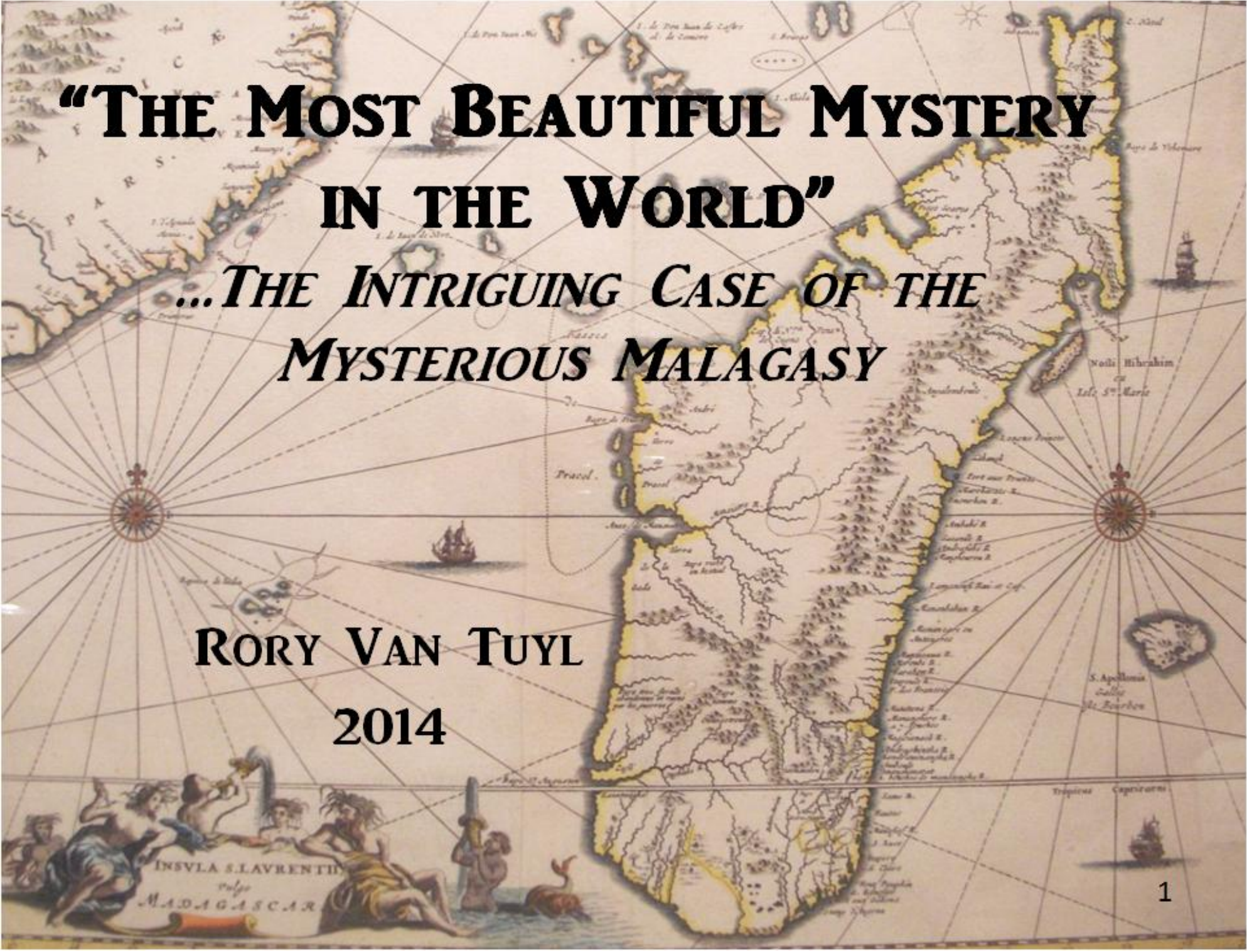


The intriguing case of the mysterious Malagasy! Alfred Grandidier [1836 – 1921], the 19th century's greatest expert on Madagascar, called this *"La plus belle énigme du monde"* – the most beautiful mystery in the world. But before we delve into the mystery of its people, let's talk about the place itself, the wonderful island of Madagascar.

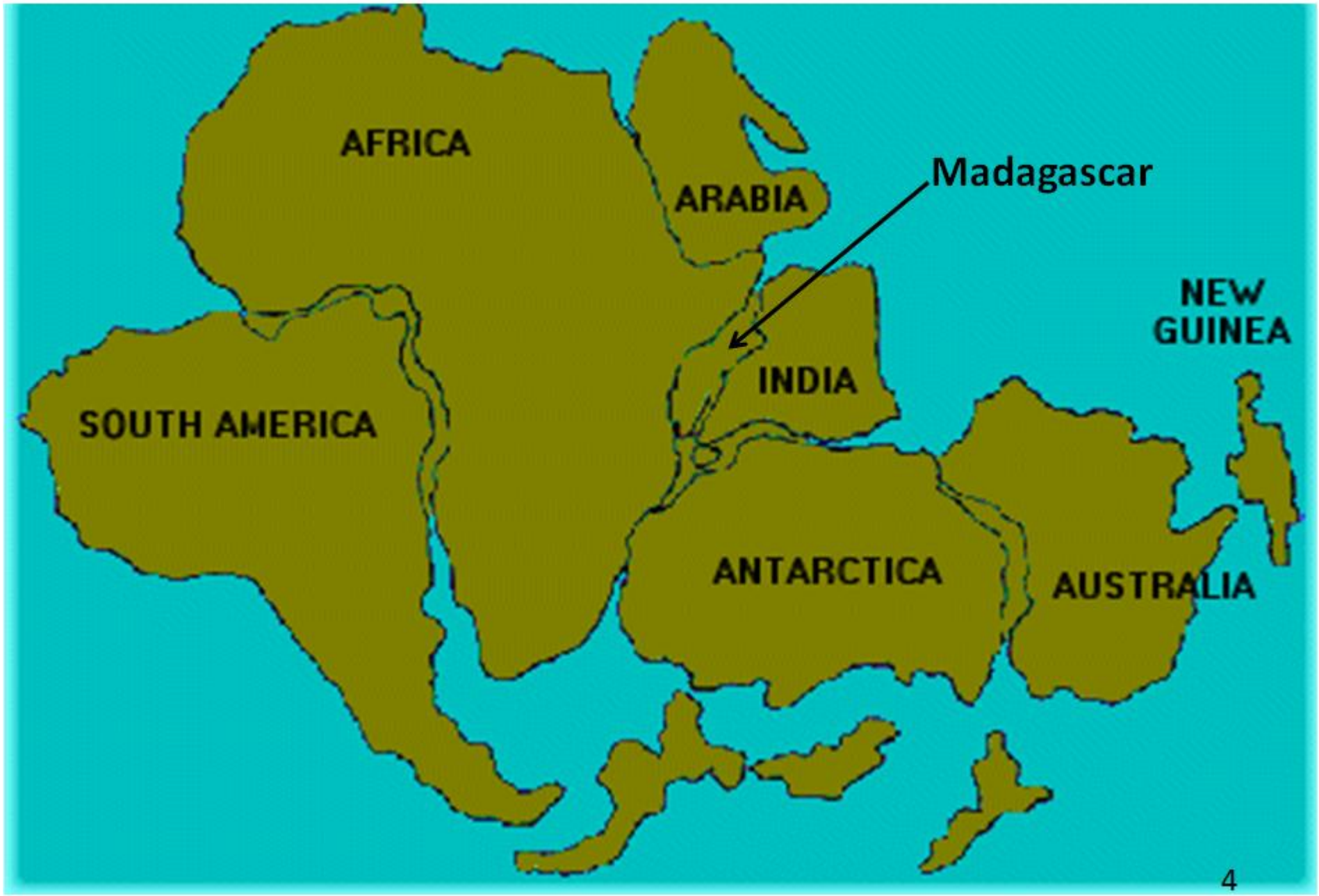
Madagascar is the World's 4th Largest Island
Many consider it the "Eighth continent"

Madagascar is 38% Larger than California!

