

LINGUISTIC AND ARCHEOLOGICAL TIME DEPTH IN THE WEST INDIES

DOUGLAS TAYLOR

DOMINICA, B.W.I.

AND

IRVING ROUSE

YALE UNIVERSITY

0. Introduction

1. Time depth of Island Carib

2. Archeological correspondences

0. In a recent symposium on "Time Depth of American Linguistic Groupings," Swadesh¹ published a date for the separation of the Dominican and Lokono languages of the Arawakan stock based on a word count by Taylor. The following is a revision of this date by Taylor (1) and a consideration of its archeological significance by Rouse (2), together with some discussion of the question of migrations into the Antilles, which developed as a by-product of the dating problem.

1. It is here assumed—but can, I am convinced, be proved—that the language of the historical, so-called Island Carib is Arawakan, and almost as closely related to Lokono or True Arawak of the present time as is Roumanian to French.² It is further assumed that this language is a continuation of the one spoken by the 'Igneri' or pre-Carib-conquest inhabitants of the Lesser Antilles, whose womenfolk were spared, according to seventeenth-century tradition and in all likelihood, to become wives of the conquerors and mothers of subsequent generations of 'Island Caribs.'³ French missionaries writing in the middle of the seven-

teenth century tell us that the same language was spoken in all the islands then inhabited by this people; from which we may at least conclude that dialectal differences were not so great as to preclude mutual intelligibility. At the end of the eighteenth century this language was taken to Central America by some five thousand 'Black Carib' deportees; and is spoken there today by about six times that number of individuals.⁴ In the Lesser Antilles it lingered on only in St. Vincent and Dominica, where it became extinct about 1920. Apart from the modern Central American dialect, only two records of this language are known to be extant: one, fairly full, dating from the middle of the seventeenth century;⁵ the other, very sketchy, from the end of the nineteenth century; both made in Dominica.⁶

Phonetically, the Dominican dialect—even in its most recent stage—was much closer to modern Lokono than is that spoken by the present-day Black Caribs; and for that reason I at first employed it when seeking to estimate by means of lexical statistics the length of time that must have elapsed since Lokono and Island Carib were one and the same language. However, there are

⁴ Douglas Taylor, *The Black Carib of British Honduras*, VFPA 17 (1951).

⁵ Raymond Breton, *Dictionnaire Caraïbe-François . . .*, édition facsimile Jules Platzmann (Leipzig, 1892); *Dictionnaire François-Caraïbe . . .*, édition facsimile Jules Platzmann (Leipzig, 1900); and *Grammaire Caraïbe suivie du catéchisme Caraïbe*, nouvelle édition, L. Adam et Ch. Leclerc (Paris, 1878).

⁶ Joseph Numa Rat, *The Carib Language as now spoken in Dominica, West Indies*, JRAI 27.293-315 (1898).

¹ Morris Swadesh, *Time Depth of American Linguistic Groupings*, AA 56.361-4 (1954).

² C. H. de Goeje, *Nouvel examen des langues des Antilles . . .*, JSAP 31.1-20 (1939); reviewed by Taylor in IJAL 17.257-9 (1951).

³ Douglas Taylor, *Diachronic Note on the Carib Contribution to Island Carib*, IJAL 20.28-33 (1954).

several disadvantages in using an extinct language for such a purpose; one cannot possibly obtain a word missing from the record, or decide which of two apparent synonyms was the commoner. So, for example, confronted with the item *fall* of Swadesh's basic word-list, I could find nothing in the record of recent Dominican to match with Lokono *atikida*; while Breton's seventeenth-century dictionaries offered an embarrassing wealth of different equivalents employed in different contexts, among which two seemed to be equally 'basic': *áikua* and *atíkera*. So that, although the latter is obviously cognate with the Lokono word, this item had to be dropped from the list because there was no indication that it was the commoner of the two, or differed from the former in meaning, as for example *tumble* differs from *drop*. Since the living dialect offers only one word, *áigua*, this item has been included in the list, and scores a MINUS.

Nevertheless, instead of a cognate ratio of 62/146, as reported by Swadesh,⁷ I now get a ratio of 72/154, or 46.75%, which indicates a time depth of 18 (instead of 21) centuries. The English words whose Lokono and Island Carib equivalents are matched all appear in one or another of Swadesh's test-lists; but as these call for 200 items, and as Lokono data are still not abundant, I have included some items that do not appear in all of them. Even so, I can match only 186 pairs; and for greater precaution 32 of these have been queried and omitted from the count. Such precaution seems advisable wherever the evidence for cognation remains inconclusive one way or another, and wherever there is uncertainty as to usage. So, for example, apart from the pair *vomit* *ereda* : *euéra*, I can find no support for the existence of an r : u correspondence, though there is plenty of proof that d : r is regular; while in such a case as that of the words for *cut*, Island Carib (and prob-

ably Lokono) has a number of different terms whose employment depends on whether the cutting is done with a knife, scissors, an ax, etc.

