



## PROBLEM 1: *Nen*

*Nen* is a highly endangered language spoken by only about 250 people in the village of Bimadeben in the Morehead District of the Western Province in Papua New Guinea.

NOTE: *a* and *á* are different sounds: *a* is a long *ah* sound as in *ta* for ‘thankyou’, *á* is a short version of it, like the *a* in *pizza*. *e* and *è* also represent distinct sounds: *è* is pronounced more like the *a* sound in *bat* while *e* is like *e* in *egg*. How these sounds are pronounced, however, is not relevant to the questions asked about *Nen*.

Study the examples from *Nen* and their English translations, then answer the following questions:

1	I work	<i>yánd nogiabtán</i>
2	you (one person) work	<i>bám nogiabte</i>
3	he or she works	<i>bè nogiabte</i>
4	I talk	<i>yánd nowabtán</i>
5	I return	<i>yánd nánangwtán</i>
6	you (one person) return	<i>bám nánangwte</i>
7	he or she talks	<i>bè nowabte</i>
8	we (three or more) work	<i>yánd nogiabtám</i>
9	we (three or more) return	<i>yánd nánangwtám</i>
10	you (three or more) work	<i>bám nogiabtát</i>
11	you (three or more) return	<i>bám nánangwtát</i>
12	they (three or more) talk	<i>bè nowabtát</i>
13	they (three or more) work	<i>bè nogiabtát</i>
14	we two work	<i>yánd nogiabám</i>
15	you two return	<i>bám nánangwát</i>
16	they two talk	<i>bè nowabát</i>
17	they two return	<i>bè nánangwát</i>
18	we two talk	<i>yánd nowabám</i>



**Question 1.** How would you say the following:

1a. you (one person) talk \_\_\_\_\_

1b. he (or she) returns \_\_\_\_\_

1c. they (three or more) return \_\_\_\_\_

1d. we (three or more) talk \_\_\_\_\_

1e. you two work \_\_\_\_\_

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**Question 2.** What words and/or parts of words do you need in order to express these English words

2a. 'I' \_\_\_\_\_

2b. 'they (more than two)' \_\_\_\_\_

**Question 3.** How would you translate:

3a. *yánd* \_\_\_\_\_

3b. *bè* \_\_\_\_\_

**Question 4.** How would you best define the meaning of the *t* found in *nogiabtan* in 1 and the corresponding *t* in 2-13?

\_\_\_\_\_

\_\_\_\_\_

**Question 5.** How do you express the idea that two people are carrying out the action?

\_\_\_\_\_

\_\_\_\_\_

**Question 6.** You hear a new phrase *yánd neretan* 'I listen'. Hearing that, how do you think you would say 'they (three or more) listen'?

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Contributed by Nick Evans, Australian National University



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## PROBLEM 2: *Enga verbal pronouns*

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Enga is a language spoken by over 150,000 people in the Enga area in the highlands of Papua New Guinea.

Enga verbs always incorporate a sound or sequence of sounds indicating whether it is the speaker or addressee, or another person (or some combination of these) who is being referred to by the *subject* word or phrase in the sentence (typically referring to the person doing the action, or who is in the state denoted by the verb). A small number of 'give' verbs also incorporate information about who something is being given to.

Consider these sentences which are about the gift of a pig. These sentences contain information about both the 'pig-giver' and the 'pig-receiver'. Pigs play a very important role in the economic and social life of Enga people.

- |    |                      |                 |                     |                      |                                  |
|----|----------------------|-----------------|---------------------|----------------------|----------------------------------|
| 1. | Namba-mé<br>I-agent  | émba<br>you     | mená méndé<br>pig a | dílio.<br>give       | <i>I am giving you a pig.</i>    |
| 2. | Émba-me<br>you-agent | nambá<br>me     | mená méndé<br>pig a | dilíno.<br>give      | <i>You are giving me a pig.</i>  |
| 3. | Baa-mé<br>he-agent   | nambá<br>me/you | mená méndé<br>pig a | diliámo.<br>give     | <i>He is giving me a pig.</i>    |
| 4. | Baa-mé<br>he-agent   | émba<br>you     | mená méndé<br>pig a | diliámo.<br>give     | <i>He is giving you a pig.</i>   |
| 5. | Namba-mé<br>I-agent  | baá<br>him      | mená méndé<br>pig a | mailio.<br>give      | <i>I am giving him a pig.</i>    |
| 6. | Émba-me<br>you-agent | baá<br>him      | mená méndé<br>pig a | mailíno.<br>give     | <i>You are giving him a pig.</i> |
| 7. | Baa-mé<br>he-agent   | baá<br>him      | mená méndé<br>pig a | mailiámo.<br>give    | <i>He is giving him a pig.</i>   |
| 8. | Baa-mé<br>he-agent   | baá<br>him      | mená méndé<br>pig a | maipiámo.<br>gave    | <i>He gave him a pig.</i>        |
| 9. | Baa-mé<br>he-agent   | baá<br>him      | mená méndé<br>pig a | maitámo<br>will_give | <i>He will give him a pig.</i>   |

