A SURVEY OF THE ARAPESH LANGUAGE FAMILY OF PAPUA NEW GUINEA

Robert J. Conrad
Summer Institute of Linguistics

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0   INTRODUCTION

The Arapesh language family of the Maprik and Yangoru Sub-Provinces, East Sepik Province, is in the Kombio Stock of the Torricelli Phylum[1] of Papua New Guinea. It consists of three languages: Bukiyip (Mt. Arapesh), Muhiang (Southern Arapesh[2]), and Bumbita. The approximate populations are 10,300, 10,600, and 2,300 respectively[3].

The major purpose of this survey was to estimate the coverage of vernacular literature in the Muhiang dialect spoken at Albinama 3. This was accomplished by investigating the major dialect differences in the Muhiang language of the Arapesh family.

The secondary purpose was to ascertain the extreme dialect differences within the Bukiyip (Mt. Arapesh) language and also confirm the place of Bumbita as a separate language.

The main focus of the survey was on the Muhiang language and its dialects, since this is the first language in the family in which national translators have begun working. Data was also collected by helicopter[4] from the coastal dialect of Bukiyip from the villages of Matapau, Malin, Balof, Walum, and Walahiga. I wish to thank Dr. Robert Brown and Mr. Arden Sanders for taking the word lists on this part of the survey in which I was unable to participate due to illness.

1   PROCEDURE

The villages of Namango, Balif, Amahop, and Bonahoi were visited during the survey. The remaining lists were taken at the South Seas Evangelical Church's Bible School at Brugam. The Dagua list was obtained from a student at the Lahara Course and the Bubuamo list from a close friend, some years ago, when the author resided there.

For control purposes, two lists (AA and AL) were taken for Albinama 3 and two more (BG and IT) for Ilahita 4. Both pairs of these lists scored 95% probable cognates.

The standard SIL Survey Word List containing 190 words and phrases was modified by deleting those words which are difficult to elicit and/or cause problems in the Arapesh language family.

The words deleted included most of the verbs and also the following other words: heart, liver, bone, horn, feather, wing, tail, old man, old woman, person, frog, bean axe, mountain, seed, tobacco; all colours except white and black; good, bad, long, short, heavy, light, cold, warm, old, new, many, all, this, that, what, who, when, where, round, wet, dry, full, not. This left a list of 127 words. An attempt was made to elicit the full 127 word list except where comparison showed very close similarity with a previous list already taken. In such cases the first 50 words only were elicited. Due to limitations of time in the helicopter, and limitations of the SPEED program for counting cognates, only 115 words were actually compared in 10 villages. A separate comparison was made using 44 words from 26 villages. A final comparison was made using 72 words from 18 villages.

These words were elicited in Pidgin English, which was well known by all the speakers. The words were then compared in the following way: two words were counted as cognate if they had half or more of the phonemes (sounds) the same or regularly corresponding and in the same order. These decisions were then counted using the SPEED program at the Ukarumpa base of the Summer Institute of Linguistics. These counts were then converted into percentages by the use of a calculator.

In addition, many of the speakers were interviewed using a portion of the sociolinguistic questionnaire written by Arden Sanders.

Finally, a simple intelligibility test involving 20 items was used with most of Muhiang speakers to estimate their intelligibility with respect to Albinama 3. A few intelligibility tests were made with Ilahita, and a few with Bubuamo. Albinama 3 and Ilahita were chosen for the intelligibility testing because the two national translators chosen by the South Seas Evangelical Church are from these two villages.

The intelligibility tests were administered in the following way: a tape recording of 20 simple statements or questions in the vernacular to be tested was played, one question at a time, and the speaker's translation into Pidgin was evaluated as correct, half correct, or wrong.

2   RESULTS   .

    The following abbreviations were used for village names:

    AA   Albinama 3 (Joshua Lukas)
    AL   Albinama 3 (Andrew)
    BA   Balif
    AM   Amahop 2
    WA   Walahuta
    SU   Supari 2
    IL   Ilahop
    BG   Balanga (Ilahita 4) list from John Alungum
    IT   Ilahita 4
    MU   Muwi
    NI   Ningalimbi
    NO   Nomangu (Namango)
    NK   Nagipeim
    NB   Ningalemb
    AH   Ami (Amih)
    IW   Iwam
    WO   Womsak 1
    WL   Walahiga
    MA   Malin
    BF   Balof (Balup)
    MT   Matapau
    DA   Dagua (Urip)
    BO   Bonahoi
    UR   Urita
    TI   Timingir
    BU   Bubuamo

    The cognate percentages obtained are listed in Figures 1-3.   In
each case, the percentage of average shared cognates is listed at the
right of each village name abbreviation.   The results of the intelli-
gibility test are shown in Figures 4 and 5.

