynesian; PEP, Proto-Eastern Polynesian; PCEP, Proto-Central Eastern Polynesian; PMQ, Proto-Marquesic; PTA, Proto-Tahitic. Abbreviations of language names are HAW, Hawaiian; MAO, Māori; MQS, Marquesan; RAR, Rarotongan; RPN, Rapa Nui; TAH, Tahitian; TUA, Tuamotuan.

9. Unless otherwise indicated, all Hawaiian forms cited are from Pukui and Elbert (1986); Mangarevan from Rensch (1991); Māori from Ryan (2008); Marquesan from Dordillon (1904); Rapa Nui from Fuentes (1960); Rarotongan from Buse and Taringa (1995); Tahitian from Fare Vana’a (2012); Tuamotuan from Stimson and Marshall (1964).
Green’s “major” phonological innovation is actually two distinct innovations, as was further described by Biggs (1978:711) and Marck (2000:25): (1) PEP *f merges with *s medially and before round vowels as PCEP *h, and (2) PEP *f merges with *w word-initially before PCEP *ah. The result of both changes is illustrated in table 4, adopted from Marck (2000:25).

Table 5 further demonstrates these phonological changes through the modern CEP reflexes of PCEP *waha, *wahie, *wahine, and *waho. To show contrast, forms with the same meaning in Rapa Nui have also been listed in table 6.

Marck (2000:132) further argued for a Central Eastern Polynesian subgroup by demonstrating uniquely shared sporadic consonant and vowel changes in PCEP. Of his six changes, I find five that provide strong evidence of sporadic change. These appear in table 7, adapted from Marck (2000:132). Table 8 shows the reflexes of these changes in EP languages.

Marck’s other sporadic sound change is not very convincing. He argued that PEP *kumi ‘strangle’ changed to *kumu in PCEP. Marck’s analysis is problematic because not a single CEP language demonstrates this change. To the contrary, I have found that

| TABLE 2. REFLEXES OF PCEP *kite ‘TO KNOW, UNDERSTAND’ |
|---------------------------------|
| Hawaiian | Marquesan | Mangarevan | Rarotongan | Tahitian | Tuamotuan | Māori |
| ‘ike | ‘ite | kite | kite | ‘ite | kite | kite |

| TABLE 3. REFLEXES OF PCEP *tahito ‘OLD, ANCIENT’ |
|---------------------------------|
| Hawaiian | Marquesan | Mangarevan | Rarotongan | Tahitian | Tuamotuan | Māori |
| kahiko | pakahio | ta’ito | tahito | tahito | tawhito |

Table 4. PEP *fafa- TO PCEP *wah- CORRESPONDENCES

| PEP | PCEP | Gloss |
|-----|------|-------|
| *fafa | *waha | ‘carry on back’ |
| *fahie | *wahie | ‘firewood’ |
| *fahine | *wahine | ‘woman’ |
| *faho | *waho | ‘outside’ |

| TABLE 5. REFLEXES OF PCEP *wah- |
|---------------------------------|
| Hawaiian | Marquesan | Mangarevan | Rarotongan | Tahitian | Tuamotuan | Māori |
| carry on back | waha | — | — | — | vaha | waha |
| firewood | wahie | vehie | ve’ie | va’ie | vahie | — |
| woman | wahine | vehine | ve’ine | va’ine | vahine | wahine |
| outside | waho | vaho | va’o | va’o | vaho | waho |

| TABLE 6. FORMS IN RAPA NUI |
|---------------------------|
| Gloss | Rapa Nui |
| carry on back | ha’a |
| firewood | huka |
| woman | bahine |
| outside | haho |
nearly all of the CEP languages show some reflex of PEP *kumi: Mangarevan *kukumi, Hawaiian *'umi, Marquesan *kukumi, Rarotongan *kukumi (Savage), Tuamotuan *kukumi.