**PART 1.**

Focusing on the forms of the verb (= last word in each sentence):

**Question 1.** Which part of the verb indicates the *giver*? Write the Enga forms which correspond to the English word in the indicated sentences.

Sentence	English	Enga
1. & 5.	I	
2. & 6.	you	
3,4, 7, 8, 9	he	

**Question 2.** Which part of the verb indicates the *receiver*? Write the Enga forms which correspond to the English word in the indicated sentences.

Sentence	English	Enga
1. & 4.	you	
2. & 3.	me	
5-9	him	

**Question 3.** (a) Circle the part of the following three verbs that expresses the **time** of the 'giving' event relative to the time at which the sentence is uttered, and (b) indicate whether it marks *present*, *past* or *future* by writing this under the matching verb. (The number indicates the sentence the verb is taken from.)

7. *mailámo*      8. *maipiámo*      9. *maitámo*

**Question 4.** Circle the part of the verb that expresses the idea of *giving* in the following verbs taken from the sentences indicated by the number:

1. *dilio*      2. *dilino*      5. *mailíno*      9. *maitámo*

**PART 2.**

Although *li* is written in the verbs in 1-7 whether followed by a consonant or a vowel, when it is followed by a vowel (a, e, i, o, u) the 'i' is not pronounced as a full 'i' sound as in English *lit* (or *lee*), so that *dilio* in sentence 1 is not pronounced as *di-li-o* (or *dee-lee-o*) but as *di-lyo* (*ly* is like in English *million* which is pronounced as two syllables *mil-yon* and not as three syllables: *mi-li-on* or *mi-lee-on*).

Each Enga verb has one accented syllable marked by an acute accent symbol (´) over the accented vowel.

**Question 5.** Is it possible to predict which syllable of each verb will receive the accent?

Explain the reasons for your answer, showing how your explanation can account for the accent placement on the verb in sentences 1, 2, 3 and 5.

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**Question 6.** Comparing the placement of the accent on the first word of each sentence and the accent on the pronoun which is the second word, can you account for the variable placement of the accent on the first word: either on the first syllable or the final syllable?

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Contributed by Mary Laughren, University of Queensland  
Data from  
Lang, Adrienne (1975) *The semantics of classificatory verbs in Enga (and other Papua New Guinea languages)*.  
Pacific Linguistics B-39. Canberra: ANU.



### PROBLEM 3. *Deciphering Linear B*

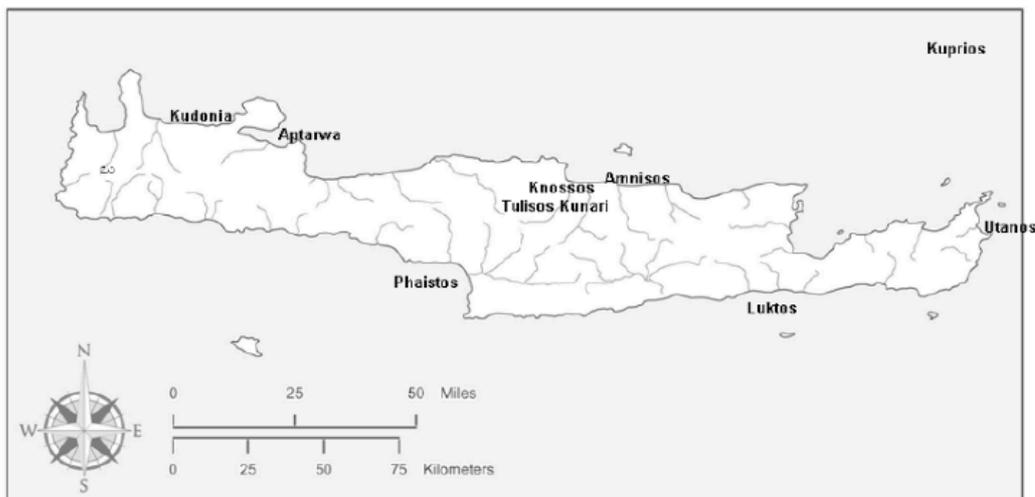
Linear B, deciphered by the architect and amateur epigrapher Michael Ventris in 1953, was used to write Mycenaean Greek around the 15<sup>th</sup> century BCE. Linear B tablets, all of which were accounting records, have been found both on Crete and at various Mycenaean sites on the Greek mainland.