ARAPESH FAMILY – 44 WORD COMPARISON

```
AA  81
95  AL  78
100 95  BA  81
95  91  95  AM  78
93  89  93  93  WA  77
91  86  91  91  91  SU  79
98  93  98  93  91  89  IL  79
91  89  91  89  89  89  91  BG  78
93  89  93  93  93  91  91  91  IT  78
95  91  95  91  89  89  93  93  95  MU  80
91  86  91  91  84  82  89  89  93  93  NI  75
91  91  91  84  82  89  84  84  86  91  89  NO  75
80  75  80  75  75  77  80  82  77  80  80  82  NK  75
86  86  86  82  80  84  86  82  84  86  82  82  86  NB  78
84  82  84  80  77  84  82  80  82  84  80  84  84  95  AH  76
86  86  86  82  80  84  86  82  86  86  84  86  84  95  100 IW  78
70  66  70  70  70  77  68  66  70  66  70  70  77  70  68  70  WO  65
75  75  75  75  80  73  73  70  73  73  73  66  73  82  77  82  73  WL  72
70  66  70  66  68  66  68  64  70  66  66  64  70  73  70  73  68  73  MA  68
68  64  68  68  70  66  64  66  68  59  68  66  75  70  70  70  64  75  77  BF  67
75  70  75  68  73  68  66  68  68  66  75  68  64  75  73  75  70  64  70  75  MT  69
68  64  68  66  66  64  66  61  61  80  68  70  59  68  57  59  68  73  77  70  75  DA  66
55  52  55  52  55  57  55  55  57  50  50  61  55  57  48  57  55  52  73  52  48  48  BO  56
48  45  48  48  48  50  50  48  45  43  48  50  50  55  50  48  41  48  41  48  41  41  91  UR  51
45  43  45  45  45  48  48  45  45  43  45  48  43  48  48  48  39  48  48  48  41  41  89  98  TI  49
77  73  77  73  80  73  73  73  73  80  73  70  82  80  82  80  68  80  75  82  68  77  86  55  48  BU  73
```

Figure 1

ARAPESH FAMILY - 72 WORD COMPARISON

```
AA 71
94 AL 70
85 82 SU 69
90 88 85 BG 68
93 90 83 92 MU 70
85 86 72 81 82 NO 66
69 67 75 69 69 61 NK 65
76 75 81 74 76 71 72 NB 68
82 82 83 78 79 76 72 88 AH 71
78 79 79 75 76 72 74 89 89 IW 70
62 64 67 57 58 63 71 68 71 74 WL 63
57 56 57 51 54 54 71 58 63 61 81 MA 62
58 57 58 53 56 57 68 57 63 60 81 81 BF 59
63 60 64 60 60 57 68 60 63 61 63 64 64 DA 59
51 49 47 49 51 47 44 51 51 50 47 46 44 40 BO 53
50 47 44 47 50 44 40 49 50 49 44 43 43 39 90 UR 51
47 44 42 44 47 43 39 46 47 46 43 43 43 38 90 97 TI 50
68 65 72 69 68 61 74 67 68 71 61 63 60 81 47 43 42 BU 64
```

Figure 2

ARAPESH FAMILY - 115 WORD COMPARISON

```
AA 73
83 SU 69
93 82 BG 72
94 80 93 MU 72
70 69 69 69 NK 67
75 77 72 73 70 NB 66
58 54 54 56 68 55 BF 56
63 61 61 60 66 58 61 DA 62
55 50 53 54 46 52 42 42 BO 49
69 66 69 67 73 63 58 86 47 BU 66
```