As Swadesh⁸ has been careful to point out, the results that have already been obtained from lexico-statistical dating, although distinctly encouraging, must still be regarded as provisional in greater or lesser degree. So far as languages with little or no written history are concerned, there appears to be a real danger of over-estimating time-depths through failure to recognize actual cognates as such. For it cannot be supposed that the Indo-European family of languages is unique in containing such divergent products of phonetic change as (Russian : English) *jazík* : *tongue*, or (English : French) *sew* : *coudre*, *blow* : *souffler*, or (English : Spanish) *eat* : *comer*. Yet the student of an American Indian linguistic family rarely has any knowledge of such 'links' as Latin *consuere*, connecting *sew* with *coudre*; Latin *com-edere*, connecting *eat* with *comer*. Lokono : Dominican Island Carib *my father* *dati* : *núkusili* look even less like cognates than when *núguçi* of the modern Central American dialect is substituted for the latter word; yet t : s for the former and t : c for the latter dialect are attested in some other cases, such as *dig* *atika* : *asíka* : *acíga*; while the former correspondence suggests borrowing from related Goajiro, in which s regularly corresponds to Lokono t. According to Hickerson, Lokono has a morpheme *-ku-* *consanguineal elder*; and the Island Carib forms meaning *father*, *mother*, and *grandfather* almost certainly contain this morpheme in a fossilized state. Similarly, the pair *fly* *amoroda* : *áhamara* are seen to be cognate only when compared to *amáhara fly* of the Dominican dialect, both the latter having *hama-* as stem alternant.

To judge by the records of Daniel Brin-

⁸ Morris Swadesh, *Archeological and Linguistic Chronology of Indo-European Groups*, AA 55.349-52 (1953).

⁷ Swadesh, *op. cit.*, p. 362.

ton,⁹ de Goeje,¹⁰ and Hickerson,¹¹ Lokono (True Arawak) exhibits a rather high degree of phonetic instability, so far as this comparatively short and recent period is concerned. So, for *two*, the first and second of these authors give *biana*, but the third has *bian* ~ *biani*-; for *three* the first gives *kabuhin*, the second *kabuin*, and the third *kabun* ~ *kabuni*-; for *four* the first has both *bibuti* and *bibiti*, the second *bibiti* alone, and the third *bibiti* ~ *biti* ~ *bis*-. The personal pronouns are given by Brinton as *dakia* ~ *dai* *I*, *bokia* ~ *bui* *thou*, *likia* *he*, *turreha* *she*, *uakia* ~ *uai* *we*, *hukia* ~ *hui* *ye*, *nakia* ~ *nai* *they*; and by Hickerson as *dai*, *bui*, *lira*, *tora*, *uaiko*, *hui*, *naira*. Brinton's *-piru* corresponds to *-firo*, meaning *big* or *strong*, of both de Goeje and Hickerson; the word for *blood* is given by de Goeje as *ite*, but by Hickerson as *utu*. Brinton tells us that 'from *kasan* to *be pregnant*' (cf. *-sa* ~ *osa* *child*) 'comes *kasaku* the *firmament*, big with all things which are, and *kasahu* *behu* the *house of the firmament*, the *sky*, the *day*.' This last phrase renders highly plausible a relationship between modern Lokono *kasakabo* *day* and Island Carib *ubéku* > *ubéhu* > *ubéu* *sky* or *clouds* (the first form attested from early Dominican, and the last two from the Central American dialect of, respectively, one hundred years ago and today). Nor has Island Carib always been much more conservative, to judge by the (early Dominican : modern Central American) correspondence, *binálepule* : *bináfi* *morning*; although here a lapse of three hundred years and a change of habitat are involved.

Evidence for the cognation of some of the rejected pairs, though inconclusive, is not lacking. So, Taino *da-guita* *my rope* (in which the *g* is probably a dummy) sug-

gests that the final *-ho* and *-ru* of (Lokono : Island Carib) *taho* : *fitaru* *rope* were once suffixes, and that these words are cognate. The resemblance of the Island Carib forms meaning *father* (*-guci*) and *mother* (*-gucu*) to one another makes it likely that Lokono *-io* *mother* resulted from the weakening of older **-tio*, more closely paralleling Lokono *-ti* *father*; and that if so, also Lokono : Island Carib *ioio* : *dódo*-*wet* are cognate, and come from older **tiotio*. If I had to reduce the number of queried pairs omitted from the count, I should score a PLUS against those meaning *hold*, *left*, *man*, *mother*, *old*, *rain*, *root*, *rope*, *sky*, *snake*, *suck*, *vomit*, *wet*, *worm*; a MINUS against those meaning *cut*, *fruit*, *fur*, *guts*, *knee*, *near*, *short*, *thin*, *walk*, *when*; and leave the query against those meaning *earth*, *hot*, *hunt*, *I*, *if*, *in*, *not*, *what*. This would raise the cognate ratio to 86/178, or 48.3%, which indicates a reduction of some 75 years in the time depth. It seems to me unlikely that further data will reveal a percentage of cognates much higher than these last figures; but even in the improbable event of all the doubtful pairs proving to be cognate, we would still have to reckon that these two languages had been diverging for the past 13 centuries.