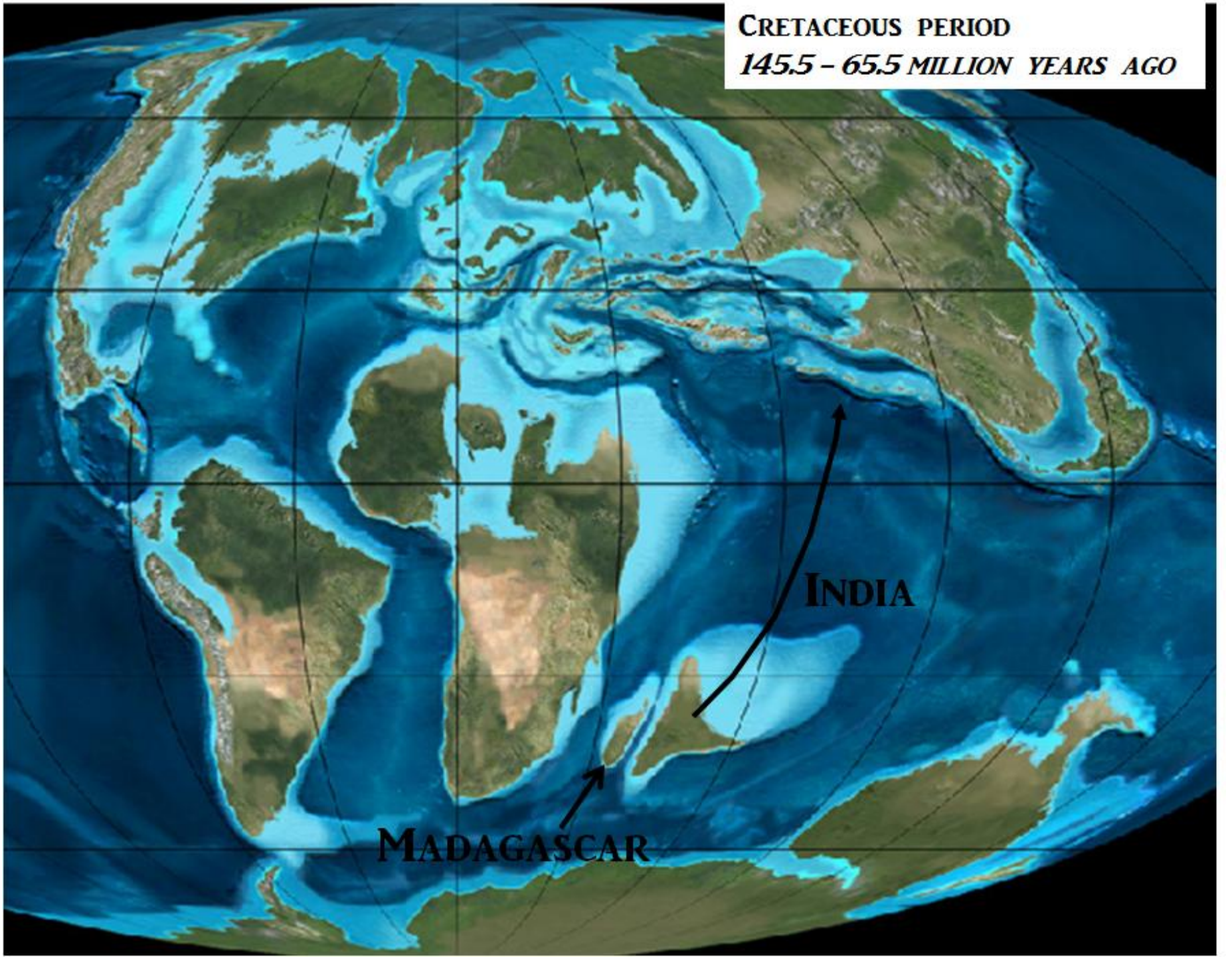
3

- **Madagascar Area= 587,041 sq km**
- **California Area=423,970 *square kilometers***

Gondwana – circa 167 Million Years Ago



•**When all the world's southern lands were one continent, Madagascar was a little sliver sandwiched between what are now Africa and India**



- **Madagascar split from Africa at 160 mya and from India at 90 mya.**
- **The world was still ruled by dinosaurs**
- **India had yet to drift northward to become part of Asia**

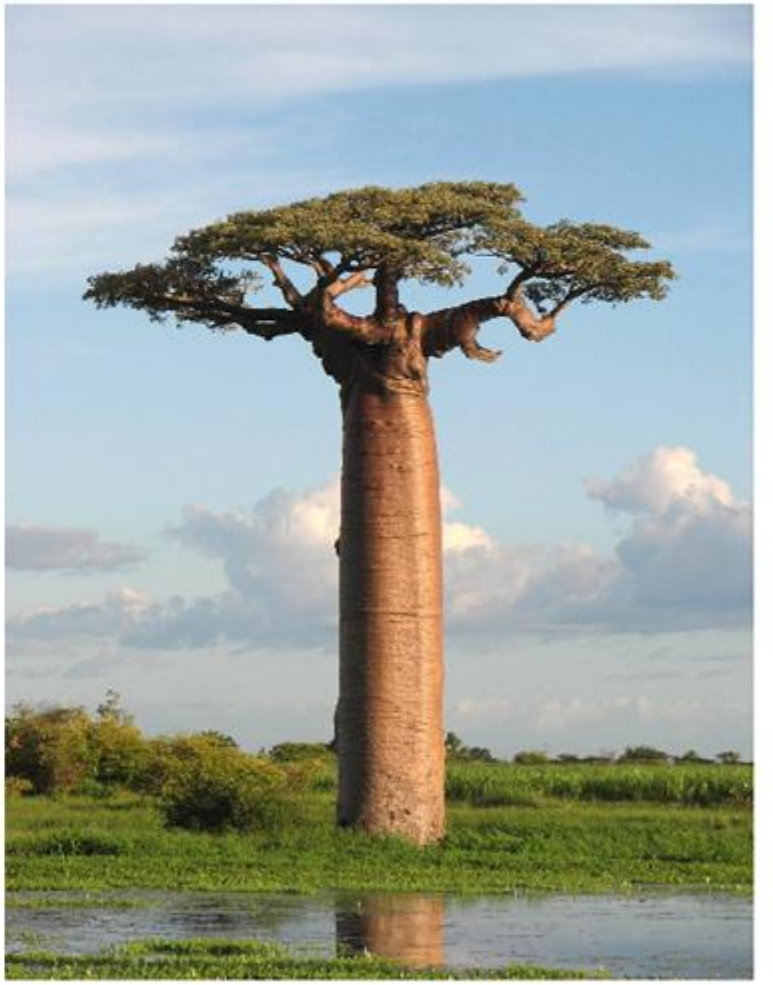
Madagascar: A World of its Own

- 10,000 – 12,000 Plant Species: 80% Endemic
- 300 Species of Reptiles: 91% Endemic
- 250 Species of Birds: 46% Endemic
- 178 Species of Amphibians: 99% Endemic
- 33 Species of Primates: 100% Endemic
- 1000 Species of Orchid: 85% Endemic
- Entire Family "Didieraceae" Unique to Madagascar's "Spiny Desert"

Famous Endemic Flora and Fauna

Chameleons

Baobabs



Lemurs

Chameleon: Madagascar is home to about half the world's 150 or so species of chameleons, including both subfamilies

Baobab: nine species of tree, including six native to Madagascar, two native to mainland Africa and the Arabian Peninsula, and one native to Australia.

Lemur- Found only in Madagascar, Lemurs arrived around 62 to 65 mya by rafting on mats of vegetation. The 101 species extant today have evolved to fill many ecological niches, especially those filled by monkeys elsewhere.. Some 17 species of "Giant" lemur went extinct after the arrival of humans on the island.

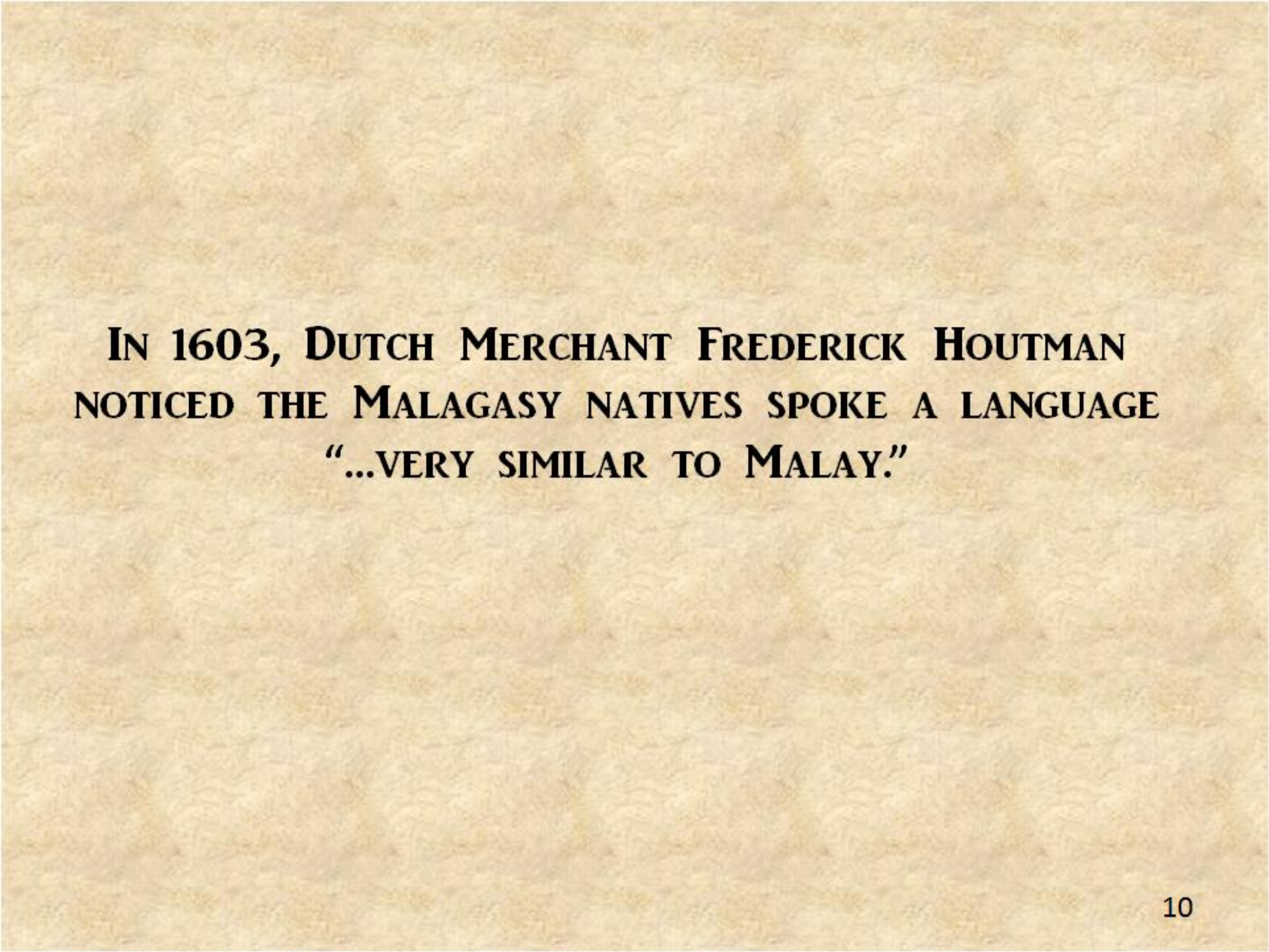
These natural wonders attract over 300,000 tourists per year, of which 60% are French.

But in this lecture we will be studying an equally fascinating aspect of Madagascar, its People.