Figure 3

PERCENTAGE OF CORRECT ANSWERS TO INTELLIGIBILITY TEST FROM

ALBINAMA 3

AH	$72\frac{1}{2}$
AM	$92\frac{1}{2}$
BA	100
BO	$57\frac{1}{2}$ (7 answers only half correct)
IL	$92\frac{1}{2}$
IT	95
IW	$62\frac{1}{2}$
MU	$97\frac{1}{2}$
NB	60
NI	$92\frac{1}{2}$
SU	100
TI-UR	$42\frac{1}{2}$
WA	$82\frac{1}{2}$

Figure 4

PERCENTAGE OF CORRECT ANSWERS TO INTELLIGIBILITY TEST FROM

ILAHITA

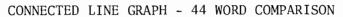|	
AH	$92\frac{1}{2}$
BA	100
IW	90
TI-UR	80

Figure 5

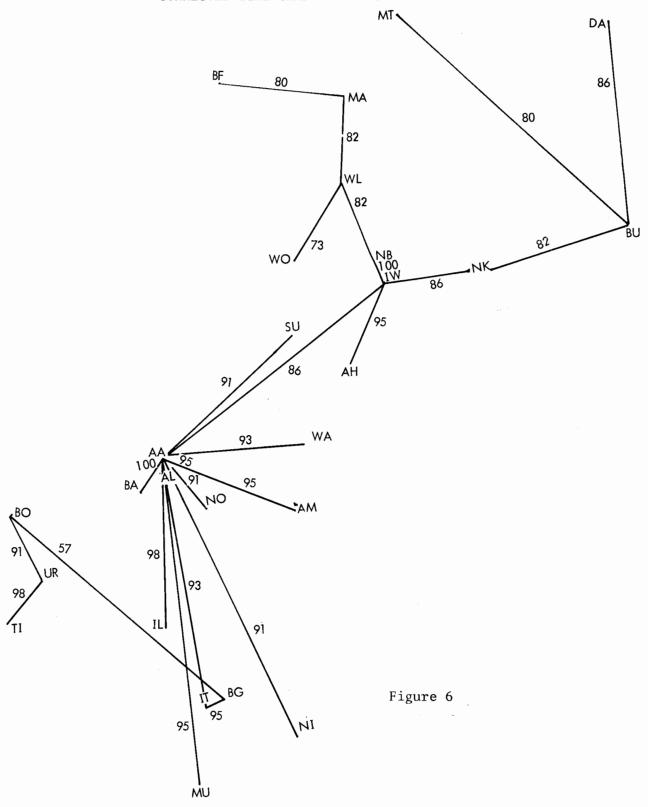The data in Figures 1-3 can be summarized in the following chart showing the major relationships:

```
NI
NO
WA
AL
AM
IT
IL
MU                          CHAIN
BA
AA
SU
BG
NB                                        MUHIANG
IW
AH
NK
BU        (BUKIYIP)
WL                                        ARAPESH
MT
MA            DIALECT                     FAMILY
BF
DA
WO
BO                                        BUMBITA
UR
TI
```