By substituting the early Dominican for the modern Central American dialect, a cognate ratio of 79/154 is obtained; seven more agreements are registered (*bird* *ulbíyü*, *five* *uákabu* *ápurku*, *four* *biáburí*, *grass* *kálaru*, *husband* *iráiti*, *alive* *kako-*, and *person* *iláku*), the items meaning *guts* and *hunt* each score a MINUS, and those meaning *dust* and *fall* must be queried. When the difference in dates is taken into account, this reduces the time depth found for the modern dialect by less than half a century. By using recent Dominican in the same way, three more agreements are registered (*four* *biáburí*, *grass* *kálaru*, *husband* *iráiti*), but the number of pairs matched is considerably reduced through lack of data, which probably accounts for the time depth of 21 centuries as reported by Swadesh. It is perhaps superfluous to add that the absence of

⁹ Daniel Brinton, *The Arawack Language of Guiana in its Linguistic and Ethnological Relations*, APS-T, 14.427-44 (1871).

¹⁰ C. H. de Goeje, *The Arawak Language of Guiana* (Amsterdam, 1928).

¹¹ Nancy P. Hickerson, *Ethnolinguistic Notes from Lexicons of Lokono (Arawak)*, IJAL 19.181-90 (1953). Also in personal communication.

cognate pairs of words with the same meaning does not necessarily imply the absence of cognates in the two languages; so, for example, Lokono kudibiu *bird* and C. A. Island Carib guribua *sp. of bird* (unidentified), Lokono ibitua *burn* and Island Carib ébeda *kindle*, Lokono iribe- *dirty* and Island Carib iribi *soot*, Lokono buin *whole* and Island Carib buí *full*.

One apparently unrelated pair of words, (Lokono : Island Carib) dakia ~ dai : nugúia *I*, is of particular interest for the prehistory of the Antilles. Mason tells us that in Arawakan languages 'the first person pronoun is usually *nu*, whence the generic name *Nu-Arawak*'; whereas Lokono has dakia ~ dai (and affixial dA- and -da, *vs.* Island Carib nV- and -na), Goajiro has taya (and tA-), and Taino has variously spelt dacha, daça, daca (and dA-). These latter forms (those beginning with an apical stop) would therefore appear to be innovating as compared with the former (beginning with n), among which are those of far-away Campa (nu) and Amesha (na'). Moreover, it is difficult to see how either Taino or Igneri and Island Carib forms meaning *I*, *me*, *my* could have been borrowed after migration to the Antilles (as speakers of English borrowed *they*, *them*, *their* from Scandinavian), since the Taino were separated from other da-speakers by the Igneri or Island Carib, and the latter from other nu-speakers by the Lokono. And if, as seems likely, they were inherited, it is reasonable to assume for the linguistic forbears of Lokono, Goajiro, and Taino a period of common development in which those of the Igneri and Island Carib had no part. Compare:

	Taino	Lokono
<i>I</i>	dacha, dA-	dakia, dA-
<i>we</i>	guA-	uakia, uA-
<i>he</i>	nV-	likia, IV-
	Goajiro	Island Carib
<i>I</i>	taya, tA-	nugúia, nV-
<i>we</i>	waya, wA-	uagía, uA-
<i>he</i>	nia, nV-	ligía, IV-

Should this view be correct, it would follow that the separation of Igneri and Lokono preceded that of Taino and Lokono; so that Igneri and Taino could not then possibly be recently diversified forms of one and the same parent tongue. Unfortunately, the extant Taino vocabulary is too meagre, the transcription too erratic, and the given meanings too uncertain to offer much help in this respect. Nevertheless, comparison of the following Taino items (with, so far as possible, the spelling found in the sources) with their Lokono and Island Carib equivalents shows more agreements with Lokono (and with Goajiro) than with Island Carib of either dialect or period. So, the forms meaning *I*, *know*, *man*, *stone*, *three* agree only with Lokono, those meaning *dog* and *woods* only with Island Carib, while that meaning *four* agrees with Lokono and with the Dominican dialect of Island Carib only. *black* xey-, *breast* too, *dog* aon (also : alco), *ear* -rique-, *eye* -aco, *good* tayno, *I* dacha (or daça or daca), *know* ita, *man* guaxeri (*cf.* Goajiro hašič'i *man*), *one* hequeti, *say* ahia-, *see* oca-, *skin* -ra, *stone* cibe, *tooth* -ahi-, *two* yamoca, *four* yamoncobre, *rope* -guita, *sea* bagua, *sky* turey, *three* canocum, *woods* arcobuco. The name for the Tainos' ceremonies, areito, which those who witnessed them described as 'bailar cantando,' may be compared with Goajiro airøha *to sing*. Taino higuera *calabash* (*Crescentia cujete*), with which compare Lokono iuida, Island Carib úira (with the same meaning), probably contains the Taino word for *fruit* (*cf.* Lokono iui *fruit*) in composition with the stem meaning *skin* (-ra in Taino, -da in Lokono), or with that meaning *tree* or *wood* (also -da in Lokono, but unattested for Taino); although the Island Carib word was not analyzable even in the earliest recorded dialect.