Finally, Green (1985:12) outlined nine grammatical innovations that Marck echoed in 1996. These are: *tei ‘present position’; *ina(a) fea ‘when?’, *le(’)ila ‘there, aforementioned place’; *noo/naa ‘possessive particle’; *me ‘and, with, plus’; *taua ‘that aforementioned’; *aanei ‘interrogative’; *vai ‘who’; and *vau ‘1st person singular’. Table 9 shows reflexes of these in CEP languages and indicates that they are all fairly well attested.

Green (1985:15) and Green and Kirch (2001:270–71) provided three more innovations for names of seasons or months: *pipiri ‘June–July’, *serefu ‘March–April’, and *(f,s)iŋaia ‘December–January’. Unfortunately, the precise meanings of these ‘innovations’ are not as easily defined as Kirch and Green claimed, and since the attestations in modern CEP languages are limited, these are not strong evidence for subgrouping. Only *pipiri has multiple reflexes in CEP languages, and these vary in meaning: Mangarevan

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**Table 7. Sporadic Sound Changes in PCEP**

| PEP | PCEP | Gloss |
|-----|------|-------|
| *ŋuu-feke | *muu-feke | ‘squid’ |
| *ŋau | *nahu | ‘chew, bite’ |
| *faahua | *paahua | ‘Tridacna (giant clam)’ |
| *kai | *koi | ‘sharp’ |
| *kau-natu | *kau-nati | ‘fire-plow’ |

**Table 8. Reflexes of PCEP Sporadic Changes**

| Language | Hawaiian | Marquesan | Mangarevan | Rarotongan | Tahitian | Tuamotuan | Māori |
|----------|----------|-----------|------------|------------|----------|-----------|-------|
| squid | mu:he’e | muheke | — | muu’ekte | — | muheke | ngūheke |
| chew, bite | nahu | nahu | nga’u | — | ahu | ngahu | ngau |
| large mollusk | pāpaua | pahua | pa’ua | paa’ua | pahua | pahua | — |
| sharp | ‘oi | koi | koi | koi | ‘oi | koi | koi, koikoi |
| fire-plow | ‘aunaki | kounati | kounati | — | aunati | kaunati | kaunati |

**Table 9. PCEP Grammatical Innovations†**

| Language | Hawaiian | Marquesan | Mangarevan | Rarotongan | Tahitian | Tuamotuan | Māori |
|----------|----------|-----------|------------|------------|----------|-----------|-------|
| present | ināhea | ine hea | ‘ea | ina’ea | nahea | inaheea | āhea |
| when | laila, leila | ei’a | reira | reira | reira | reira | reira |
| there | no, na | na | no, na | no, na | no, na | no, na | nō, nā |
| POSs | me | me | me | — | — | me | me |
| and, with, plus | — | — | — | taua (S) | taua | taua, ua | taua |
| that, afore. | ua | — | — | taua (S) | taua | taua, ua | taua |
| interrogative | aanei | auanei | — | — | ānei | aeni | — |
| who | wai | ai | ‘ai | vai | ai | wai |
| I, me | au, wau | au | au | (S) | vau, au | vau, au | au |

† The symbol (S) after some Rarotongan forms indicates that the source is Savage, not Buse and Taringa.
pipiri ‘June’ (Janeau), Māori pipiri ‘June’, Rarotongan pipiri ‘season September to November’ (Savage), Tahitian pipiri ‘February’ (POLLEX), Tuamotuan pipiri ‘a month, October to January’. Of the other two forms, *(f,s)iŋaia is attested in Tahitian hiai’a ‘September–October’ and Hawaiian hinaia ‘July–August’ (Handy and Handy), while *serefu is attested only in Tahitian, rehu ‘third month of the year’.