Madagascar Statistics

- Population (2013 est): 22.6 Million
- Rural Population (2010): 14.5 Million
- Population Under 15: 41%
- Population Growth rate: 2.7%
- Urban Population Growth Rate: 4.7%
- Income per Capita (2010): $430
- HIV/Aids total Infection Rate: 0.2%
  [Nigeria=3.1%; South Africa 18.1%]
- Adult Literacy Rate: 65%

But we're here to learn about the people of Madagascar – The *Malagasy.*
Here they are. These pictures represent various people from 16 of the 20 or so ethnic groups on the island. In this lecture, we will be looking at their languages and DNA to see what we might learn about who they are and where they came from.



In 1500, Portuguese navigator Diego Diaz became the first European to visit Madagascar. Other European traders followed, most of them headed to and from the East Indies. **IN 1603, DUTCH MERCHANT FREDERICK HOUTMAN NOTICED THE MALAGASY NATIVES SPOKE A LANGUAGE "...VERY SIMILAR TO MALAY."**

AND IN 1613, PORTUGUESE JESUIT FR. LUIS MARIANO WROTE THAT HE NOTICED THE SIMILARITY OF MALAGASY SPEECH TO *THE LANGUAGES OF SOUTHEAST ASIA.*

HE TRAVELED UP AND DOWN THE COASTS OF MADAGASCAR NOTING :

"THEIR LANGUAGE...IS THE SAME THROUGHOUT THE ISLAND... THE NATIVES OF THE SOUTH AND NORTH UNDERSTAND EACH OTHER WITH EASE."

Remember that claim: "Everyone understands everyone else with ease"

But why would people who looked like This...

Talk like people who looked like This?

12

That is the mystery in the title of this talk: “Le plus belle enigme du monde”

THE ANSWER CAME CLEAR TO EUROPEANS IN 1777, WHEN FRENCH MERCHANT-EXPLORER NICHOLAS MAYEUR VENTURED INTO THE CENTRAL HIGHLANDS AND FOR THE FIRST TIME DISCOVERED THE MERINA PEOPLE.

HE WROTE...

"IN THE INTERIOR OF THIS GREAT ISLAND ENTIRELY SURROUNDED BY SAVAGE PEOPLES THERE IS MORE ENLIGHTENMENT, MORE INDUSTRY AND A MORE ACTIVE ADMINISTRATION THAN ON THE COASTS WHERE THE INHABITANTS ARE IN CONSTANT RELATIONS WITH FOREIGNERS."

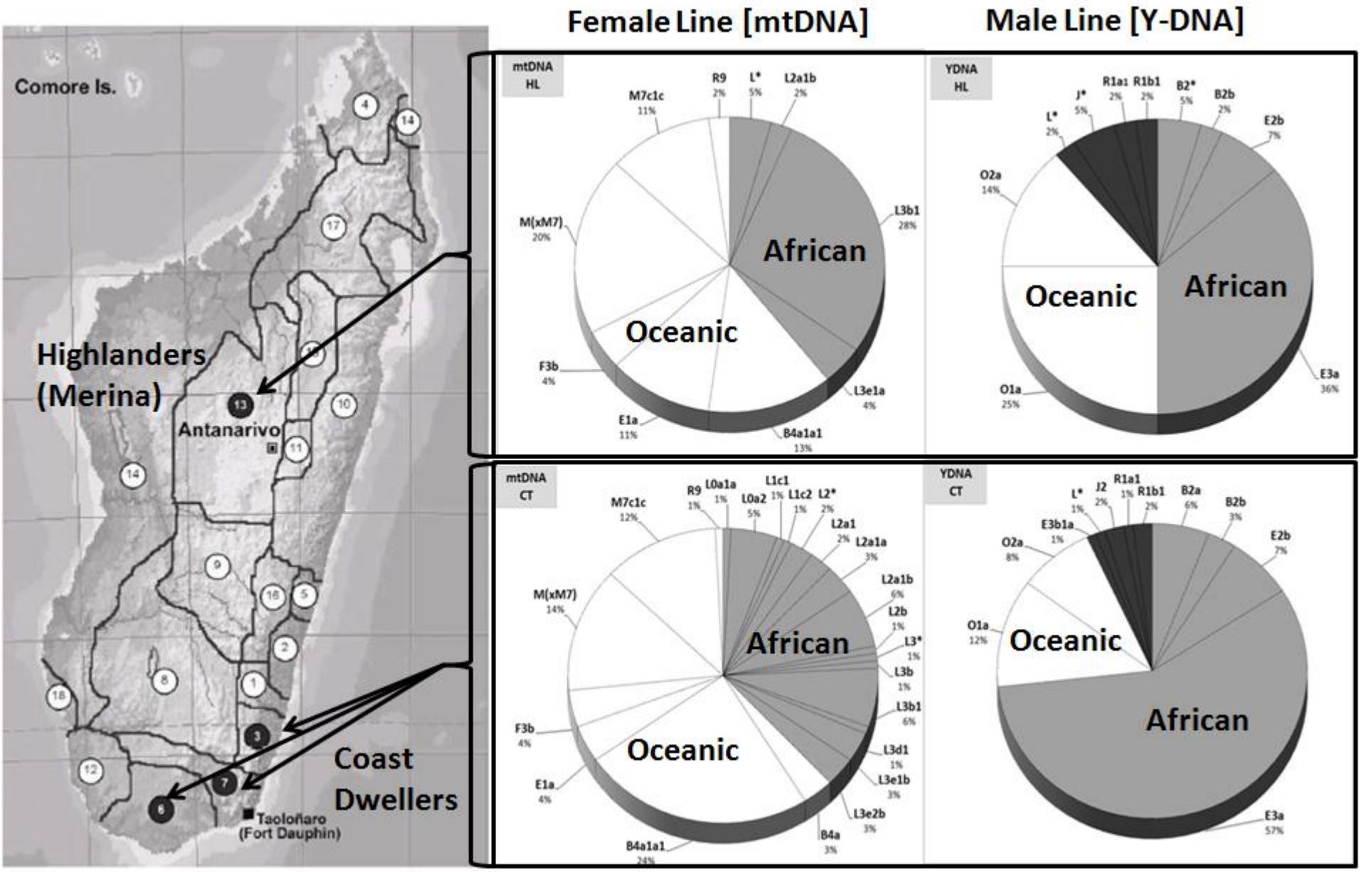
The Merina People

King Andrianampoinimerina (1745–1810)

Modern Merina

Here is the Imerina Kingdom in the highlands of Madagascar. It was unified in the 18th century by the great Merina king Andrianamoinamerina. Many Merina - especially the upper classes - don't look like they came from Africa. Could they have come from the Malay Peninsula as Houtman hypothesized? Or from SE Asia as Mariano supposed? And did they bring the Malagasy language with them?

Today, we have DNA analysis to help us answer the question about the origin of immigrant peoples.

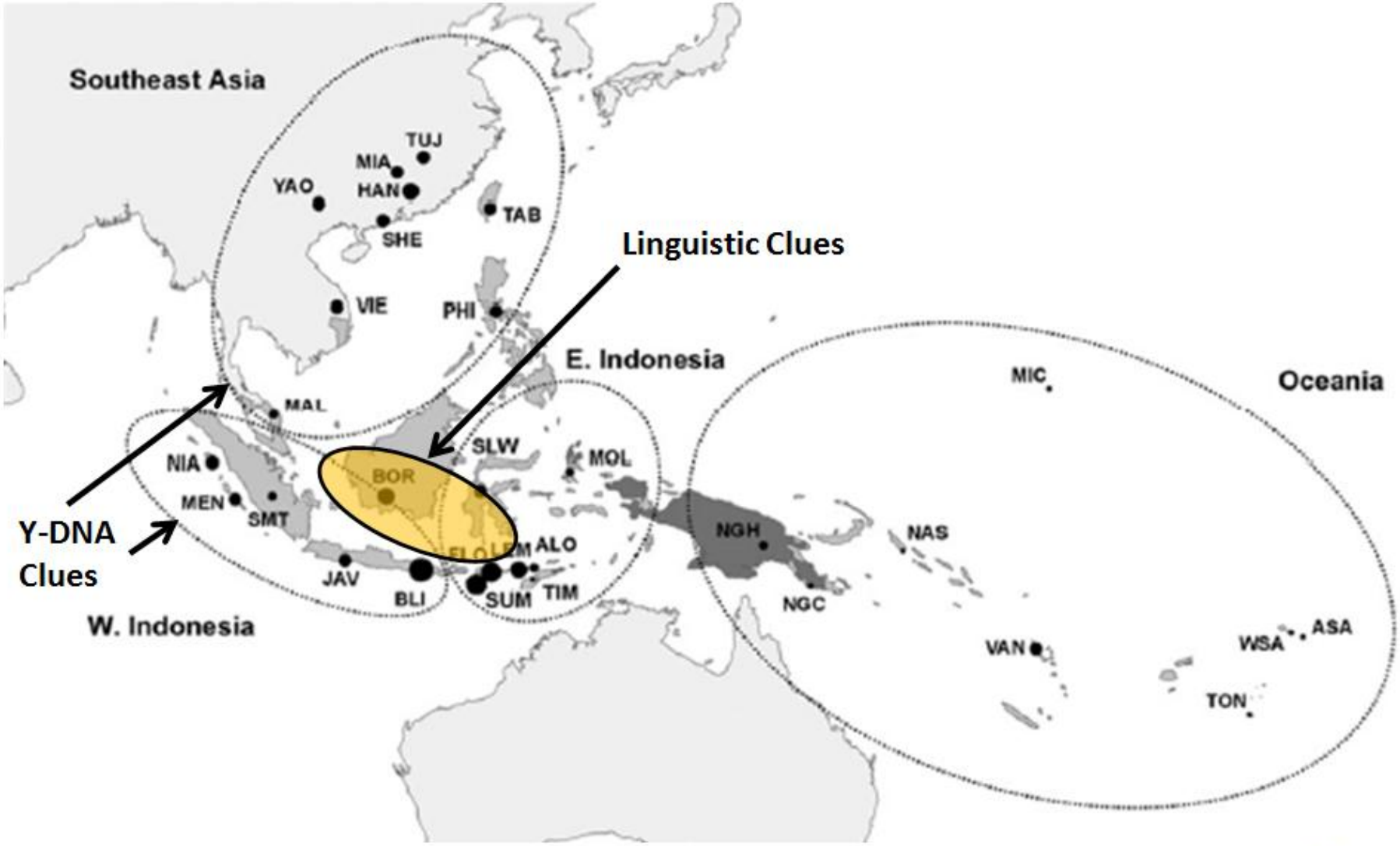


Here's what the most recent DNA study tells us:

Both the Merina and the coastal dwellers from the southern and eastern sections share African and Oceanic heritage. In fact, the female line (mtDNA) is quite similar for both the Merina and the coastal dwellers: about 60% Oceanic, 40% African. In the male line, the Merina are about 50% African, while the coast dwellers are about three-quarters African. In the male line, there has also been a substantial contribution – about 10% - from Europeans and Arabs, as might be expected from the known history of Arab slave trade and European trade and colonization. For comparison: African-American admixture is 27.5%±2.5% European Y -DNA, about the same as southern Malagasy. But mtDNA is only 9%±2% European, much less than the Oceanic contribution to Malagasy.