This seems to imply that the Antilles were peopled by two distinct migrations of different Arawakan tribes. If the Igneri came first, we may presume that this

people left the mainland some time during the first three centuries of this era; to be followed about 700 years later by the Taino. In this case, it seems unnecessary to assume that any 'conquest' or fighting took place at that time; for in 1635 the Island Carib of St. Vincent allowed two shiploads of escaped African slaves to settle in a part of their country, where they long continued to be joined by fugitives from neighboring islands; and it is by the descendants of these Negroes that the only surviving dialect of Island Carib is spoken today. But the Taino, as new comers, would have been expected to 'move on' if and when increase of population rendered means of subsistence scarce. Thus they would have remained a minority, and have been gradually assimilated by the Igneri in the smaller, more southerly islands; while in such a comparatively large island as Porto Rico they would have come to outnumber and assimilate the few Igneri that may have preceded them thither before any pressure of population was felt.

If, on the other hand, the Taino were the first to leave the mainland, I doubt (on account of the apparent time-depths between the languages concerned) whether this could have been much earlier than A.D. 600, or much later than A.D. 1000. And in this case, the Igneri must have followed rather closely on their heels, and chased them into the Greater Antilles; for geographic distribution of the languages then compels us to assume a 'conquest' of the Lesser Antilles by the Igneri, since it is unlikely that the Taino should have allowed themselves to be 'assimilated' or have given up their old homes to the new comers without a struggle. Moreover, this second, alternative solution raises yet another problem,—that concerning the separation, long before any Arawakan migration to the islands, between Igneri and the common progenitor of Lokono, Goajiro, and Taino.

In general, Hickerson's Lokono forms have been preferred; so (Lokono : Island Carib) *mouth* -leroko : -íuma scores a

MINUS, although de Goeje lists obviously cognate *uima* ~ *uma* ~ *ema* with the same meaning. That the former, and not the latter, is the ordinary Lokono term is clear from two recordings cited by Brinton, the one (*dalerocke my mouth*) dated 1598, and the other (*daliroko my mouth*) dated 1800. In a few instances, however, Hickerson's form has been rejected, as in the case of her -doli *root*. De Goeje also lists this last form, but gives it the special meaning of 'racine tuberculeuse' (which Island Carib -flagola does not have), as opposed to *ekura root*, *vein*, *nerve*, which tallies semantically with the Island Carib. This is one of the items which I have thought better to omit from the count.

In the following word list, the Lokono forms follow the English, and are followed by those of the C.A. dialect of Island Carib.

all -makua : sú(gubai) (-), *and* kena : -úma (-), *animal* iliki-n : ilógo-ni (+), *arm* -duna : aróna (+), *ash* balisi : balígi (+), *back* -iabo : -anága (-), *bad* uakaia : uríba- (-), *bark* (ada) uda : t-úra (uéue) (+), *because* -doma : -rúma (+), *belly* -dibeio : -urágai (-), *big* fi-ro : uáiri (-), *bird* kudibiu : dunúru (-), *bite* akota : ágora (+), *black* karime- : urí- (-), *blood* utu : h-íta-o (+), *blow* afudi- : á-fu-ra (+), *bone* -bona-ho : -ábu (+), *breast* -odio : -úri (+), *breathe* ahakobu- : auára-gua (-), *burn* ibitua : á-guda (-), *child* ilon-/iren- : iráho (+), *claw* -obada : -úbara (+), *cloud* ororo : ubéu (-), *cold* meme : dili- (-), *come* anda : (n)iób(u)i (-).

cut aroka / asoka : fíbiha / ácuga (?), *dark* bura- : buri- (+), *day* kasakabo : uéiu (-), *die* ahoda : a-hila-ra (+), *dig* atika : a-cíga (+), *dirty* iribe- : ufe- (-), *dog* pero : áuli (-), *down* onabu / abomun : ónabu / -ábugię (+), *drink* ata : áta (+), *dry* uato : mábai- (-), *dull* (not sharp) ma-mana- : ma-mána- (+), *dust* akumuiu : t-ife múa (-), *ear* -diki : arígai (+), *earth* uaia : múa (?), *eat* eke : áiga (+), *egg* karinasa : gáię (-), *eye* akusi : águ (+), *fall* atikida : áigua (-), *far* taha : díse (-), *father* -ti :

-guci (+), *fear* hamaroka- : anúfude (-), *feather* -bara : t-ubána (dunúru) (-), *few* kabun : m-íbe (-), *fight* afara : a-gá-ia-dagua (-), *finger* akabo ibira : l-iráo -úhabu (+).

fire hikihi : uátu (-), *fish* hime : údu-rao (-), *five* aba dakabo : ségo (-), *flesh* isi-roko : ógorogo (+), *flower* koro-ho : íleue (-), *fly* amoroda : áhamara (+), *foot* -koti : ugúdi (+), *four* bibuti, bibiti ~ bititi ~ bis- : gágoro (-), *fruit* iui : h-í (?), *fur* -iti : h-fu (?), *give* isika : íciga (+), *good* osa : buídu (-), *grass* karau : sagádi (-), *grease* kihi : agólei (+), *green* imoro- : urí-gi- (-), *guts* -ite : -isása (?), *hair* -bara : ídiburi (-), *hand* okabo : úhabu (+), *he* likia / lira : ligía (+), *head* isi : icígo ~ icógo (+), *hear* akanaba : agába (+), *heart* oasisini : anígi (-), *heavy* kudu- : hóro- (+), *here* ia-ha : iá(-ha) (+), *hit* aboroka : áfara (-).