Green also provided five PCEP innovations for phases of the moon: *tu: ‘one night in the first period of moon’; *funa ‘middle period night’; *maraŋi ‘middle period night’; *tangaloa ‘third period night’. These also do not have any specific gloss in Green’s interpretation, but they are again, according to Green, unattested in Rapa Nui. These moon phase forms are questionable, since there are no attestations found in Rapa Nui, and infrequent attestations in other EP languages. Only *tu:, *turu, *funa, and *tangaloa have reflexes in more than one modern CEP language. PCEP *tu: > Hawaiian ku: ‘3rd, 4th, 5th, and 6th days of the month’ (Pukui and Elbert); *turu: > Māori turu ‘moon on the 14th night’, Rarotongan turu ‘sixteenth night of the moon’, Tahitian turu ‘seventeenth night of the moon’ (Henry); *funa > Hawaiian huna ‘eleventh night of the month’, Mangarevan una ‘twelfth night of the moon’, Marquesan huna ‘phase of the moon’, Māori huna ‘moon on eleventh night’, Rarotongan ‘unaa ‘tenth night of the moon’s age’ (Savage), Tuamotuan huna ‘thirtieth night of the lunar cycle’; *tangaloa > Mangarevan tagaroa ‘twenty-seventh night of the moon’, Marquesan takaaoa ‘phase of the moon’, Māori tangaroa ‘a night of the moon’, Rarotongan tangaroa ‘series of moon nights, 22nd to 24th’, Tahitian, takaroa-tahi ‘twenty-fourth night of the moon’ (Henry).

Overall, the features that have been historically described to define the Central Eastern Polynesian subgroup are still compelling. In spite of some exceptions, there remain regular sound changes, semantic innovations, and morphological innovations establishing PCEP as a separate speech group from Rapa Nui. However, as will be shown in section 7, the shared features of CEP languages may be products of continuous contact and diffusion after the settlement of east Polynesia rather than innovations developed in isolation, which suggests that PCEP may have been a language community with a wide geographic dispersal.

4.2 PROTO-MARQUESIC AND PROTO-TAHITIC. The rationales for the Marquesic and Tahitic subgroups are generally viewed as weaker than those for CEP and, as a result, in defining them there has been a history of wavering and extensive qualifications for anomalies or weaker pieces of evidence. Even Green, who originally proposed these subgroups, stated that the linguistic basis for them was “not particularly strong” (1966:18). This same sentiment was echoed by Marck, who wrote that “many of the innovations originally described for PMQ must now be rejected” (1996:501). Four years later, he said that “what we reconstruct as Proto-Marquesic and Proto-Tahitic may only be dialect differences between varieties of Central East Polynesian” (Marck 2000:138–39), noting that in general the language groups are not very different. Despite these problems, Marck and Green maintained the existence of the Tahitic and Marquesic subgroups and defined them based on regular sound changes, sporadic sound changes, and lexical innovations. In comparing their evidence with the primary source data, it becomes clear that their definition is limited to isolated sporadic vowel changes that are
not represented in all members of the given subgroups, making it insufficient for subgrouping purposes. I will first address regular sound change, followed by sporadic sound change, and then finally lexical innovations.

4.2.1 Regular sound change. While Biggs (1978:711) remarked that neither subgroup is marked by any regular consonant changes, Marck (2000:24–25) showed that PTA retained PCEP *s, while PMQ reduced it to *h. This change is not convincing for one main reason: the only retention of PTA *s is found in Penrhyn, in the Northern Cook Islands (Marck 2000:45; Greenhill, Clark, and Biggs 2012). All other “Tahitic” languages reduced *s to h (Marck 2000:45), and in one case, Rarotongan, PCEP *s reduced to glottal stop, though this likely was a further change after the reduction of *s to h. In “Marquesic” languages, all but Mangarevan reduced PCEP *s to h as well. Mangarevan demonstrated a similar change of PCEP *s to glottal stop which, like Rarotongan, likely was a further change after the reduction of *s to h. Because of the general regularity of PCEP *s reducing to h in CEP languages, the retention of *s as s in Penrhyn cannot be evidence of a group-wide phonological retention for “Tahitic” languages, but rather a retention of PCEP *s in one PCEP daughter language. My data, therefore, agree with Biggs, and I argue that no regular sound change can be found to define either of these subgroups. Table 10, taken from Marck (2000:45),10 shows examples of this change throughout CEP languages.

4.2.2 Sporadic sound changes. Marck, in 2000, argued for six sporadic changes in PMQ and ten sporadic vowel changes in PTA. These are outlined below in tables 11 and 12, taken from Marck (2000:133–34).