Linear B isn't perfectly suited for Greek; it is an adaptation of another script (Linear A) that was used to write a language about which very little is known. Linear A/B didn't distinguish *l* and *r*, nor did it distinguish the three sounds written in the Roman alphabet as *ba*, *pa* and *p<sup>h</sup>a* (which were distinct sounds in Greek), and apparently it could only write sequences of V or CV syllables so that a syllable in a Greek word like *k<sup>h</sup>rusos* 'gold' had to be broken up as something like *ku-ru-so*. (Here V stands for vowel and C stands for consonant.) The famed city of *Knossos* was written as though it was pronounced as *ko-no-so*. Some consonant sounds at the end of syllables were not written, e.g., final *s* in *k<sup>h</sup>rusos* and *Knossos*, but others such as *p* and *k* were. The writing is to be read from left to right.

In what follows you will be asked to decipher a portion of the Linear B symbol set.

The map shows the approximate locations of some ancient Cretan towns (a list of these will be found on the next page). The spellings reflect their probable pronunciation in Mycenaean Greek (not their pronunciation in Modern Greek). Note that we do not know the location of *Kuprios*; also, *Tulisos* and *Kunari* are two different places. Most of these names have stayed more or less the same up until the present day. However, one of the names on the map is **not** the name that was used in Mycenaean times.

#### Map of ancient Crete



Map by Tom Elliott. Copyright 2003, Ancient World Mapping Center

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Below are the spellings of these place names in Linear B. Beside them are the place names in Roman script shown on the map, but the names written in Roman script are **not** in the same order as those written in Linear B. Remember that one of the Linear B words does not correspond to a word written in Roman script.

**Question 1.** Link each place name written in Linear B with its equivalent written in Roman Script by drawing a line between each pair of words. (One is done for you as an illustration.)



- Kuprios
- Kudonia
- Aptarwa
- Knossos
- Amnisos
- Tulisos
- Kunari
- Phaistos
- Luktos
- Utanos

**Question 2.** Which placename written in Roman letters on the map does not correspond to a name in the Linear B list?

\_\_\_\_\_

**Question 3.** Identify the word in the Linear B list which is not given in the list written in Roman letters. What was its approximate Mycenaean pronunciation, given what you now know about Linear B spelling?

Since one of the symbols used there only occurs in that name in this list, here is a hint: that symbol represents *ja* (pronounced *ya*).

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**Question 4.** For each Linear B symbol, what is a likely pronunciation? Recall that it will represent a syllable: either a vowel (V) or a consonant+vowel (CV) combination.

Answer this question by writing the Linear B symbol in the correct cell in the Table on the next page.

NOTE: Some of the syllables represented by Linear B have been omitted from the Table because they are not used in the placenames in our list. Even so, not all syllables represented in this Table are found in this list of placenames so that some cells should remain empty.

The symbols representing the syllables *jo* and *ja* (pronounced *yo* and *ya*) and the symbols representing the vowel *i* and the syllable *ki* have been placed in the Table as a guide.



	a	i	o	u
		Ψ		
d				
j	☐		ʔ	
k		∇		
m				
n				
p				
r				
s				
t				
w				

**Question 5.** What are the probable pronunciations of the following words whose meanings are indicated by the English words.

 	'girl'	_____
 	'all'	_____
 	'this'	_____
  	'cumin'	_____
 	'linen'	_____



## PROBLEM 4: *HELP MY CAMERA!*

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In the following dialogues the computer is misunderstanding the human because it is misinterpreting certain words or phrases:

Example 1

**Human:** There's this restaurant on Bancroft that's supposed to be really good that I heard about from my mother. Can you help me find it?