hold abokota : ágoda (?), *hot* tere : hára (?), *how* halika- : ída -ia (-), *hunt* aioka : áibaha, a-gá-liru-ha (?), *husband* ireti : úmari (-), *I* dakia ~ dai : nugúia (-), *if* -faro-ka : áha- (?), *in* oloko : -ída / íla-o (?), *kill* afara : áfara (+), *knee* -kuru : -gá-corogo (?), *know* aita / adita : a-súbudi-ra (-), *leaf* -bana : -ubána (+), *left* -baro : -ubáuna (?), *leg* -dana : -úruna (+), *lip* -leroko : -iumáru (-), *alive* kake- : n-ibá-ga-i (-), *liver* -bana : -ubána (+), *long* uadik- : migífe- (-), *louse* ie : íe-í (+), *man* uadili : eiéri (?), *many* ioho : g-íbe (-), *moon* kati : háti (+), *mother* -io : -gucu (?), *mountain* fororo : uóbu (-), *mouth* -leroko / -noroko : -iúma (-).

name iri : íri (+), *near* -erebu : -rúgabú (?), *neck* -noro : -igína (-), *night* oriko : áriabu (+), *nose* -siri : ígiri (+), *not* ma- / koro : ma- / máma (?), *old* uahadu- / hebe- : uái-ha- (?), *one* aba : ába ~ ábana (+), *person* loko : mútu (-), *play* ibiraka : hurára- (-), *pull* aduruda : a-cáua-ra (-), *pus* oko : óho (+), *rain* oni-kia : húia (áhuia) (?), *red* kore- : funá- (-), *right-hand* -isa : -áuerere (-), *ripe* kore- : funá- (-), *river* onikain : dúna (-), *road* abona-ha :

óma ~ -éme-ri (-), *root* ekura / doli : ílagolá-o (?), *rope* taho : fítaru (?), *rotten* toro / kolo : niála- (-). *saliva* uraroni : aróre-i (+), *salt* pamo : sálu (-), *sand* motoko : ságau (-), *say* adia- : eréga (~ aríaga) (+).

sea bara : barána / baráua (+), *see* adoka : aríha (+), *seed* -si : -í / -íla (-), *sew* akosa : áhoca-gua (+), *sharp* kamana- : ga-mána- (+), *short* baseken- / auka- : dî- / láugua- (?), *sit* abalta : niuru ~ iú (-), *skin* uda : úra-o (+), *sky* kasa-hu behu : ubéu / siélu (?), *sleep* adonka : arúmuga (+), *small* sioko : nió-rao- (-), *smell* adimisa : irímica (+), *snake* uri : óui / héue (?), *some* aba-no : -íbirí (-), *stand* adinama : rárama- (-), *star* uiua : uarúguma (-), *stick* (N) ada : uéue (-), *stone* siba : dóbu (-), *straight* misi- : surú- (-), *suck* atuku- / asoroto- : su- / sura- (?), *sun* hadali : uéiu (-), *tail* ihi : íli (+), *that* tora / lira : túra / líra (+), *there* iara : iára (+), *they* nakia ~ nai / naira : hagía (+).

thick tibo- : durú- (-), *thin* uakara / bili- : íbfię- (?), *think* ikisika : aríta-gua (ep. Lokono *know*), *this* to / li : tóa / léa (+), *thou* bukia ~ bui : bugúia (+), *three* kabuhin, kabuin, kabun ~ kabuni- : órua (-), *throw* aboreda : huí- ~ fuí- / a-có-ra (-), *tie* akora : ágora (+; ágora *bite* and ágora *tie* have as free stems *gro* and *gra* respectively), *tongue* -ie : -íéje (+), *tooth* ari : ári (+), *tree* ada : uéue (-), *two* biama, bian ~ biani- : bíama ~ bíá (+), *up* aiomun : íu (+), *vomit* ereda : euéra / euéreha (?), *walk* aiahadi- / akona : áibuga (?), *wash* asokosa : a-cíba (-), *water* oniabo, uini : dúna (-), *we* uakia ~ uai, uaiko : uagía (+), *weep* aia- : aiáhua (+), *wet* ioio : dódo- (?), *what* hama : á, ka (?), *when* halika : ída-, áha- (?), *where* halun : halia (+), *white* harira : harú- (-), *who* hama : ka (-).

wife iraito : úmari (-), *wind* auaduli : garábalí (-), *wing* -duna : -aróna (+), *wipe* aburanda : a-rága-ca (-), *with* -oma : -úma (+), *woman* hiaro : híáru (+), *woods* anaku / konoko : árabu (-), *worm* usehi :

ígei (?), *ye hukia* ~ *hui* : *hugúia* (+), *year uiua* : *irúmu* (-), *yellow subule-* : *dumári* (-).

2. The foregoing statement is concerned with two problems: (1) the time when the Ignéri, or original speakers of what later became the Island-Carib language, split off from the Taino, Lokono, and Goajiro; and (2) the manner in which the Ignéri and Taino entered the Antilles. Archeologists have investigated both of these problems and their solutions, if correct, should agree with the ones proposed by Taylor on linguistic grounds. It will be convenient to consider the second problem first.