In PMQ, five of the six changes are problematic: the protoforms *tu-ŋaane ‘woman’s brother’, *hele ‘go, walk’, *muko ‘growing tip’, *teiti ‘child’, and *to-kete ‘ego’s same-sex sibling’. Use of *tu-ŋaane as evidence is debatable because reflexes show up in two “Tahitic” languages: in Māori as tungane (Ryan) and in the Tuamotus as tungane (Stimson and Marshall). PMQ *hele is controversial, as Moriori evidences here ‘advance, go’ (Greenhill, Clark, and Biggs 2012). PMQ *muko is found in the Tuamotuan dialects as muko ‘young shoot of a plant’ and also as muko ‘edible core of new growth at base of

| TABLE 10. PCEP *s REFLEXES |
|---------------------------|
| PCEP | *sae | *see | *sii | *so | *suaki |
| Hawaiian | hae | — | hii | honi | hua’i |
| Marquesan | (ka)hae | hee | (ika)hii | hoki | huai |
| Mangarevan | (‘ae)ae | — | ‘ii | ‘ogi | — |
| Māori | hae | hee | hii | hongi | hua |
| Penrhyn | sae-sae | — | sii-sii | — | — |
| Rarotongan | (‘ae)ae | ‘ee | ‘ii | ‘ongi | ‘uaki |
| Tahitian | (hae)hae | hee | hii | ho’o | hua’i |
| Tuamotuan | hae | hee | — | hongi | huaki |

10. In Marck’s table, double vowels represent long vowels. I have maintained this in tables with data taken directly from his 2000 book (tables 11, 10, and 12) in order to be consistent with his conventions.
young pandanus leaves’ (Greenhill, Clark, and Biggs 2012). PMQ *teiti I have found to be represented in Rapa Iti as teiti ‘baby’ (field notes, 2013). Additionally, PMQ *to-kete is found in Penrhyn tookete ‘brother-in-law’ (Greenhill, Clark, and Biggs 2012).

In PTA, I find all but two to be questionable changes: *kimi ‘seek’, *nono ‘plant sp.’ *tahuŋa ‘priest’, *waele ‘weed, clear away scrub’, *aruhe ‘fern sp.’, *matie ‘grass’, *toŋa’amimi ‘bladder’, and *tokomauri ‘hiccup’. PTA *kimi is disputable because nearly all EP languages appear to have reflexes of this; however, they are more likely reflexes of PPN *kimi (table 13). In fact, there is no evidence in any forms for ‘seek’ that support a reconstructed form *kumi for PCEP. Similarly, PTA *nono is found in two of the three Marquesic languages, Marquesan and Mangarevan: nono ‘odorous plant’ and ‘small tree’, respectively. PTA *tahuŋa and *waele are problematic because Hawaiian, one of the three modern Marquesic languages, also shows these changes: kahuna and waele (Pukui and Elbert). Marck claimed this is due to a borrowing from Tahitian (2000:134); however, as Marck concludes himself (2000:117), based on the limited membership of Marquesic and lack of description for those few members, there is no way to be certain if such terms are truly borrowed from PTA or inherited from PCEP. PTA *aruhe and *matie are evident in Mangarevan: amu’e ‘fern’ and mātī ‘green’ (Greenhill, Clark, and Biggs 2012). PTA *tokomauri is suspect because of Hawaiian mauli-awa ‘hiccup’.

Finally, there is evidence against a PTA reconstruction *tonjaamimi ‘bladder’. Attirning *tonjaamimi to PTA would require a Tahitic language to show only sporadic vowel change a > o. This is not observed: Hawaiian has retained only the mīmī portion of the PCEP form *tāna-amimi, and so cannot provide any evidence; and Mangarevan and Marquesan exhibit tungamimi and tu’umimi, respectively, for ‘bladder’ (Greenhill, Clark, and Biggs 2012). Based on natural sound change, it seems more likely that Mangarevan and Marquesan would have gone through a mid-step change a > o (resulting in