One approach to a dialect chain was suggested by Gary Simons and is described by Arden Sanders (Sanders 1977:307 ff). In this method the speech communities are arranged according to geographical position on a map and then the graph is drawn beginning with the highest percentage figure. Successive lines are drawn indicating the successive next higher percentages, with the constraint that no line is drawn which will connect two speech communities already connected by another route. As Sanders notes, the result shows the basic pattern of closest relationships between the group of speech communities. These graphs are shown in Figures 6, 7 and 8 respectively, using the 44, 72 and 115 word comparisons.
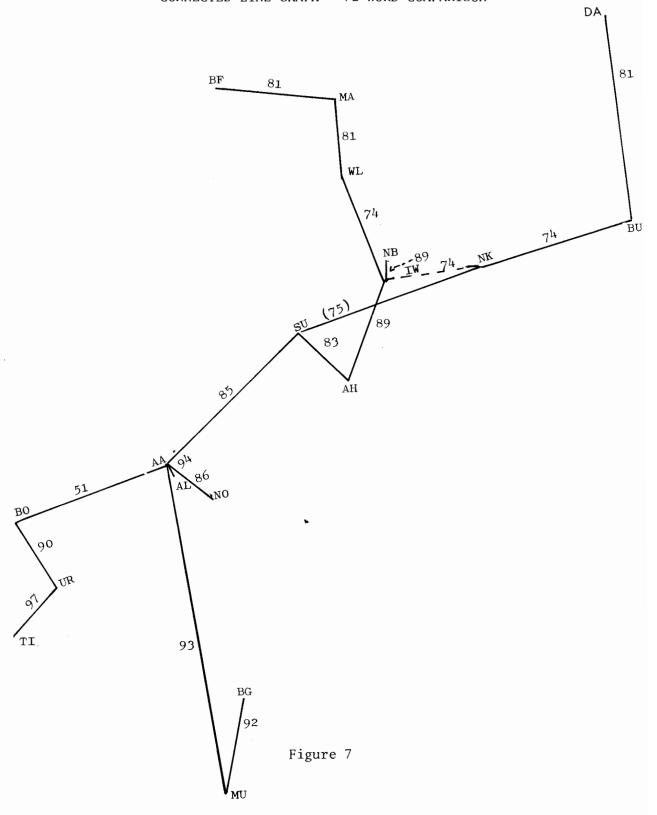
Following this, the lines from the graph can be used to decide which point is the centre of the pattern. This is done by constructing a matrix whose cells indicate the number of lines on the connected line graph between each pair of speech communities. Then the average scores are calculated and the scores are compared to find the lowest average. This community is taken to be the centre of the language pattern. This was done and the results are shown in Figures 9, 10, and 11 respectively for the three comparisons of 44, 72, and 115 words. Note that AA comes out as the centre in the 44 word comparison only, and is replaced by IW in the 72 word comparison and by NB and SU in the 115 word comparisons. However, in both the latter cases AA is not too far from being the lowest.

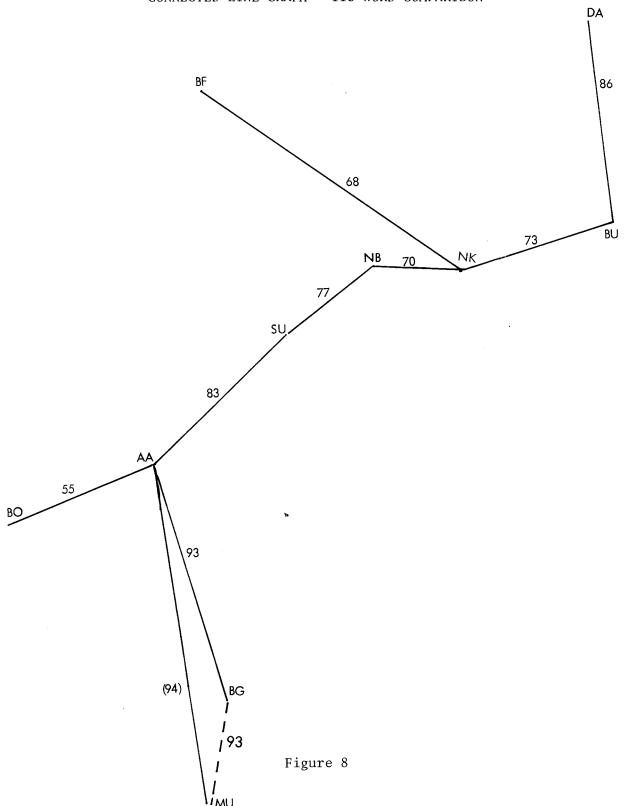CONNECTED LINE GRAPH - 44 WORD COMPARISON