As the result of stratigraphic excavations in the West Indies and Venezuela, archeologists have been able to establish a chronology of four periods, numbered from I to IV.¹² The first is preceramic and need not concern us here, since the little available information about the historic descendants of the people of this period indicates that they spoke non-Arawakan languages.¹³

Period II is marked by the first appearances of both pottery and agriculture. These clearly entered the Antilles from South America. They seem to have passed from the lower part of the Orinoco Valley onto Trinidad, whence they spread through the Lesser Antilles into Puerto Rico, leaving the rest of the Greater Antilles in its original preceramic status.¹⁴

The pottery of Period II is strikingly similar wherever it has been found over the vast area extending from Barrancas, just above the Delta of the Orinoco River in Venezuela, through Trinidad and the Lesser Antilles, and into Puerto Rico. Everywhere, this pottery is finely made—more finely than at any later time. Everywhere, too, gracefully outflaring sides and rims with triangular cross

sections predominate, and the decoration is characterized by white-on-red painted designs, with the white paint dropping out in some parts of the area during the latter part of the period. The existence of these similarities, extending over such a broad area and always occurring at the time of first appearance of pottery and agriculture, can hardly be explained except as the result of a migration. I have coined the term "white-on-red horizon complex" to refer to the pottery which the migrants seem to have brought with them.¹⁵

Lovén has identified the pottery of the white-on-red horizon complex as Ignéri, and he is followed in this by most archeologists currently working in the Antilles.¹⁶ If it is true, then the Ignéri must have entered the Antilles during Period II, and have at that time taken over all of the major islands except Hispaniola, Jamaica, and Cuba.

At the beginning of Period III, pottery related to the white-on-red horizon complex makes its appearance in Hispaniola, Jamaica, and Cuba along with the first evidences of agriculture in those islands.¹⁷ Presumably, this pottery marks the spread of the Ignéri through the rest of the Greater Antilles, leaving only isolated pockets of preceramic, non-Arawakan peoples in some of the larger islands.

A little later in the period, the pottery of the Greater Antilles, at least, begins to vary greatly. The previous horizon complex de-

¹⁵ *Idem*, p. 193.

¹⁶ Lovén, *op. cit.*, pp. 271-3; J. A. Cosculluela, *Sincronismo de las culturas Indo-Antillanas*, *Revista de Arqueología y Etnología*, II época, 3.27-51 (Habana, 1946), pp. 38-41; J. M. Crucent, *Prehistoric Pottery of Venezuela* (MS); etc.

¹⁷ Rouse, *op. cit.*, Fig. 2, footnote 5. The red-painted pottery referred to in this footnote appears to be derived from the ceramics of the latter part of Period II in Puerto Rico. It has now been identified at the beginning of the ceramic sequence in Jamaica and Haiti as well as in the Dominican Republic, to which the footnote refers. See Marian DeWolf, *Excavations in Jamaica*, *American Antiquity* 18.230-8 (1953), pp. 237-8.

¹² Irving Rouse, *The Circum-Caribbean Theory*, an Archeological Test, AA 55.188-200 (1953).

¹³ Sven Lovén, *Origins of the Tainan Culture*, *West Indies* (Göteborg, 1935), pp. 1-6.

¹⁴ Rouse, *op. cit.*, Fig. 2, Profile 1.

velops into a series of local styles, differing greatly from island to island.¹⁸ Since there is considerable variation in other aspects of culture as well, it is probable that the inhabitants of the several islands lived in relative isolation. Evidences of large-scale migrations are lacking, although population increases may well have led to expansion of the settlements of individual islands. In Puerto Rico, for example, our site survey has shown that the Indians completed the settlement of the interior of the island at this time.¹⁹

The local variation and scarcity of evidence of migration have led us to conclude that the Igneri continued to live in both the Lesser and the Greater Antilles through at least the first half of Period III.²⁰ It does not seem likely that the Taino could have moved into the West Indies at this time.

By Period IV, on the other hand, the Island Carib must have conquered the Lesser Antilles and the Taino made their appearance in the Greater Antilles, for this period extended into historic times, when the Island Carib and the Taino were in possession of those respective areas. As Taylor has noted, the Carib traditions indicate that they moved out from South America and took over the Lesser Antilles from the Igneri. The Taino, on the other hand, had no clear traditions of origin and so we can only infer their movements from archeological and linguistic evidence.

From an archeological standpoint, Period IV was a time of reappearance of similarities in pottery from island to island. These make it possible to distinguish a "modeled-incised horizon complex," extending throughout the Greater Antilles.²¹ The roots of this complex

go back to Period III, when its designs and techniques of decoration appear gradually in both the Lesser and the Greater Antilles. They are handled differently from island to island, as if they had spread individually and had been adapted separately to each of the local ceramic traditions of Period III. By Period IV in the Greater Antilles, however, they had become standardized and are everywhere found in association with the same shapes, typically bowls with incurving sides.