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**TABLE 11. SPORADIC SOUND CHANGES IN PROTO-MARQUESIC**

| PCEP     | PMQ   | Gloss                  |
|----------|-------|------------------------|
| *haere   | *here | ‘go, walk’             |
| *muka    | *muko | ‘growing tip’          |
| *taiti   | *teiti| ‘child’                |
| *tao-kete| *to-kete| ‘ego’s same-sex sibling-in-law’ |
| *tokelau| *tokolau| ‘north’               |
| *tua-ŋaane| *tu-ŋaane| ‘woman’s brother’       |

**TABLE 12. SPORADIC SOUND CHANGES IN PROTO-TAHITIC**

| PCEP     | PTA   | Gloss                  |
|----------|-------|------------------------|
| *kumi    | *kimi | ‘seek’                  |
| *urufe   | *aruhe| ‘fern species’          |
| *katafa  | *koataha| ‘bird’s nest fern’    |
| *rimu    | *remu | ‘moss, seaweed’         |
| *mutie   | *matie| ‘grass’                 |
| *nonu    | *nono | ‘plant species’         |
| *taŋa-amimi| *tonjaamimi| ‘bladder’      |
| *toko-mauru| *tokomauri| ‘hiccup’              |
| *tuhuŋa | *tahuŋa| ‘priest’                |
| *wele    | *waele | ‘weed, clear away, scrub’ |
something like *toŋaamimi), rather than directly changing a to u. As a result, both Marquesic and Tahitic languages would have shared the sporadic a > o change from PCEP. Suffice it to say that, if all the CEP languages underwent this change, it cannot be treated as a PTA innovation, and, thus, cannot be used as a criterion for a Tahitic subgroup. It would be more accurate to reconstruct *toŋaamimi as a PCEP innovation from PEP, given that Rapa Nui retains PEP *taŋaamimi.

Marck also noted two other sporadic sound changes for PTA in his 1996 discussion: *ŋahuru ‘base ten’ and *ki: ‘full’. He wrote that there is a reduction of PCEP *aŋafulu to *ŋahuru in PTA (1996:505). An exception to this is found in the “Tahitian” language Tuamotuan, where ‘ten’ is angahuru (Stimson and Marshall). The form *ki: is reported as a PTA innovation for ‘full’, contrasting with reflexes of *pi: attested in “Marquesic” languages, and marking a change from PCEP *pi: ‘full’ (Greenhill, Clark, and Biggs 2012): Tahitian *iː; Rarotongan kiː (Savage), Tuamotuan kiː; Māori kiː; Mangarevan piː; Marquesan piː; and Hawaiian piha. This list appears to support Marck’s claim; however, Marquesan also has a kiː form potentially cognate with the Tahitic languages, meaning ‘very much’. The fact that there is a cognate form with a close semantic relationship in a Marquesic language does not make the sporadic change from PCEP *pi: to PTA *kiː strong evidence in and of itself.

4.2.3 Semantic innovations. Marck (1996:503) listed three semantic innovations for PMQ: *pana, *paki-uma, and *mano, claiming that *pana is a semantic innovation for ‘bow’ from PCEP *pana ‘under tension’. However, the meaning of ‘bow’ can be reconstructed for Proto-Polynesian *pana (Greenhill, Clark, and Biggs 2012), and a meaning related to ‘bow’ can be reconstructed as far back as Proto-Austronesian (PAN): PAN *panaq. As is demonstrated by Blust and Trussel (ongoing) in the Austronesian comparative dictionary, PAN *panaq has ‘bow’ reflexes in many languages well outside of east Polynesia. It follows that Marck’s claim for a PMQ innovated *pana is better viewed as a reflex of PAN *panaq, and, therefore, provides no evidence for subgrouping.