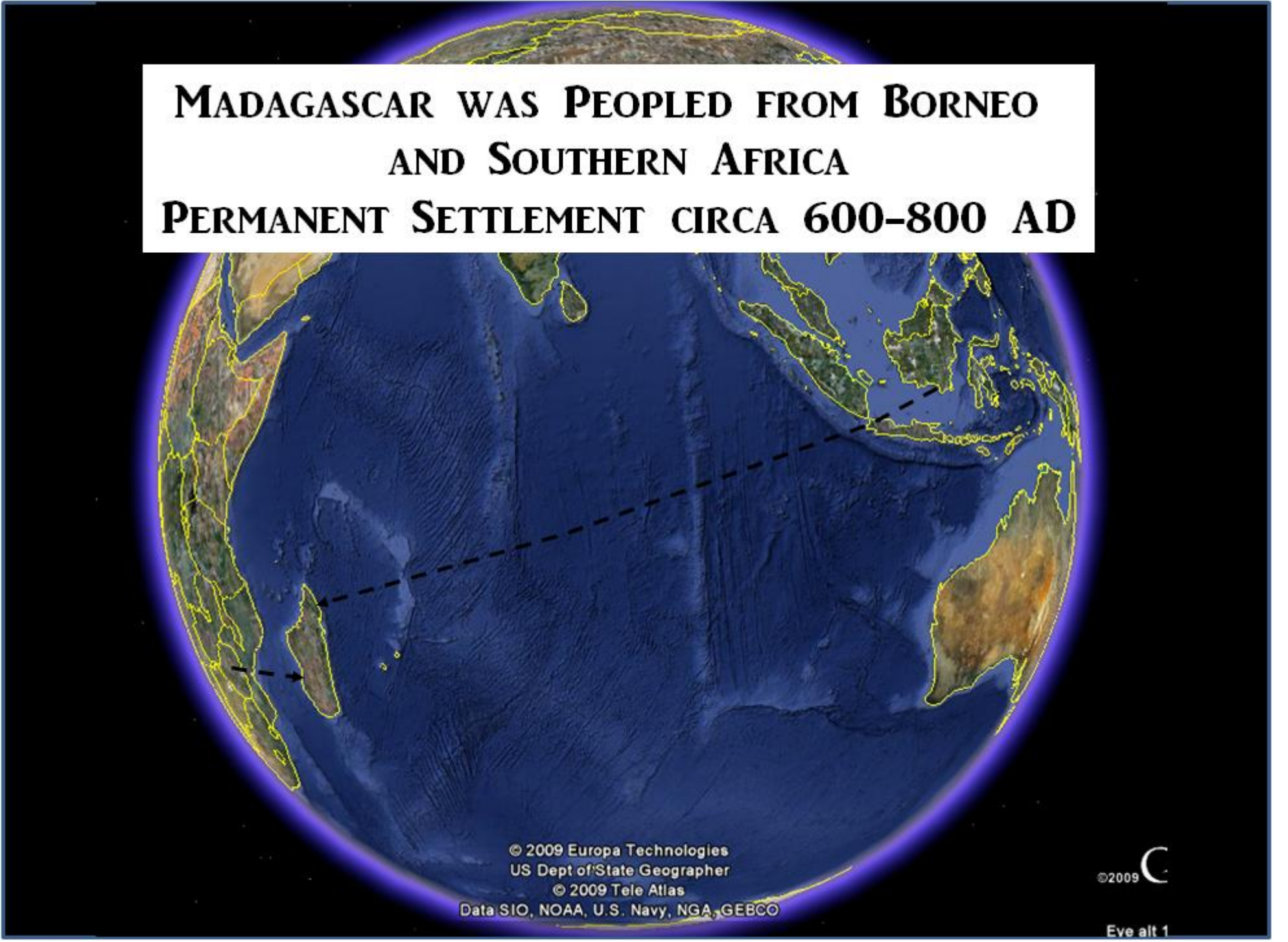
Recently, a complex statistical simulation involving a rare mtDNA motif unique to Madagascar [Cox et al. 2012] claimed that the island was most likely settled about 800 AD and that some 30 Indonesian women (comprising 93% of the founding party's women) were in that group.

Where Did the Oceanic Malagasy Originate?
Both DNA and Linguistic Evidence Point to Western Indonesia

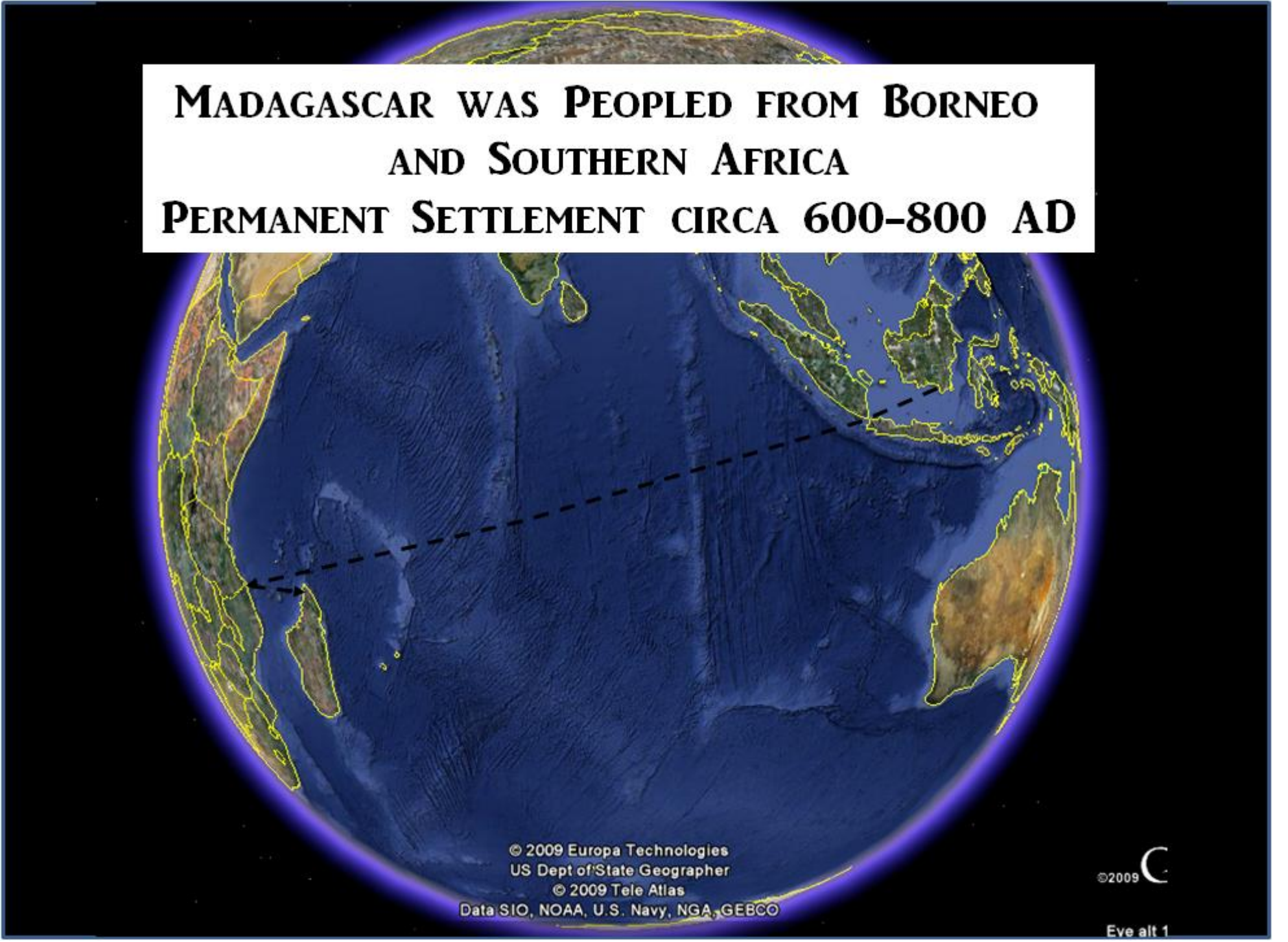


Y-DNA analysis points to SE Asia, Indonesia and Oceania as the origin of the Austronesian component of the Malagasy. This does not give us much of an idea about where the immigrants actually came from.

But linguistic clues are more specific: they point to the island of Borneo.



- **Earliest known humans circa 400AD**
- **Permanent Settlement by Humans was circa 600-800 AD**
- **Why not settled earlier from Africa?**
  - **Bantu migration only reached southern Africa ca. 300-500AD**
  - **Bantu did not have long-distance sailing technology**



One theory holds that the Indonesians sailed first to mainland Africa, where they hooked up with some coastal Africans, and they then migrated together to Madagascar. This theory does a better job of explaining how a small group of Indonesian sailors could encounter Africans than any theory involving separate emigration to the island.