In view of this gradual development during Period III and of the barrier formed by the Carib occupation of the Lesser Antilles during Period IV, it is difficult to see how the Taino could have migrated from the mainland. Instead, I have elsewhere assumed that the Taino developed from the Igneri in the Greater Antilles.²² The fact that the deities known as ZEMIS, which were a focal point of Taino culture in the time of Columbus, are first found in the archeological sites of the latter part of Period III and increase in numbers and complexity during Period IV strengthens this interpretation.

Archeology, then, indicates that the Igneri first reached the Lesser and Greater Antilles during Period II and had intensively occupied both regions by Period III. During Period IV they gave way to the Island Carib in the Lesser Antilles and developed into the Taino in the Greater Antilles.

The first part of this reconstruction is consistent with Taylor's linguistic formulation but the second is not. To judge from his linguistic evidence, the Taino language cannot have developed out of the Igneri in the Greater Antilles, as archeologists have assumed. On the other hand, it is difficult to reconcile a migration of the Taino speakers from the mainland with the archeological evidence, as presented above. The two sets of evidence are contradictory, and so we are faced with a dilemma.

Pending the accumulation of further data,

¹⁸ Irving Rouse, *Areas and Periods of Culture in the Greater Antilles*, SJA 7.248-65 (1951), pp. 256-8.

¹⁹ Irving Rouse, *Porto Rican Prehistory*, The New York Academy of Sciences, *Scientific Survey of Porto Rico and the Virgin Islands* 17.305-578 (1952), pp. 566-71.

²⁰ *Idem*, Table 1, p. 340.

²¹ Rouse, *op. cit.* (footnote 12), p. 193.

²² Rouse, *op. cit.* (footnote 19), pp. 361-2.

I do not know of any satisfactory way to resolve this dilemma, but three possible solutions occur to me:

(1) The most obvious possibility is that the linguists and the archeologists are not talking about the same thing when they speak of Igneri and Taino. Linguists apply these terms to languages but archeologists must of necessity define them in cultural terms, with emphasis on pottery. It has long been customary to assume that language and culture are directly correlated in the Caribbean area but, as I have noted elsewhere,²³ this is not necessarily true. The fact that the Island Carib spoke an Arawakan language but had a typically Carib culture is a case in point. Can it be that the languages and cultures of the West Indies had entirely separate histories and that, therefore, one should not attempt to correlate them, as is being done here?

To answer this question in the affirmative would, in my opinion, be unwarranted. Certainly, the appearance of agriculture and of white-on-red pottery during Period II must have been accompanied by the introduction of a new language, presumably Igneri. On the other hand, one might assume that the Taino language was subsequently introduced into the Antilles without such a marked change in the culture that it would show up in the archeological record. This would provide one possible solution to the dilemma.

(2) As a second, related possibility, it can be suggested that we archeologists may have been too cautious in inferring migrations from our remains. If it is true that changes in language do not always correspond exactly to changes in culture, then perhaps we should look for less pronounced innovations in culture with which to correlate the migration of the Taino into the Antilles. Two such innovations are perhaps worth mentioning:

(a) Most of the white-on-red pottery of

²³ Irving Rouse, *Guianas, Programa de Historia de América I*, 7 (Mexico City, 1953), pp. 24-6.

Period II lacks any great amount of incision and modeling, but there is a sub-complex which has these characteristics—particularly finely incised crosshatched designs.²⁴ The exact relationship of the sub-complex to the more typical white-on-red pottery is still uncertain, but there is reason to believe that it may have originated along the north coast of Venezuela, whereas the more typical pottery appears first—so far as we now know—in the lower part of the Orinoco Valley. Could these two forms of the white-on-red horizon complex have been brought into the Antilles by separate migrations, one of the Igneri and the other of the Taino?

(b) If, instead, only the Igneri pottery reached the West Indies during Period II, along with the white-on-red pottery, then the Taino would have had to follow during Period III, despite the apparent local diversity at that time. In such an event, the first appearance of elements of the subsequent modeled-incised horizon complex and of the worship of ZEMIS might be considered a marker of the Taino migration.

(3) Taylor has suggested as an alternative hypothesis to (1) and (2) that the Taino may have entered the Antilles before the Igneri, in which case it would have been the Taino who introduced agriculture and white-on-red pottery during Period II. The Igneri would then have come in later, either during the latter part of Period II, as in (2, a) above, or during Period III, as in (2, b). It is even possible—although not so likely—that the Island Carib acquired the Igneri language on the mainland and themselves introduced it into the Antilles during Period IV.

²⁴ This sub-complex has never been defined as such, but the Cedros style in Trinidad may be cited as an example. Irving Rouse, *Prehistory of Trinidad in Relation to Adjacent Areas*, Man 47.93-8 (1947), pp. 93-4. For its occurrence in Venezuela, see Cruxent, *op. cit.* It is also common in the Lesser Antilles and has recently been isolated by Ricardo E. Alegria (personal communication) in Puerto Rico, where its relation to my Cuevas style is uncertain.