Figure 6

CONNECTED LINE GRAPH - 72 WORD COMPARISON

Figure 7

CONNECTED LINE GRAPH - 115 WORD COMPARISON

DA

BF

86

68

BU

73

NB   70   NK

77

SU

83

AA

55

BO

93

(94)   BG

93   Figure 8

MU

CENTRAL COMMUNITY OF LANGUAGE PATTERN - ARAPESH FAMILY - 44 WORD COMPARISON

```
BF 4.9
6  DA 4.8
6  2  MT 4.7
3  3  5  WO 4.1
1  5  5  2  MA 3.9
6  6  6  5  5  BG 3.5
5  5  5  4  4  3  MU 3.2
5  5  5  4  4  3  3  BA 3.2
5  5  5  4  4  3  2  2  AL 3.2
5  9  5  4  4  6  2  2  2  IT 2.8
4  4  4  3  3  2  1  1  1  1  AA 2.1
3  3  2  2  2  3  2  2  1  1  2  IW 2.3
4  2  3  3  3  3  3  3  2  2  2  1  NK 3.0
2  4  1  3  3  4  3  3  2  2  2  1  2  WL 3.0
5  5  4  4  4  4  2  2  2  3  2  3  3  3  AM 3.2
5  5  4  4  4  4  2  2  2  3  2  3  3  3  2  WA 3.2
5  5  5  4  4  4  2  2  2  3  2  3  3  3  2  2  SU 3.2
5  5  5  4  4  4  2  2  1  3  1  3  3  3  2  2  2  NO 3.2
5  5  5  4  4  4  2  2  1  3  1  3  3  3  2  2  2  2  NI 3.2
4  4  3  3  3  3  3  3  2  3  2  3  3  3  3  3  3  3  3  NB 3.3
4  4  3  3  3  3  3  3  3  3  3  3  4  3  3  3  3  3  3  2  AH 3.3.
5  5  4  4  4  4  4  4  2  5  1  4  4  4  4  4  4  4  4  3  3  BU 3.8
7  7  6  5  5  5  5  5  4  6  5  5  6  5  5  5  5  5  5  4  5  6  BO 4.3
8  8  7  6  6  6  6  6  5  7  6  6  7  6  6  6  6  6  6  5  6  7  1  UR 5.9
9  9  8  6  6  6  6  6  6  7  6  6  7  7  7  7  7  7  7  6  7  8  1  1  TI 5.9
```

Figure 9

CENTRAL COMMUNITY OF LANGUAGE PATTERN - ARAPESH FAMILY - 72 WORD COMPARISON

Using IW-NK = 74% Instead of SU-NK = 75%

```
TI 5.4
1  UR 4.6
2  1  BO 3.6
9  8  7  7  BF 4.9
4  3  2  2  7  NO 4.9
5  4  3  3  8  3  BG 4.8
4  3  2  2  7  2  1  MU 3.9
7  6  5  2  6  6  5     WL 3.3
3  2  1  1  6  2  2  1  4  AA 3.3
6  5  4  4  3  5  5  4  1  3  IW 2.6
5  4  3  3  4  4  4  3  2  2  1  AH 2.7
4  3  2  2  5  3  3  2  3  1  2  1  SU 2.9
5  4  3  3  4  6  6  5  2  4  1  2  3  NK 3.3
7  6  5  5  4  6  6  5  3  5  2  3  4  1  3  NB 3.6
6  5  4  4  1  6  6  5  3  4  1  2  3  4  3  BU 3.9
8  7  6  6  7  7  6  5  4  5  2  3  4  3  3  4  MA 4.1
7  6  5  5  6  7  6  4  3  4  3  4  5  2  4  1  5  DA 4.9
```

Figure 10

CENTRAL COMMUNITY OF LANGUAGE PATTERN - ARAPESH FAMILY

115 WORD COMPARISON

```
BO 3.3
2  MU 3.3
5  5  BF 3.1
3  2  2  NB 2.2
2  2  3  1  SU 2.2
1  1  4  2  1  AA 2.4
4  4  1  1  2  3  NK 2.4
5  5  2  2  3  4  1  BU 3.1
2  2  5  3  2  1  4  5  BG 3.3
6  6  3  3  4  5  2  1  6  DA 4.0
```

Figure 11

The cognate percentages from Figure 1 are rearranged in Figure 12 to try and show the rough boundaries of the various dialects of Muhiang and the separate language Bumbita. A quick look at the percentages and the overlap of the lines enclosing a dialect indicate that there is a significant amount of dialect chaining and that some other approach should be used.

Gary Simons (Simons 1977:123 ff) has suggested that the matrix of percentages be rearranged with the average percentage of shared cognates indicated on the diagonal and the highest average positioned in the middle of the matrix. This has been done in Figures 12, 13, and 14 for the three comparisons of 44, 72 and 115 words respectively. Since this is a procedure to show dialect chaining, the three Bumbita villages (BO, UR, and TI) have been left out in making these calculations. Note that in Figure 13 (the 72 word comparison) AH has an average of shared cognates equal to AA, while in the other two comparisons AA comes out as the highest, even though BA equals the AA average in Figure 12. It is also interesting that the average for AA goes down from 85 using 44 words to 76 using 72 words to 75 using 115 words. In general the other villages with the higher averages remain consistently the same (villages) throughout the three comparisons.