- The Indonesians brought with them the technology that ensured not only their survival, but the exponential growth in population in the centuries that followed: riziculture, the farming of rice.
- In the countryside, rice paddies are worked by individuals, but the hillsides are burned for communal planting of rice, in a procedure known a TAVY, what we would call “slash and burn”.
- Tavy is an ancient practice which was actually a good and efficient way to operate before the population explosion.
- A farm community can get up to 3 years of crop yield from Tavy,
- But must then let the field lie fallow for at least 15 years to recover enough vegetation to be burned once again.

•But it was PADY that made the Malagasy so successful. These paddies around the capital city of Antananarivo were built by Early Merina kings, who used *fanampoana* (statute labor) to construct a massive system of irrigated rice paddies and dikes around the city to provide adequate rice for the growing population; most fields are still producing rice to the present day.

•Extensive rice fields around the capital city of Antananarivo are shown here.

•The Merina became expert rice cultivators on a grand scale

•However, due to population explosion, Madagascar today produces only 20% of the rice it consumes

•It must import the rest, mostly from Thailand.

- Here is another technology from Indonesia: rectangular thatched-roof houses
- The village has typical Malagasy huts for houses.
- Raised wood floor
- Wood siding
- Thatched roof
- No chimney, even though fires are lit inside

All over Africa, thatched-roof huts are ROUND.

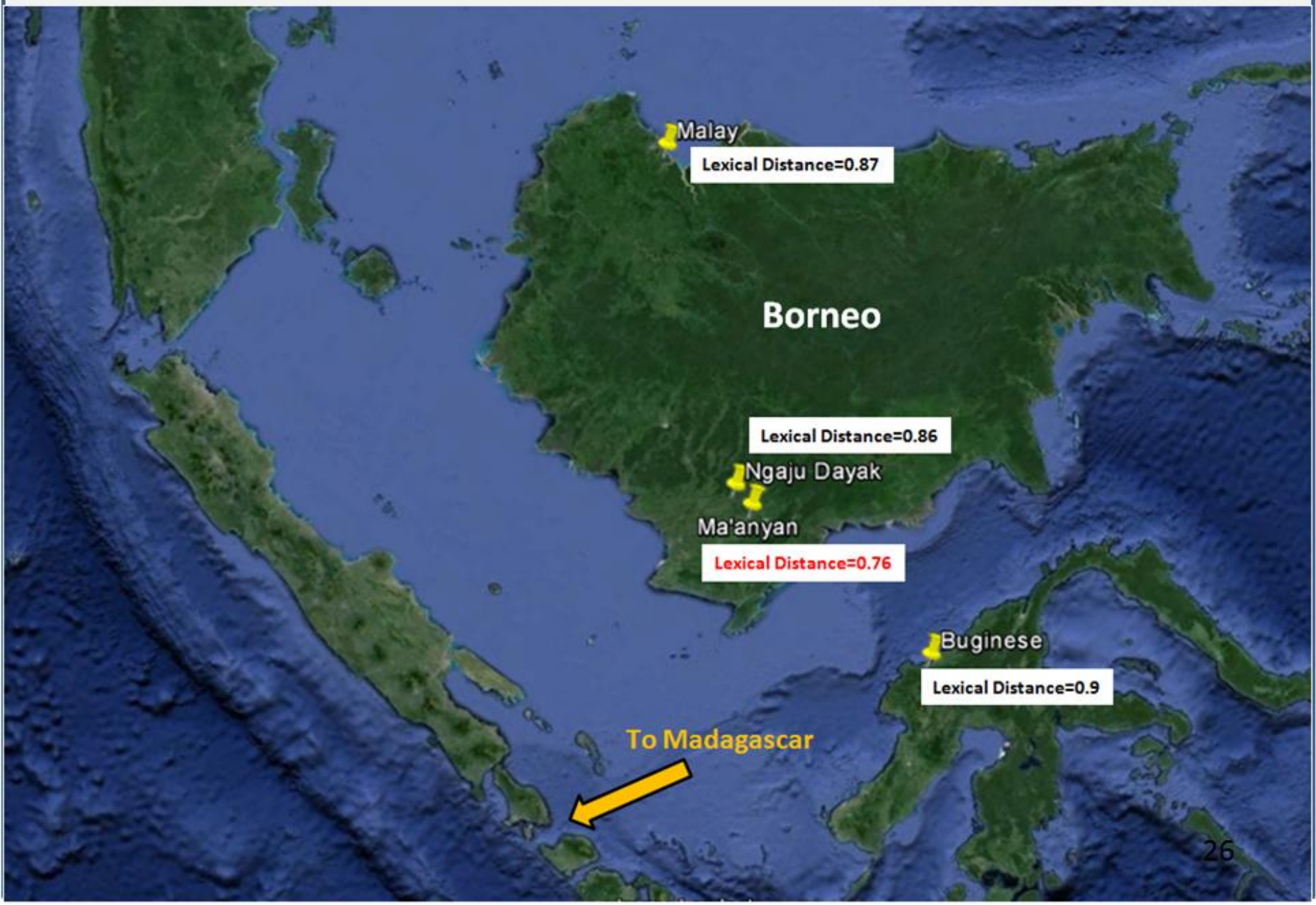
- **It was the Africans who introduced cattle to Madagascar. Possibly in the original settlement, or possibly later.**
- **This is the *Zebu*, a form of cattle imported from Africa.**
- **Cattle are found everywhere, but the largest herds are run by pastoralists of the inland south and west.**
- **Zebu are used as working animals as well as a source of milk and meat.**

One of the most colorful Indonesian customs is the Famidihana, the ritual re-burying of an ancestor's bones after the flesh has decayed.

But in Madagascar, the ceremony has taken on a typical African flavor, with song and dance similar to that of southeastern Africa.

After the ceremony, the bones are interred above ground for posterity.

Indonesian Languages Cognate to Merina Malagasy

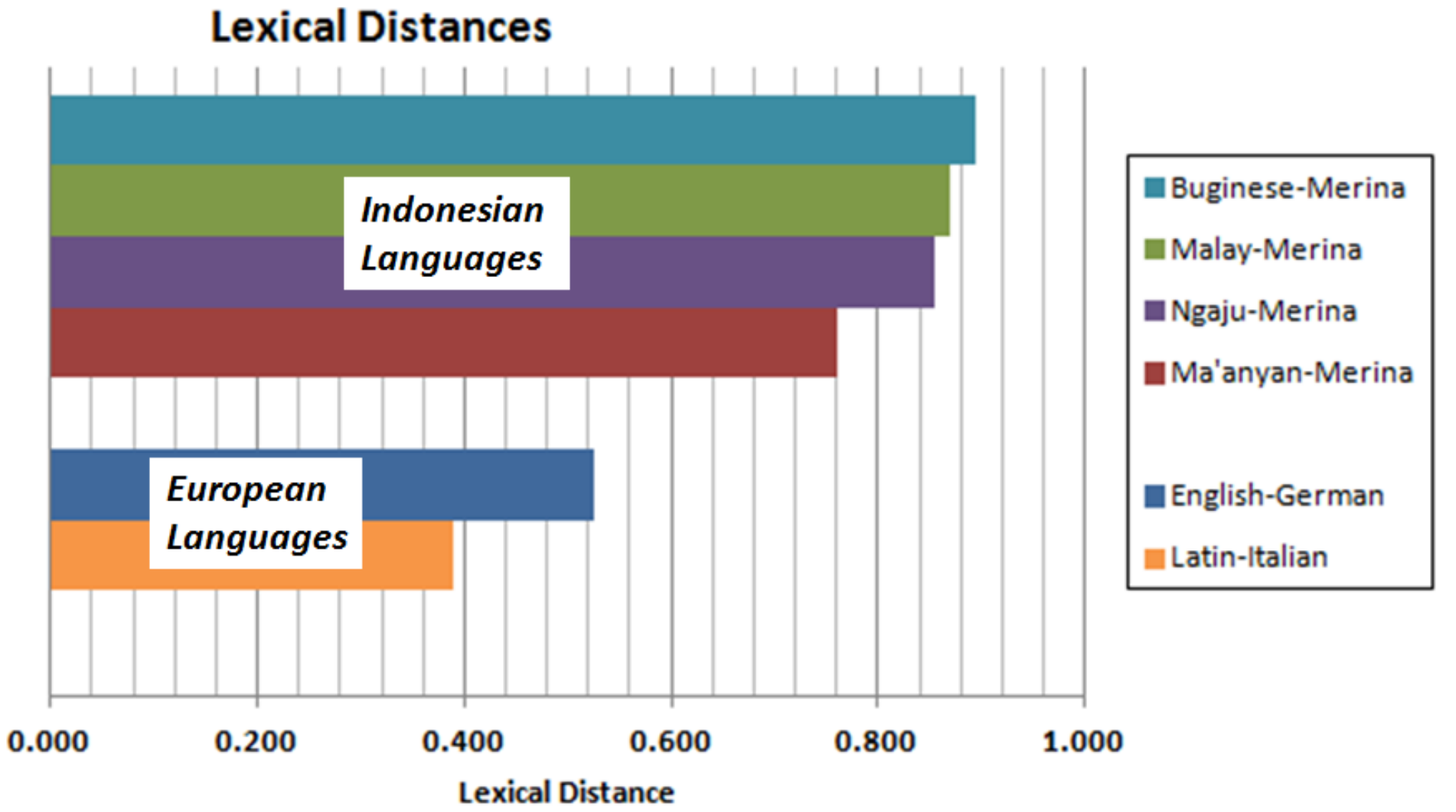


And of course the Malagasy language comes from Indonesia. The most closely related language is that of the Ma'anyan Dayak people.

But the Ma'anyan are land-bound and no longer go to sea. So the actual sailors who set off for the west may have been ancestors of the Ma'anyan who lived near the coast.