PMQ *paki-uma is attested in Hawaiian as ‘chest-slapping hula’ and in Marquesan as ‘type of game that involves slapping the chest’. However, I fail to see the isolated PMQ innovation here, as Marck (1999:502) also reported a possible reflex in Māori meaning ‘chest-slapping’. Furthermore, while the compound meaning may be isolated to Marquesan and Hawaiian, the two individual components, paki and uma, can be reconstructed much further back than PMQ. The form *paki, meaning ‘to slap or clap’, can be reconstructed for Proto-Oceanic (Greenhill, Clark, and Biggs 2012), and as far back as PAN *pakpak (Blust and Trussel ongoing). Additionally, nearly all EP languages have similar forms for ‘chest’ that appear to be directly cognate: Rapa Nui uma ‘breast, breast of fowl’, Hawaiian uma ‘muscles of the upper chest’, Mangarevan uma-vakavaka ‘center of chest’, Marquesan uma ‘chest’, Māori uma ‘chest’, Rarotongan uma ‘breast, chest, bosom’, Tuamotuan uma ‘chest of turtle’. These widespread cognates support PEP *uma

| TABLE 13. EP REFLEXES OF PPN *kimi ‘SEEK’ |
|------------------------------------------|
| to seek   | RPN | HAW | MQS | MAO | RAR | TAH | TUA |
|------------|-----|-----|-----|-----|-----|-----|-----|
| kimi      | ‘imi’ | imi | kimi | kimi | ‘imi’ | kimi | kimi |
'chest'. It would not be particularly unusual for people to have combined these words already in use by the time of the Hawaiians and Marquesans, and this is, therefore, not convincing evidence for a Tahitic subgroup.

Finally, PMQ *mano was reported by Marck to be a semantic innovation for 'four thousand', attested in Marquesan and Hawaiian (1996:502). According to Greenhill, Clark, and Biggs (2012), however, 'four thousand' is only found in the Northwest Marquesan dialect. In the Southeast dialect of Marquesan, mano means 'two thousand'. *Mano also means ‘two thousand’ in another Marquesic language, Mangarevan. Furthermore, in the data available for Tuamotuan dialects, regularly classified by linguists as Tahitic, the ‘two thousand’ meaning is noted.

With regard to semantic innovation in PTA, Marck (1996:505) listed *koura ‘crayfish’ and *tufa ‘spit’, neither of which can be demonstrated in the source data. In a comparison of all EP terms meaning ‘crayfish, prawns, shrimps’, it is clear that *koura is more likely a PEP innovation, not a PTA innovation, and can, therefore, be ruled out as evidence for the proposed subgroup: Rapa Nui kōura ‘flea; small insects in general’, Mangarevan ōura ‘crayfish’, Marquesan koua ‘lobster’, Maori kōura ‘crayfish’, Rarotongan koura ‘crayfish’, Tahitian ōura ‘shrimp or lobster’, Tuamotuan kooura ‘crayfish, rock lobster’. The form *tufa meaning ‘to spit’ actually has reflexes in Hawaiian kuha and Marquesan tufa. These attestations in “Marquesic” languages, thus, rule it out as evidence for a Proto-Tahitic innovation.

5. DISCUSSION OF SUBGROUPING ANALYSIS. As was detailed in section 4, the shared features of CEP languages show that these languages shared a period of common development, but not for PMQ and PTA. According to this reanalysis, phonological evidence is not satisfactory for either PMQ or PTA, and lexical evidence is equally unconvincing. This analysis shows, then, that PMQ is defined by only one sporadic sound change, and PTA is defined by only two sporadic sound changes. This raises the question: are these features strong enough to clearly define a subgroup? Certainly, shared sporadic sound change should not be discounted; however, in this case, these shared features are so few and are of weak quality. They are (a) limited to single vowel changes, and (b) unattested in all Marquesic or all Tahitic languages—which raises questions about the discreteness of these proposed subgroups.

Strong evidence against the Tahitic and Marquesic subgroups arises in the Tahitic forms that emerge in Marquesic languages, and vice versa (cf. section 5.2). These cross-subgroup similarities have been explained away by linguists as “borrowings.” However, the grounds on which they have been classified as loans seem uncertain. As Wilson (2010:292) stated, “if the languages involved in the borrowing are closely related and have the same, or highly similar phonologies and grammars, detecting borrowing is extremely difficult.” The most notable of these “borrowings” are from Tahitic languages into Hawaiian. Marck (2000) wrote that there are 219 shared PCEP lexical items between PTA and Hawaiian that are not shared with the other two Marquesic languages. Such borrowings represent a major indeterminacy in EP subgrouping, as a large number