**Computer:** Where did you last see your mother?

Example 2

**Human:** My friend is looking for information about on-line movie databases. What should I tell him?

**Computer:** You can tell movie databases reviews of movies you've seen.

Example 3

**Human:** My parents are having a hard time choosing a new digital camera. How can I help them?

**Computer:** I'm afraid I don't understand your question. People don't help cameras.

**A.** What are the words (or phrases) that the computer is misinterpreting?

Ex. 1 \_\_\_\_\_ Ex. 2 \_\_\_\_\_ Ex.3 \_\_\_\_\_

**B.** What rule is the computer using to interpret those words (or phrases)?

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**C.** Give a better rule that would make the computer interpret the words (or phrases) correctly in these examples.

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From NACLO2009



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## PROBLEM 5: *Bamanan-kan*

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The Bambara language (called Bamanan-kan by its speakers) is spoken in the Republic of Mali in West Africa. Bamako is its capital city. It is one of the Mande languages, closely related to languages spoken in parts of Sierra Leone, Burkina Faso, Côte d'Ivoire, Gambia, Guinea, Mauritania, and Senegal. Bambara is spoken by about 3 million people as a first language, and by many more as a second language. As many Bambara speakers have traditionally engaged in trade throughout West Africa their language has become a convenient language of wider communication (or *lingua franca*) for speakers of other more geographically restricted languages. The variant of this language spoken in Côte d'Ivoire is called Dyula, which means 'trader' or 'merchant'.

**Note:** Bambara is a tonal language. The grave accent ( ` ) on a vowel (e.g., à) indicates a low tone, so that *ka* and *kà* would be distinct words, each with its own meaning. The tonal system of Bambara is more complex than what is written here since the missing tonal information is not relevant to the problems you need to solve.

Study the conversation on the next page between two men, Bala (B) and Musa (M), paying attention to the word order in each sentence, and also to the way in which the time of the event relative to the time of the utterance is expressed. You should also focus on the difference between positive (or affirmative) sentences and negative ones and also the different ways in which statements and questions are formulated.



M:	I ni ce. I ka kènè wa?	Greetings. Are you well?
B:	N'ba. Tòorò tè.	OK. No problems.
	I bòra min?	Where have you come from?
M:	N' bòra so.	I've come from home.
	Madu bè yan wa?	Is Madu here?
B:	Ayi, a tè yan. A bòra yan.	No, he's not here. He's gone away from here.
M:	A taara min?	Where has he gone?
B:	A taara dugu kònò.	He's gone to town.
M:	A bè segin kà na dumuni kè wa?	Is he coming back to eat?
B:	Ayi, a tè segin.	He's not coming back.
	A ye dumuni kè kaban.	He has eaten already.
M:	Mobili bè Madu fè wa?	Has Madu got a car?
B:	Ayi, mobili t'a fè.	No, he doesn't have a car.
	Madu tè se kà mobili san.	Madu can't buy a car.
	Wari tè Madu fè dè!	Madu doesn't have any money!
	I taara sugu kònò kunun wa?	Did you go to market yesterday?
M:	Owò. N'taara yen ni n'muso ye.	Yes, I went there with my wife.
B:	Madu taara sugu kònò kunun.	Madu went to market yesterday.
	I y'a ye sugula wa?	Did you see him at the market?
M:	Ayi, n'man Madu ye sugula kunun.	No, I didn't see Madu at the market yesterday.
	N'ye Madu muso dònò ye yen.	I saw only Madu's wife there.
B:	I kòròke taara sugu kònò kunun wa?	Did your brother go to market yesterday?
M:	Ayi, a man taa sugu kònò. A bè Bamako.	No he didn't go to market. He's in Bamako.
B:	A bè mun kè yen?	What's he doing there?
M:	A bè baara kè yen.	He's working there.
B:	I ye mun san sugula kunun?	What did you buy at the market yesterday?
M:	N'ye dólò san yen.	I bought beer there.
B:	A ka di wa?	Is it good?
M:	Ayi, a man di. A ka kumun.	No, it's not good. It's sour.
	I ye tamati san sugula wa?	Did you buy vegetables at the market?
B:	Ayi, n'man tamati san, n'ye jègè dònò san yen.	No, I didn't buy vegetables, I bought only fish there.
M:	Jègè ka di wa?	Is the fish good?
B:	Owò. A ka di kosobe.	Yes. It's really good.
M:	N'bè bò yan sisan.	I'm leaving here now.
B:	I bè taa min sisan?	Where are you going now?
M:	N'bè taa so.	I'm going home.
	N'bè segin yen kà na dumuni kè.	I'm going back there to eat.
B:	Kà tile hère caya!	May the day pass in peace.
M:	Amiina.	Amen (so be it).