Indonesian Languages Cognate to Merina Malagasy

…But Not Very Close



None of the modern Indonesian languages that contain words similar to Malagasy are particularly closely related to it.

Using a measure called Lexical Distance (which we'll discuss later), we see that Ma'anyan and Malagasy are not nearly as close as English to German or Latin to Italian.

Table of Numbers in Austronesian Languages

Language	1	2	3	4	5	6	7	8	9
Samoan	tasi	lua	tolu	fa	lima	ono	fitu	valu	iva
Tuvalu	tasi	iua	tolu	fa	lima	ono	fitu	valu	iva
Rarotongan	tai	rua	toru	a	rima	ono	itu	varu	iva
Maori	tahi	rua	toru	wha	rima	ono	whitu	waru	iwa
Hawaiian	kahi	lua	kolu	ha	lima	ono	hiku	walu	iwa
Rapanui	tahi	rua	toru	ha	rima	ono	hitu	vau	iva
Tongan	taha	ua	tolu	fa	nima	ono	fitu	varu	hiva
Fijian	dua	rua	tolu	va	lima	ono	vitu	walu	civa
Rotuman	ta	rua	folu	hake	lima	ono	hifu	valu	siva
Cebuano	usa	duha	tulo	upat	lima	unum	pito	walo	siyam
Tagalog	isa	dalawa	tatlo	apat	lima	anim	pito	walo	siyam
Malay	satu	dua	tiga	empat	lima	enam	tujuh	lapan	sembilan
Malagasy	iray/isa	roa	telo	efatra	dimy	enina	fito	valo	sivy
Thao[a]	tata	tusha	turu	pat	rima	–	pitu	–	–
Ma'anyan	isa	rueh	telo	efatro	dime	enem	pitu	walu	su'ey

The Lexical Distance between languages can be estimated by comparing words with the same meaning in the languages and looking for *cognates* – words with enough similarity to suggest a family relationship.

This list of numbers for languages in the Austronesian family shows the kind of phonetic relationship that's typical for common words that persist as languages evolve. But confusion may arise when there are synonyms involved, like iray/isa for "one". More on this later.

A *Swadesh List* of 200 Selected Words

Serva's 200-Word Swadesh List (English):

1	all	21	cloud	41	far	61	good	81	in	101	narrow	121	root	141	smell	161	that	181	water
2	and	22	cold	42	fat	62	grass	82	kill	102	near	122	rope	142	smoke	162	there	182	we
3	animal	23	come	43	father	63	green	83	know	103	neck	123	rotten	143	smooth	163	they	183	wet
4	ashes	24	count	44	fear	64	guts	84	lake	104	new	124	rub	144	snake	164	thick	184	what
5	at	25	cut	45	feather	65	hair	85	laugh	105	night	125	salt	145	snow	165	thin	185	when
6	back	26	day	46	few	66	hand	86	leaf	106	nose	126	sand	146	some	166	think	186	where
7	bad	27	die	47	fight	67	he	87	left	107	not	127	say	147	spit	167	this	187	white
8	bark	28	dig	48	fire	68	head	88	leg	108	old	128	scratch	148	split	168	you (s)	188	who
9	because	29	dirty	49	fish	69	hear	89	lie	109	one	129	sea	149	squeeze	169	three	189	wide
10	belly	30	dog	50	five	70	heart	90	live	110	other	130	see	150	stab	170	throw	190	wife
11	big	31	drink	51	float	71	heavy	91	liver	111	person	131	seed	151	stand	171	tie	191	wind
12	bird	32	dry	52	flow	72	here	92	long	112	play	132	sew	152	star	172	tongue	192	wing
13	bite	33	dull	53	flower	73	hit	93	louse	113	pull	133	sharp	153	stick	173	tooth	193	wipe
14	black	34	dust	54	fly	74	hold	94	man	114	push	134	short	154	stone	174	tree	194	with
15	blood	35	ear	55	fog	75	how	95	many	115	rain	135	sing	155	straight	175	turn	195	woman
16	blow	36	earth	56	foot	76	hunt	96	meat	116	red	136	sit	156	suck	176	two	196	woods
17	bone	37	eat	57	four	77	husband	97	mother	117	right	137	skin	157	sun	177	vomit	197	worm
18	breathe	38	egg	58	freeze	78	I	98	mountain	118	right (hand)	138	sky	158	swell	178	walk	198	you (pl)
19	burn	39	eye	59	fruit	79	ice	99	mouth	119	river	139	sleep	159	swim	179	warm	199	year
20	child	40	fall	60	give	80	if	100	name	120	road	140	small	160	tail	180	wash	200	yellow

Named after lexicostatistics pioneer Morris Swadesh, who first generated a similar list in 1952, this list attempts to sample a language using words that are thought to be universally understood in all languages. This 200-word version contains a wide range of words that have been found and understood in many languages. It is a popular tool for measuring the similarity between related languages.

Serva's 200-Word Swadesh List (Latinate Words Highlighted):

1	all	21	cloud	41	far	61	good	81	in	101	narrow	121	root	141	smell	161	that	181	water
2	and	22	cold	42	fat	62	grass	82	kill	102	near	122	rope	142	smoke	162	there	182	we
3	animal	23	come	43	father	63	green	83	know	103	neck	123	rotten	143	smooth	163	they	183	wet
4	ashes	24	count	44	fear	64	guts	84	lake	104	new	124	rub	144	snake	164	thick	184	what
5	at	25	cut	45	feather	65	hair	85	laugh	105	night	125	salt	145	snow	165	thin	185	when
6	back	26	day	46	few	66	hand	86	leaf	106	nose	126	sand	146	some	166	think	186	where
7	bad	27	die	47	fight	67	he	87	left	107	not	127	say	147	spit	167	this	187	white
8	bark	28	dig	48	fire	68	head	88	leg	108	old	128	scratch	148	split	168	you (s)	188	who
9	because	29	dirty	49	fish	69	hear	89	lie	109	one	129	sea	149	squeeze	169	three	189	wide
10	belly	30	dog	50	five	70	heart	90	live	110	other	130	see	150	stab	170	throw	190	wife
11	big	31	drink	51	float	71	heavy	91	liver	111	person	131	seed	151	stand	171	tie	191	wind
12	bird	32	dry	52	flow	72	here	92	long	112	play	132	sew	152	star	172	tongue	192	wing
13	bite	33	dull	53	flower	73	hit	93	louse	113	pull	133	sharp	153	stick	173	tooth	193	wipe
14	black	34	dust	54	fly	74	hold	94	man	114	push	134	short	154	stone	174	tree	194	with
15	blood	35	ear	55	fog	75	how	95	many	115	rain	135	sing	155	straight	175	turn	195	woman
16	blow	36	earth	56	foot	76	hunt	96	meat	116	red	136	sit	156	suck	176	two	196	woods
17	bone	37	eat	57	four	77	husband	97	mother	117	right	137	skin	157	sun	177	vomit	197	worm
18	breathe	38	egg	58	freeze	78	I	98	mountain	118	right	138	sky	158	swell	178	walk	198	you (pl)
19	burn	39	eye	59	fruit	79	ice	99	mouth	119	river	139	sleep	159	swim	179	warm	199	year
20	child	40	fall	60	give	80	if	100	name	120	road	140	small	160	tail	180	wash	200	yellow

...Latinate Word in English.

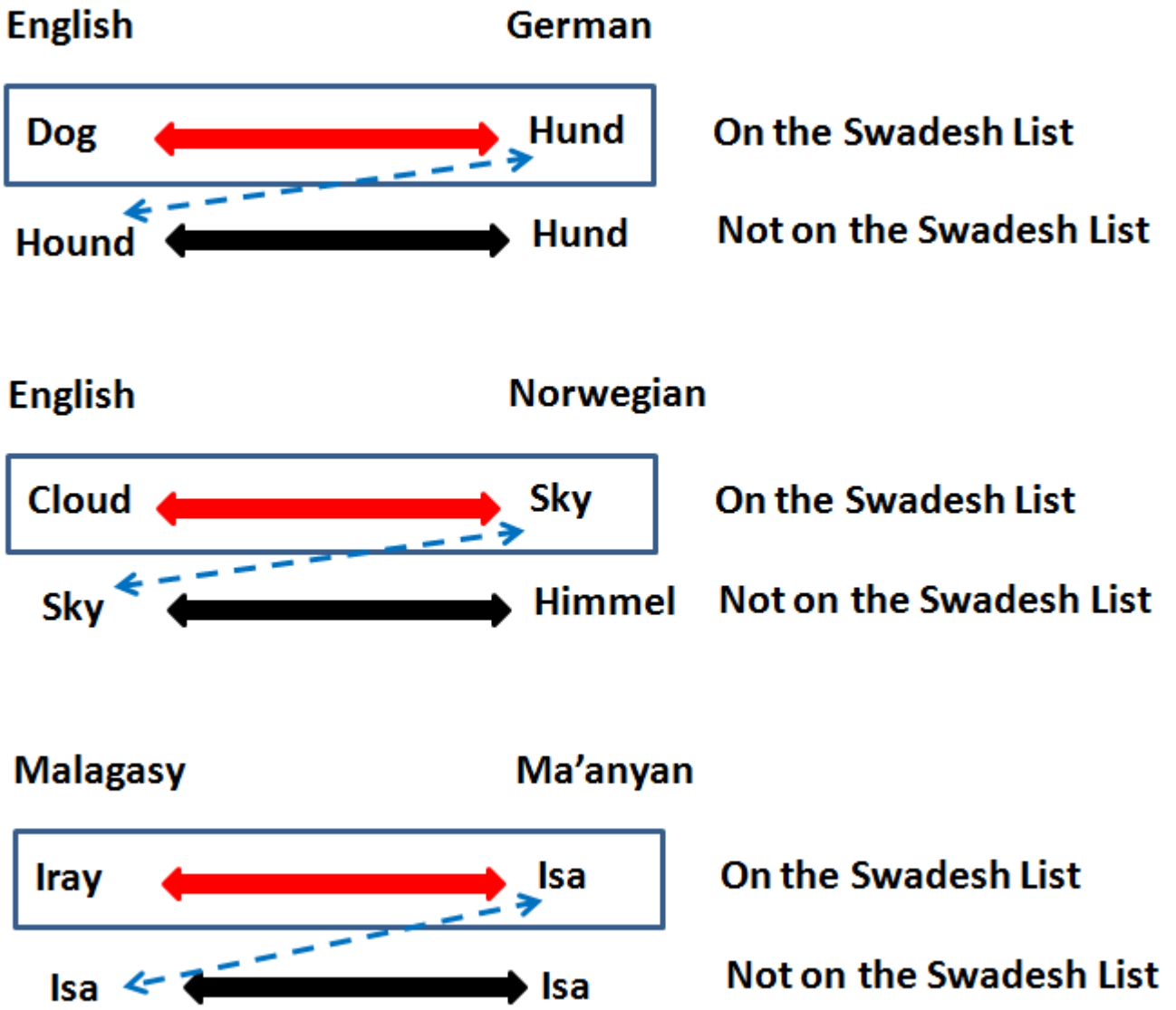
...Unsuitable for Tropical Zone Languages

The Swadesh list is not without problems. For example, the words “ice” and ”snow” in subtropical regions would probably not be of ancient origin.