11. Likely a semantic change originating in Rapa Nui during its development independent of the Central Eastern group.
of shared lexical items have been arbitrarily disregarded as loans. Furthermore, as discussed at length in Wilson (2010), the uniquely shared lexical items between Tuamotuan and Hawaiian outnumber those between Hawaiian and any member of the Marquesic subgroup. Wilson (2010:291) states that “under a strict subgrouping scheme Hawaiian could be easily ‘Tuamotuic’ with Marquesic borrowings as Marquesic with Tahitic borrowings.” Wilson does not mean to suggest that there is a Tuamotuic subgroup; however, his presentation and analysis of the significant shared lexical items between Tuamotuan and Hawaiian does demonstrate that traditional subgrouping may not be an appropriate way to view CEP languages.

Further linguistic evidence against the classification of Marquesic and Tahitic languages comes from Ray Harlow, who noted some dialects of Māori that contain features “peculiar to Marquesic languages” (1994:117; 2012:52–55), though Māori is considered a Tahitic language. Marck echoed this opinion, stating that there could be support for “linguistic inputs from Marquesic as well as Tahitic.” These inputs appear to be both phonological and lexical, and provide strong evidence against Māori as either a Tahitic language or a Marquesic language.

What these borrowings and dialectal inputs suggest is not evidence for occasional membership in a subgroup, but rather diffused features stemming from continued contact between particular island groups. In reality, these qualifications may come from assumptions about the historical validity of the Tahitic and Marquesic subgroups, in order to accommodate the long-held conclusions concerning east Polynesian settlement. Given the weakness of the evidence, I suggest that there was neither a Proto-Marquesic nor a Proto-Tahitic language, and that the branches of PCEP developed via spheres of contact. I propose a new EP language tree that retains the CEP subgroup based on some compelling shared features, but eliminates the Tahitic and Marquesic subgroups. This new tree, as shown in figure 2, separates Rapa Nui from all other Eastern Polynesian languages and allows it to have developed in isolation, while the CEP languages developed out of

FIGURE 2. PROPOSED NEW TREE FOR EASTERN POLYNESIAN

[Diagram showing the proposed new tree for Eastern Polynesian languages]

12 Some examples of Harlow’s evidence include: (1) Māori taumaha ‘heavy’ is cognate with Hawaiian kaumaha; (2) a form in South Island Māori for ‘bite’, kakahu, is cognate with Northern Marquesan kakahu, Southern Marquesan nanahu, and Mangarevan ŋaŋa ‘u; (3) the South Island Māori term for ‘fish sort’, rewa, is cognate with Marquesan ‘eva; (4) a Northern Māori term for ‘twist into string’, firo, is cognate with Mangarevan hiro, Marquesan hi‘o, and Hawaiian hilo (Harlow 1994:115–16); (5) merger of *n and *ŋ to /ŋ/ in the Bay of Plenty corresponds with both Hawaiian and southern dialects of Marquesan (Harlow 2012:53).
continued waves of contact, due to high mobility between island groups that diffused features based on spheres of interaction, and stretched as far as New Zealand and Hawai‘i.

6. SPHERES OF CONTACT. What this simplified linguistic tree implies is that, after initial settlement, for several generations there was regular contact among all of the islands of east Polynesia, except Rapa Nui. This would account for how the shared innovations of PCEP are distributed. This contact-based model for language development, rather than a clean-cut subgrouping model, is not a new idea in Polynesian linguistics (Pawley 1996; Wilson 2010), and is, furthermore, well supported in other fields of study. Gray, Bryant, and Greenhill (2010) use a phylogenetic approach to assess the genetic relationship of Polynesian lexical data. Their results demonstrate a “network” where the languages of EP seem to be evenly spread out and “do not form clean clusters” (2010:3928). This indicates a “conflicting signal” in the data, thus not supporting well-defined Marquesic and Tahitic subgroups. Oral histories from Hawaiian and Māori traditions also strongly indicate continued two-way voyaging from Aotearoa (New Zealand) and the Hawaiian Islands to other island groups (Finney 1994; Cachola-Abad 1993; among others).