COGNATE PERCENTAGES ARRANGED TO SHOW LANGUAGE DIALECTS AND FAMILIES – 44 WORD COMPARISON

```
NO
91  BA
91 100  AA
89  98  98  IL
91  95  95  93  AL
86  95  95  93  91  AM
84  93  93  91  89  93  WA
82  91  91  89  86  91  91  SU
84  93  93  91  89  93  91  91  IT
84  91  91  89  89  91  89  89  95  BG
86  95  95  93  91  89  91  89  93  93  MU
82  91  91  86  86  91  84  82  89  89  91  NI
84  86  86  84  82  80  86  82  82  86  80  80  NB
84  86  86  84  82  80  86  82  82  80  86  80 100  IW
84  84  84  82  80  77  84  77  80  80  84  77  95  95  AH
73  80  80  77  75  75  75  75  82  80  82  73  86  86  84  NK
64  70  70  68  66  70  70  77  70  66  70  66  70  70  70  66  WO
70  77  77  73  73  43  73  80  73  73  75  68  82  82  82  80  68  BU
61  68  68  66  64  68  66  70  66  64  68  61  70  70  68  59  86  68  DA
73  75  75  73  73  75  75  80  73  70  73  66  82  82  77  77  73  80  86  WL
68  75  75  70  70  68  70  68  68  75  66  75  75  73  75  64  80  77  68  70  MT
64  70  70  68  66  66  66  64  66  70  66  73  73  70  70  77  68  80  73  82  77  MA
64  68  68  66  64  68  68  70  66  64  68  59  70  70  70  75  64  75  70  77  75  80  BF
50  55  55  52  52  52  55  55  57  57  55  57  57  53  50  48  55  48  57  48  55  52  80  BO
45  48  48  45  45  45  48  48  50  50  48  50  50  50  43  41  48  41  50  41  48  48  41  55  UR
43  45  45  43  43  43  45  45  48  48  45  45  48  48  48  43  39  48  41  41  48  41  48  89  48  TI
```

Figure 12

PERCENTAGE OF AVERAGE COGNATES WITH BUMBITA OMITTED - 72 WORDS

```
BF 62
81 WL 67
57 63 NO 71
53 57 81 BG 73
56 58 82 92 MU 74
57 64 86 88 90 AL 75
58 63 85 90 93 94 AA 76
63 71 76 78 79 82 82 AH 76
60 74 72 75 76 79 78 89 IW 75
58 67 72 85 90 82 85 83 79 SU 74
57 68 71 74 76 75 76 88 89 81 NB 72
68 71 61 69 69 67 69 72 74 75 72 NK 70
60 61 61 69 68 65 68 68 71 72 67 74 BU 68
81 81 54 51 54 56 57 63 61 57 58 71 71 MA 66
64 63 57 60 56 60 63 63 61 64 65 65 65 64 DA 63
```
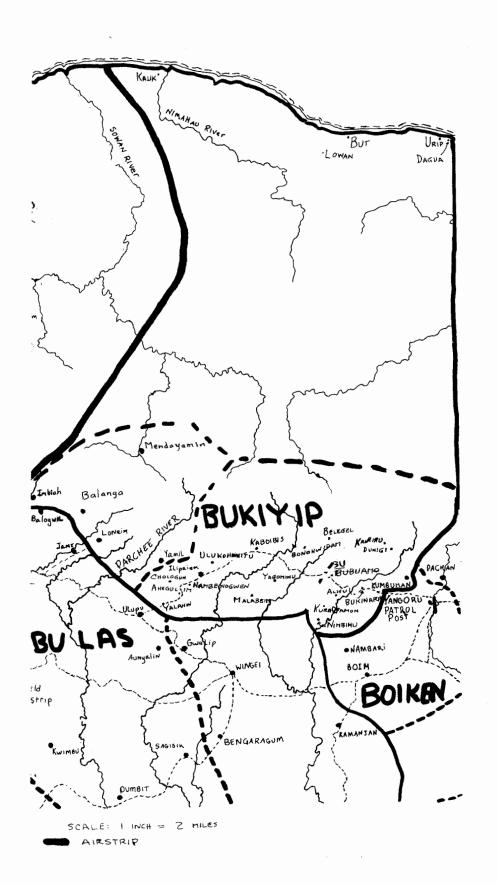
Figure 13