The words marked in purple are Latinate words brought to English by a separate path from Old English. So if we were trying to learn about the early prehistory of the English people using this list, we might be misled as to the origin of the language and people.

But the biggest problem with these lists is that there are sometimes synonyms for words in the list, and these synonyms contain information about the origin of the language which is lost due to the convention of having only ONE entry per meaning in a Swadesh List.

Examples of Synonym Problem for Swadesh Lists



Here are a couple of examples of confusion generated by certain words on the Swadesh list

But despite the problems with these lists, they can be useful.

Note: "Dog" is from late OE but early origin is unknown

The Swadesh lists used in this presentation – including versions of it for 23 Malagasy dialects –was generated from field research directed by Prof. Maurizio Serva, an Italian physicist and expert on Madagascar and its languages.

Here is one of Prof. Serva's researchers interviewing a Malagasy subject.

Serva's Malagasy Word List: 200 Words; 23 Dialects

Cognate to Ma'anyan & Merina | Cognate to Merina

	ENGLISH	Ma'anyan	MERINA (ANTANANARIVO)	Ma'ayan/Merina Cognate?	ANTAMBOHOAKA (MANANJARY)	ANTAISAKA (VANGAINDRANO)	ANTAIMORO (MANAKARA)	ZAFISORO (FARAFANGANA)	BARA (BETROKA)	BETSILEO (FIANARANTSOA)
1	all	KATULUH	rehetra	0	izy marobe	aby	iaby	daholo	aby	aby
2	and	ANRI	sy	0	de	sy	da	sy	da	sy
3	animal	SATUA	biby	0	biby	biby	biby	biby	biby	biby
4	ashes	WALENUM	lavenona	0	lavenona	lakevo	lakevogna	lakevo	lakevo	lavenona
5	at	HANG	any	0	agny	agny	agny	agny	agny	any
6	back (of a	PUNGUNG	lamosina	0	lamosigna	lamosy	lamosigna	lamosy	lambosy	lamosina
7	bad	PAMAEH ATEI	ratsy	0	ratsy	ratsy	ratsy	ratsy	ratsy	ratsy
8	bark	KUDIT KAYU	hodikazo	0	hodina kakazo	oditrazo	hodikazo	hoditrazo	hodikazo	hodikazo
9	because	DAYA	satria	0	satria	satria	satria	satria	satria	satria
10	belly	WUNTUNG	kibo	0	kibo	troky	kibo	troky	troky	troka
11	big	HANTE	lehibe	0	agnona be	zakabe	zakabe	zakabe	foloay	lehibe
12	bird	WURUNG	vorona	1	vorogna	voro	vorogna	voro	voro	vorona
190	wife	MATUE WAWEY	vady	0	vady	viavy	vady	vady	vady	vady
191	wind	RIWUT	rivotra	1	agnina	rivotry	rivotry	rivotry	rivotry	rivotra
192	wing	ELAT	elatra	1	elatra	elatry	elatry	elatry	elatry	elatra
193	wipe	NGABARASIS	mamafa	0	mamafa	mamafa	mamafa	mamafa	mamafa	mamafa
194	with	ANDRY	amin ny	0	amin ny	ame	amin ny	amin ny	miaraky	amin ny
195	woman	WAWEY	vehivavy	1	viavy	viavy	viavy	viavy	apela	apela
196	woods	JUMPUN	ala	0	ala	hazo	ala	ala	ala	ala
197	worm	SAASING	kankana	0	viky	haka	ankagna	aka	hanka	kankana
198	you (plural)	NAUN	ianareo	0	anareo	anareo	indreo	anareo	nareo	ianareo
199	year	TAUN	taona	1	taona	tao	taogna	taogny	tao	taona
200	yellow	MADINTANG	vony	0	mavo	majabo	mavo	makamaka	mavo	vony

Serva and his collaborators spoke to Malagasy people from 23 different towns and 20 different tribal groups and assembled these lists. What is really good about these lists is their identification of the LOCATION each speaker came from . This turns out to be more important than tribal affiliation when it comes to language. Notice that I have marked in pink the words on this list I judge to be COGNATE to Merina Malagasy. Those highlighted in blue are cognate to Ma'anyan as well as Merina.

But were the words on these lists the ONLY words with that meaning in use? Are there synonyms here that are not on the list but are nonetheless in the dialect? If so, comparison between dialects could be affected. Here is what Maurizio Serva had to say : "Synonyms are used but most of the time there is a single word of common use: people wh[o] say lio understand ra, but they do not use [it]. Probably Merina is contaminating all dialects since it is used in schools, spoken in television and compulsory in bureaucracy, nevertheless, people [are] able to distinguish [their] own dialect from Merina."

Lexical Distance: A way of Specifying Language Relationships

Lexical Distance =

$$1 - \left(\frac{\text{Number of Cognates Between Lists}}{\text{Number of Words in Each List}} \right)$$

e.g. 1- (50 cognates / 200 words) => Lexical Distance = 1 – 0.25 = 0.75

Lexical Distance = 1 means 0% Cognacy of Words from Swadesh List

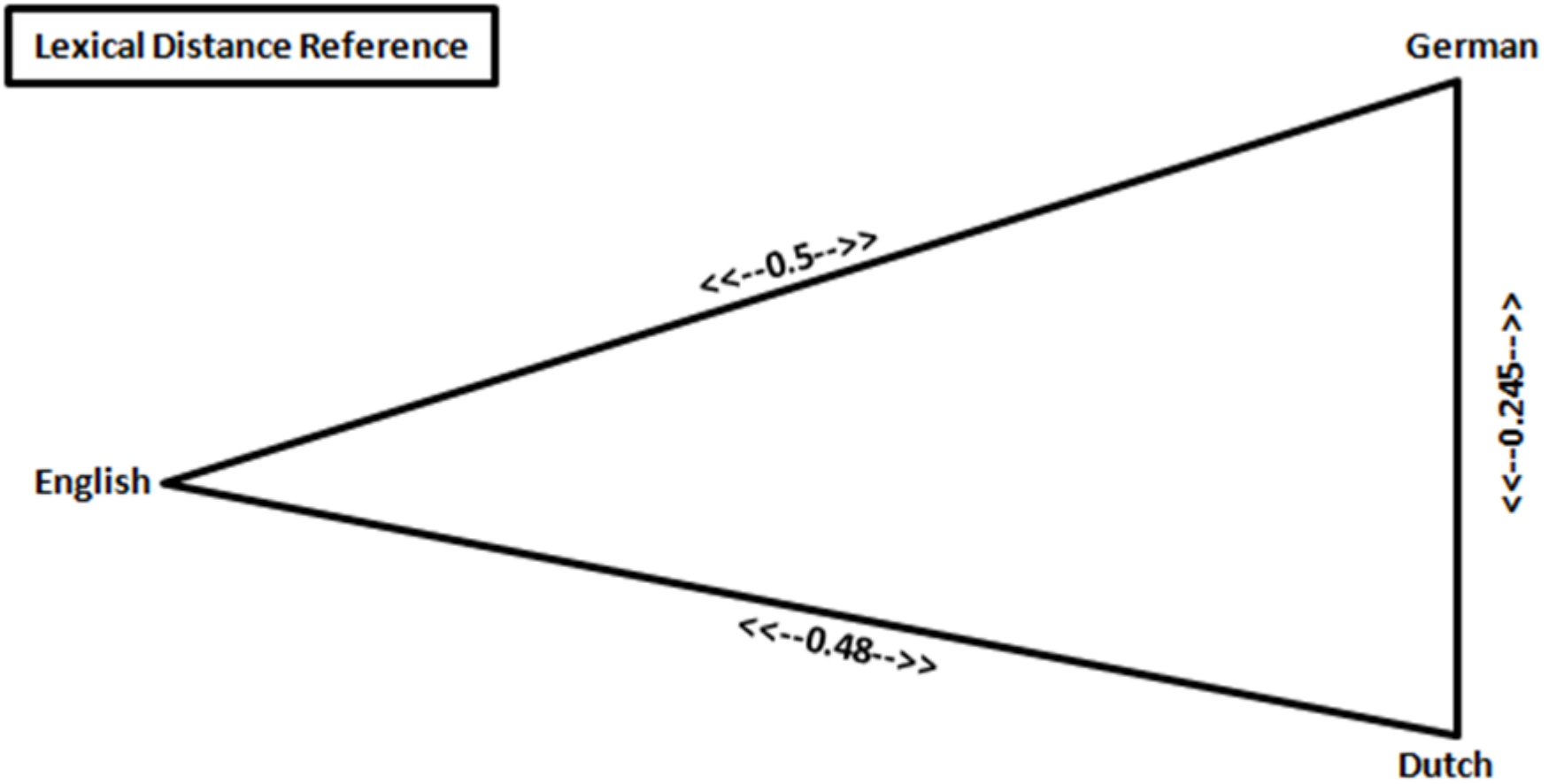
Lexical Distance = 0 means 100% Cognacy of Words from Swadesh List

By counting the number of cognates between 200 word Swadesh Lists, we can derive a useful number called "Lexical Distance"

For example, if two dialects of languages share 50 words in a list of 200, the Lexical Distance is 1 minus 50 over 200 equals 0.75.