Archaeological findings provide considerable support for contact spheres in both the central part of east Polynesia and the outer island groups, including Hawai‘i and the Australs. Kirch (2000:244) wrote that “[the archaeological findings] suggest that the central-east archipelagos were in regular communication during the earlier prehistoric period.” Evidence of even broader contact spheres, connecting all parts of east Polynesia, is extensive (Barnes, Matisoo-Smith, and Hunt 2006; Hermann, Maury, and Liorzou 2012; Rolett 2002; Turner 2000; Weisler 1994, 1998; Weisler and Kirch 1996; among others), and provides evidence that following settlement, inter-archipelago voyaging continued, “resulting in the establishment of an interaction sphere linking inhabited islands” (Walter 1996:524). This is indicated by evidence of raw materials that were passed between both local and distant communities. Most recently, Hermann, Maury, and Liorzou (2012) have suggested that stone tools found in Tubuai, in the Austral island archipelago, were made from basalt rock that was sourced some 2000 km away in Eiao, in the Northern Marquesas. Collerson and Weisler (2007) provided evidence suggesting contact between Hawai‘i and the Tuamotus, through tracing unique stone material in Tuamotuan tools to a distinctly Hawaiian origin. They wrote, furthermore, that Tuamotuan tools indicate contact with the Societies, Marquesas, Pitaaim, and the Australs, demonstrating a large interaction sphere that connected many east Polynesian language and culture groups. Weisler (1998) also provided evidence for long-distance interaction between the greater island groups of east Polynesia, again based on the movement of stone tools that can be sourced to a specific location: “the radio carbon dates clearly associated with two Eiao artifacts exported to the Societies and Mangareva and inter-archipelago interaction models based on detailed sourcing studies from the Cooks and the Mangareva-Pitaaim interaction sphere clearly demonstrate that long-distance inter-archipelago interaction continued long after colonization” (Weisler 1998:529).

But what of Rapa Nui? The linguistic evidence summarized in 4.1 for a CEP subgroup separate from Rapa Nui remains persuasive. Moreover, there is little in the realm of oral
history or archaeological history that leads to an inclusion of Rapa Nui in these exchange networks or that suggests ongoing contact with any other east Polynesian islands, at least not to the extent of the rest of east Polynesia. As Kirch and Green astutely recognize on both linguistic and archaeological grounds, “it is doubtful that Rapa Nui was ever connected with the central-east Polynesian core area by regular two-way voyages” (2001:80).

The continuation of voyaging after initial settlement demonstrates high mobility and significant local and long-distance interaction. This not only supports the theory that the languages descended from PCEP were developed in contact, but it also allows for a clearer picture of what east Polynesian settlement may have looked like. Furthermore, lack of any historical evidence of regular contact with Rapa Nui supports the theory that PCEP developed as a wide-ranging interaction sphere, with Rapa Nui developing in isolation.

7. CONCLUSION. Through reanalysis of the major branches proposed for EP, it is evident that a new approach to EP linguistic relationships needs to be adopted that eliminates the Tahitic and Marquesic subgroups, but still allows for the formation of PCEP as a result of waves of contact. The Tahitic and Marquesic subgroups were based on weak evidence in an attempt to accommodate a long-standing model of settlement derived from both linguistics and archaeology that involved substantial pauses of protolanguage communities and multiple centers of dispersal. The linguistic tree offered here independently suggests that the majority of the Eastern Polynesian languages were developed in contact situations, with only Rapa Nui really developing in isolation. In this way, both long-ranging and local spheres of interaction allowed the languages descended from PCEP to form shared characteristics separate from Rapa Nui.

This revised linguistic tree may be viewed as unconventional, as it does not allow for internal grouping of CEP languages. However, the new tree allows for a more fluid interpretation of language development in east Polynesia, one that more accurately mirrors east Polynesian’s history of contact and exchange. Finally, the revised subgrouping proposed here demonstrates the value of interdisciplinary checks and balances for linguists, archaeologists, and other historical scientists.

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