PERCENTAGE OF AVERAGE COGNATES WITH BUMBITA OMITTED - 115 WORDS

```
BF 58
55 NB 68
54 77 SU 71
56 73 80 MU 74
58 75 83 70 AA 75
54 72 82 93 93 BG 74
68 70 69 69 70 69 NK 70
73 73 66 67 69 69 73 BU 68
61 66 61 60 63 61 66 86 DA 64
```

Figure 14

The results of the survey are also shown in the map listed as Figure 15. It is easy to see from the map that Bumbita - villages BO, UR, and TI - is a separate language. This is indicated by the solid line separating it from Muhiang. It is confirmed by the reports of the local people and by the lexicostatistic percentages in Figure 1. The highest percentage of any Bumbita village with any other village is the 57 between BO and IW. By contrast, the percentages between the Bumbita villages range from 89 to 98.

The rest of the map shows that the situation is less clear for Muhiang. The lexicostatistic percentages and the connected line graphs show that the Muhiang language is one long dialect chain going all the way north until it meets the ocean and east until it meets the last Arapesh village of Bubuamo. There is in fact no real place to divide the Muhiang and Bukiyip (Mt. Arapesh) languages. Nagipeim,

Figure 15

SCALE: 1 INCH = 2 MILES

AIRSTRIP

with isolation and no percentage higher than 86 with any other lan-
guage, is chosen somewhat arbitrarily as the boundary. Dotted lines
are drawn to indicate the Ilahita dialect and the Iwam-Ami-Ningalemb
dialect. The Walihiga-Malin-Balup dialect is also so indicated. This
leaves Womsak as a sort of isolated dialect, as confirmed by the fact
that its highest lexicostatistic percentage with any other village is
73.

3 EVALUATION

     The two national translators from AL and IL can converse and com-
municate in their respective vernaculars with great ease and effic-
iency. This close relationship is confirmed by the 93% probable cog-
nates shown in Figure 1. Therefore the scores of 95% intelligibility
of AL at IL and 100% intelligibility of IL and BA (virtually identical
with AL) were to be expected. It was surprising that TI-UR, AH, and
IW scored so much higher (80, 92½, and 90) on the IL test (80, 92½,
and 90 respectively) than on the AL 3 test (42½, 72½, 62½ respective-
ly). This can probably be explained by the fact that the speakers
used for the test of intelligibility with IL had been living at the
same Bible school with other IL speakers for a year or two and had
learned the changes at IL. Therefore the tentative conclusion is that
the scores of these three areas with respect to AL represent the true
intelligibility much more accurately than their scores with respect
to IL. It would have been better to use speakers who had not had this
Bible school contact.

     There is some indication that a number of half correct responses
correlate with low intelligibility and that half correct responses
should not be counted. The best example of this is the comparative
response of the speakers from BO and TI-UR. These three villages are
very similar linguistically. (This can be seen in Figure 2 where BO
scores 90% with the two others which themselves score 97% between each
other.) However, the intelligibility with AL was only 42½% for TI-UR
while it was 57½% for BO. The higher figure for BO includes 7 res-
ponses scored as half correct, while only 3 such responses were scored
in this way for TI-UR.

     It was unfortunate that we were not able to obtain a list from
Womisis, due to lack of time available on the helicopter.