A. Write the Bambara translation of these English words:

	English	Bambara
1.	market	
2.	home	
3.	fish	
4.	beer	
5.	money	

B. Write the English translation of these Bambara words:

	Bambara	English
1.	san	
2.	taa	
3.	segin	
4.	di	
5.	kumun	

C. On the basis of what the speakers say in the preceding conversation, answer these questions in Bambara using a full sentence. Write your answer under each question. The first one is done as an example.

1.	Where did Musa come from when he met up with Bala?
	<i>A bòra so.</i>
2.	Did Musa see Madu when he arrived at Bala's place or at the market?
3.	Why can't Madu buy a car?
4.	When did Musa go to market?
5.	Did Musa go to market by himself?
6.	What did Musa buy at the market?



**D.** Translate these sentences into Bambara.

1.	Did Madu buy a car?	
2.	What did Bala buy at the market?	
3.	Did Musa see Madu at the market?	
4.	Does Madu have any money?	
5.	Where is Musa's brother?	

**E.** English contrasts the verbs *go* and *come*. Bambara makes a contrast between the verb *taa* and the verb *bò*. On the basis of how *taa* and *bò* are used by Bala and Musa, is the meaning difference between these verbs exactly the same as for *go* and *come*? Explain your reasoning.

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Contributed by Mary Laughren, University of Queensland

Data from

Bird, Charles, Hutchison, John & Kanté, Mamadou. (1977) *An ka Bamanankan kalan: Beginning Bambara*.  
Bloomington, Indiana: Indiana University Linguistics Club.



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## PROBLEM 6. *LETTERS FOR CUZCO*

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*Orthography design* is the process of developing an alphabet and spelling rules for a language. A good orthography has several features:

Given a spoken word, there's no question of how to spell it.

Given a written word, there's no question of how to pronounce it.

In the modern world, it's increasingly important that it be reasonably easy to type!

Quechua is spoken today by millions of people in Peru, Ecuador, and Bolivia, the descendents of the citizens of the Incan Empire. Quechua speakers are rapidly joining the Information Age, and both Google and Microsoft Windows now come in Quechua!

Like in English, there are more sounds in Quechua than there are letters on a keyboard, but there are ways around that. For example, we can assign one letter to multiple sounds so long as a reader can always predict, from its position in the word or from other letters in the word, which sound is meant. So if the sound [b] only ever occurs right after [m], and [p] never occurs right after [m], we can just write "p" for both, since you'll be able to predict from the previous letter whether "p" means [b] or [p].

This "phonemic principle" is the central principle of most orthographies, not just because it reduces letters but also because our minds categorize sounds in the same way.

On the next page you will see 33 words in Cuzco Quechua written as they are pronounced but not necessarily as they are written in the standard spelling system.  $q$  and  $\chi$  represent consonant sounds that do not occur in English. See if you can do the tasks that follow.



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<b>awtu</b>	car	<b>qasi</b>	free	<b>sikasika</b>	caterpillar
<b>kanka</b>	roasted	<b>qatuy</b>	to barter	<b>sipiy</b>	to kill
<b>karu</b>	far	<b>qatoχ</b>	merchant	<b>sipeχ</b>	murderer
<b>kiru</b>	teeth	<b>qatisaχ</b>	I will follow	<b>soχtaral</b>	sixty cents
<b>kisa</b>	nettle	<b>qelqaχ</b>	writer	<b>sunka</b>	beard
<b>kisu</b>	cheese	<b>qolqe</b>	silver	<b>toχra</b>	ball of ash
<b>kunka</b>	neck	<b>qosa</b>	husband	<b>uyariy</b>	to listen
<b>kusa</b>	great	<b>qosqo</b>	Cuzco	<b>uywaχ</b>	caretaker
<b>layqa</b>	witch	<b>saqey</b>	to abandon	<b>waleχ</b>	a lot
<b>oqe</b>	spotted	<b>saχsa</b>	striped	<b>weqaw</b>	waist
<b>qasa</b>	frost	<b>seqay</b>	to climb	<b>yawar</b>	blood

A. Show that we don't need separate letters for  $q$  and  $\chi$ .

B. Show that we can't represent the vowels  $a$  and  $i$  by the same letter.

C. Show why we can't represent the vowels  $a$  and  $e$  by the same letter.