Taylor has expressed a preference for the second of these three alternatives. If I had to make a choice, however, I would prefer (3). I cannot see the Taino having by-passed the Lesser Antilles to impose their language and (presumably) their culture on the Greater Antilles when, according to the archeology, both regions were just as intensively occupied by the earlier, supposedly Igneri people. The Igneri—if they were the first inhabitants—must have been in enormously greater numbers on the larger islands of the Greater Antilles than on the tiny ones of the Lesser Antilles and so should have been much easier for the Taino to assimilate in the Lesser Antilles; yet, hypothesis (2) assumes that they did not do so.

A second reason for my preferring hypothesis (3) is that it better fits the culture of the Taino, as known ethnologically. These Indians are reported to have been peaceful—their weapons, for example, were “exceedingly under-developed,”²⁵—and therefore it is difficult for me to envisage them in the role of conquerors, as required by hypothesis (2). Hypothesis (3), on the other hand, assumes that the Igneri instead of the Taino were warlike, and this better fits what we know of the Igneri who survived the Carib migration on Trinidad—they did have good weapons, for one thing.²⁵

Taylor, to be sure, argues that the Taino would not have had to conquer the Igneri but could have settled peacefully among them, as the few Negro escapees subsequently did among the Island Carib. This, however, seems to me a false analogy, since the Negroes and the Carib were united by a common bond of hatred against the Europeans, which the Taino and Igneri could not have shared. Moreover, the Negroes were acting as individuals, whereas the Taino presumably came into the Antilles as a well organized social and political group. For such a group, conquest should have been a necessity, unless the Taino were able to win over the Igneri by

superior prestige of some sort, which does not seem likely during Period III, when both groups were apparently on the same level of cultural development.

Finally, I prefer hypothesis (3) because it can be more easily reconciled with the archeological record. It accounts for the settlement of the Greater Antilles by means of only a single migration, that of the Taino during Period II, and so does not do violence to the evidence for lack of migration in that region during Periods III and IV. This hypothesis has the advantage of restricting the second, Igneri migration to the Lesser Antilles, where the archeology is as yet so poorly known that it cannot be said for sure whether one or two migrations took place.

There remains the problem of the date at which the Igneri split off from the Taino, Lokono, and Goajiro. Our uncertainty about hypotheses (1), (2), and (3) above should not affect the handling of this problem, since the split presumably took place on the mainland, before either the Igneri or the Taino entered the Antilles. The time of Period II, therefore, may be used as the point of comparison with Taylor's lexicostatistical date, no matter whether it was the Igneri or the Taino who reached the Antilles at that time.

In connection with excavations in Puerto Rico, I have obtained a series of dates by determining the amount of time required for the deposition of the refuse attributable to the various prehistoric periods.²⁶ I first calculated the yearly rate of deposition of refuse in the historic sites and then divided this into the average depth of refuse in the sites of each prehistoric period to determine the duration of each. Adding the latter figures together, I obtained a date of *ca.* 930 A.D. for the introduction of the white-on-red pottery at the beginning of Period II. This is a crude method of calculation, if only because it rests on the unlikely assumption that the rate of deposition was the same

²⁵ Lovén, *op. cit.*, pp. 440-1.

²⁶ Rouse, *op. cit.* (footnote 19), pp. 564-6.

during Periods II, III, and IV as in historic time, but it was the best that could be done under the circumstances.

Elsewhere,²⁷ I have commented that subsequent work is likely to lengthen this date rather than to shorten it. I am unable, however, to agree with Willey²⁸ when he states that the date is "impossibly late," nor can I accept the estimate of Father Pinchon²⁹ that the Igneri reached Martinique in the Lesser Antilles "au début de l'ère chrétienne," since neither author gives a basis for his opinion. Pending the presentation of evidence in favor of an earlier date, I do not think that my Puerto Rican calculation needs to be pushed back much before 600 A.D.

Archeology, then, gives an approximate date of 600 to 930 A.D. for the presumed arrival of the Igneri or Taino in Puerto Rico. This is to be compared with Taylor's date of *ca.* 1 to 300 A.D. for the differentiation of the Igneri and Taino languages on the mainland. Taking the latest value for the latter

²⁷ Rouse, *op. cit.* (footnote 23), pp. 17-19.

²⁸ Gordon R. Willey, Review of "Porto Rican Prehistory," AA 56.138-41 (1954).

²⁹ Père Robert Pinchon, Introduction à l'archéologie martiniquaise, JSAP 41.305-52 (1952), p. 347.

date and the earliest value for the former, we obtain a difference of 300 years between the two. This does not seem to be an unreasonable length of time to allow for the separation of the Igneri and Taino languages on the mainland and the spread of one of them through the Lesser Antilles into Puerto Rico.

A further check on the validity of the linguistic date will soon be provided by the method of radiocarbon analysis. J. M. Cruzent, of the Museo de Ciencias Naturales in Caracas, and I have obtained a number of samples of charcoal from deposits with white-on-red pottery at the Saladero site on the lower Orinoco, which are now undergoing analysis at the Geochronometric Laboratory in Yale University.³⁰ They should provide a more reliable archeological date and one which is more comparable to the linguistic date, since they come from the mainland where the separation of Igneri and Taino language is supposed to have taken place. Definitive conclusions cannot be drawn until the forthcoming radiocarbon dates are obtained, but meanwhile such archeological evidence as we have tends to support Taylor's linguistic date.

³⁰ Cruzent, *op. cit.*