     With the exception of these problems listed above, the scores on
the cognate percentages generally correlated quite well with the
scores on the intelligibility test. This can be seen by the following
comparison:

Ranking of Intelligibility with AA (Albinama 3)	Ranking by Percentage of Probable Cognates with AA
BA	BA
SU	IL
MU	MU
IT	AM
IL	IT
AM	WA
NI	SU
WA	NI
AH	IW
IW	NB
NB	AH
BO	BO
TI-UR	UR
	TI

4   CONCLUSION

The general conclusion from the lexicostatistic testing is that Muhiang consists of one very long dialect chain running north from Muwi through Ilahita, Balif, Walahuta, Supari, and Womsak all the way to Matapau on the coast. The chain also continues on eastward from Womisis through Walahiga and on to Nagipeim, Imbia, Lonem, Yamil, Kaboibis, and finally Bubuamo. Along the coast the chain continues eastward from Matapau to Kauk, Bae, But, Dagua, and Woginara. The chain consists of such gradual changes that even at the extreme eastern end BU (Bubuamo) is still 69% cognate with AA (Albinama 3). It is actually difficult to say where Muhiang ends and Bukiyip begins, although probably Nagipeim (NK) is as good a place as any to make the border. The intelligibility test data confirm that intelligibility with Albinama 3 gradually decreases going north-east until it is down to 60% at Ningalemb. An earlier version of the test, testing intelligibility of Namango (NO) at Bubuamo, indicated 35% correct.

The general conclusion from the intelligibility test is that the people from WA, AH, IW, and NB will have some difficulty in using the Albinama 3 materials, while the Bumbita speakers (at BO, TI, and UR) will find these materials virtually impossible. Note the higher range of scores at WA, AH, IW, and NB: from 82½ to 60%. On the other hand, TI and UR scored 42½% and the BO score of 57½% is probably much too

high, as was indicated earlier.

The cognate percentages arranged to show language dialects and
families, using the 44 word lists, are shown in Figure 12. The sub-
groupings are indicated by lines. The Bumbita language is clearly
shown at the bottom, and also the Bukiyip (Mt. Arapesh) with its dia-
lect variations. WO has an unusual relationship with cognate percent-
ages of 68 with both IL and AH. The various dialects of Muhiang are
shown at the top half of the chart.

The sociolinguistic data in general confirms the results of the
intelligibility test. WA and SU seem to have contact with villages
reasonably near Albinama 3. However, NB and AH refer to Muhiang as a
"slightly different" language, while Iwam #3 calls it "another" lan-
guage. The lack of contact between Albinama 3 and AH, NB, and IW con-
firms that the people in those areas will have some difficulty with
the Albinama 3 materials.

The estimate of the number of additional translations needed is
somewhat problematic. It is clear that a separate translation will be
required for Bumbita. The lexicostatistic percentages with the range
of 90 to 97 in Figure 2 seem to indicate that one translation is suf-
ficient. The national translator should probably come from Urita, as
it is the most linguistically and geographically central.

For the rest of the family, the situation is less clear because
of extreme dialect chaining. If another translation is needed for the
area north-east of Balif, a national translator from Supari or Iwam
should be chosen. Before this is attempted, an honest effort should
be made for the people to use the Albinama 3 materials.

The situation for the coastal area is just as problematic. A
separate translation will probably be needed. The national translator
should be from either Dagua, Malin, or Matapau. Each location has its
advantages. Possibly a list from But, or Kauk, or Lowan will indicate
that one of those villages will be the best compromise. Probably the
national translator could work from the Bukiyip materials, but this is
not certain.

The connected line graphs in Figures 6, 7, and 8 and the matrices
showing the central community of the language pattern in Figures 9,
10, and 11 confirm AA (Albinama 3) as a quite good choice for a na-
tional translator in terms of centrality. However, these graphs and
matrices also indicate that SU (Supari), IW (Iwam), AH (Ami), and NB
(Ningalemb) are possible choices. One of these others should probably
be used as a source of another national translator if it turns out
that the translation from AA is not intelligible in the area to the
north.

NOTES

[1] Laycock, D. C., 1973. Sepik Languages - Checklist and Preliminary
     Classification. *Pacific Linguistics B* 25.

[2] The name Southern Arapesh is taken from Glasgow, D. and Loving, R.,
     1964, *Languages of the Maprik Sub-District*. The people in the
     Balif and Ilahita areas all say the name of their language is
     Muhiang.

[3] These figures are from Laycock, D. C., 1973, as listed in Note [1]
     The 10,300 figure for Bukiyip includes the villages south into the
     hills from Matapau, where the range of lexicostatistic percentages
     is from 68 to 80 inclusive (see Figure 1).

[4] Special thanks are due to Mr. John Champ, who piloted the helicop-
     ter. Without his skill and assistance this part of the survey
     would have been very difficult or impossible.

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