Complete matching is a lexical distance of zero; no matching is a lexical distance of one.

Lexical Distances



Lexical Distance = 1 means 0% Cognacy of Words from Swadesh List

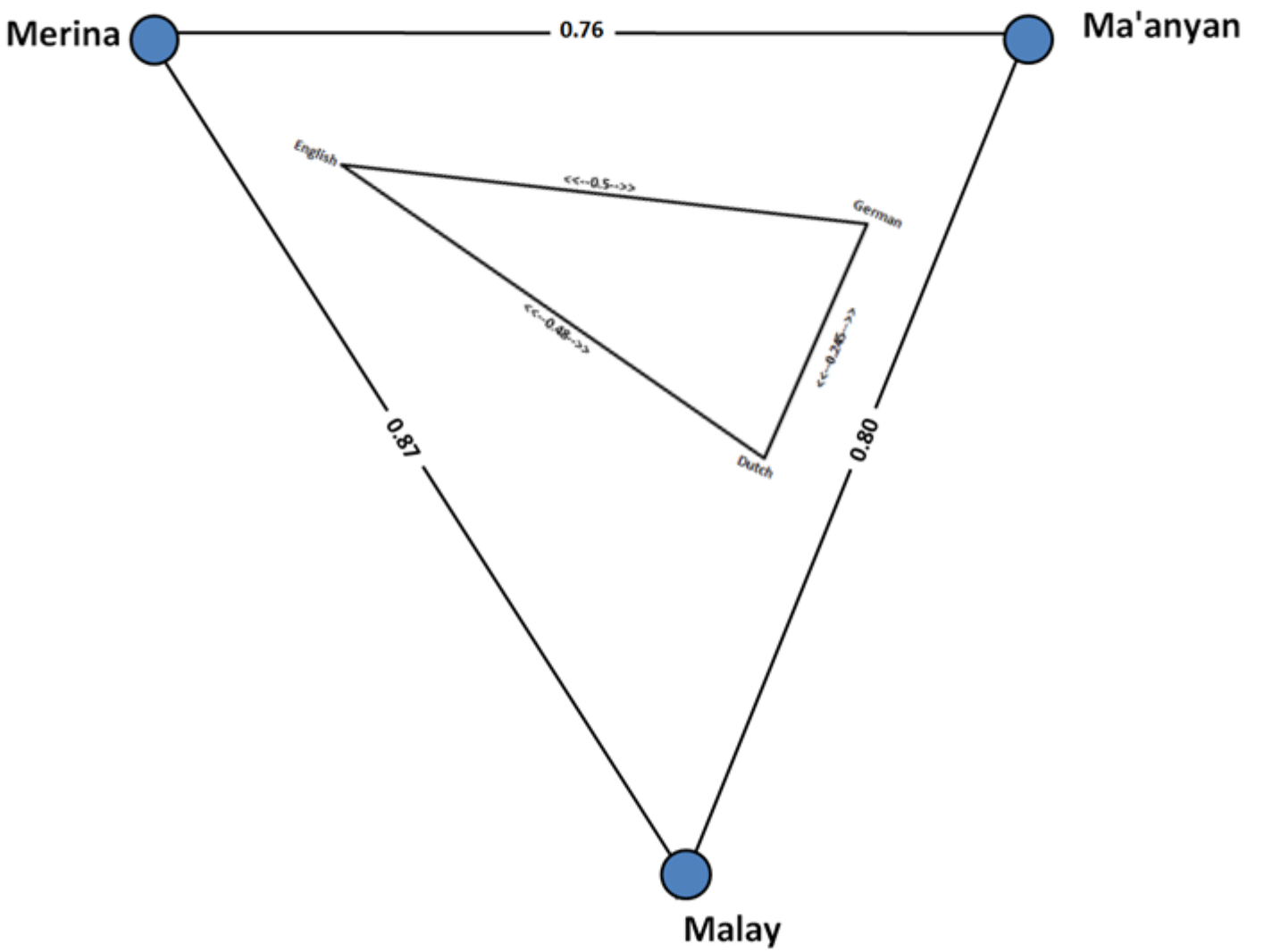
Lexical Distance = 0 means 100% Cognacy of Words from Swadesh List

To get a feel for what lexical distance means to someone listening to a language, let's use some familiar languages.

About half the English words on the list are cognate with German or Dutch, leading to lexical distance of about 0.5. About three quarters of Dutch words are cognate with German, leading to a lexical distance of about 0.25.

We'll use this diagram as a yardstick for visualizing the Malagasy Lexical Distances.

Lexical Distances from Merina to some Cognate Languages



Here is a diagram of the lexical distances between Merina Malagasy and some Indonesian languages for which Swadesh Lists are available.

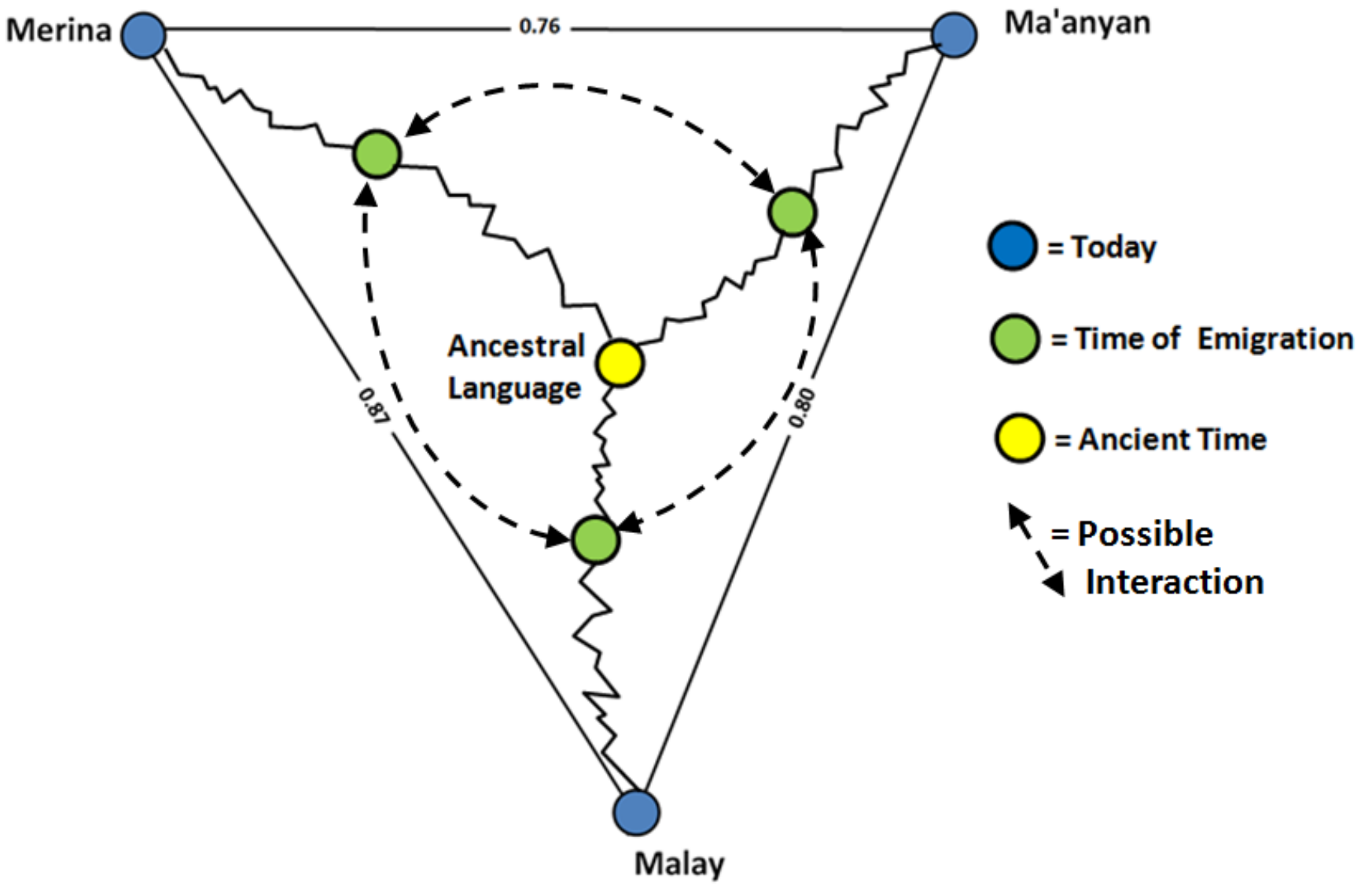
Although Ma'anyan is the closest to Merina in terms of lexical distance, it is quite a bit farther away than German is from English, for example.

Nevertheless, it is significantly closer to Merina than is Malay or any of the other Indonesian languages we've studied.

Does this mean that the people who sailed from Indonesia to Madagascar were only Ma'anyan speakers?

Or that Ma'anyan and Malay speakers all got in a boat together and sailed to Madagascar?

Relationships to Ancestral Language



More likely, this is what happened: The Indonesian languages and Merina Malagasy share a common ancient ancestral language. At the time of emigration from Indonesia, the Malagasy settlers and the forebears of the Malay and Ma'anyan speakers all spoke different languages, but these languages were much closer than they are today. Languages diverge over time in a somewhat random way. The more time passes, the farther apart these languages become, due to word replacements and evolutions along the way. Languages can also "borrow" words from one another if the speakers are in social contact, as were the Western Indonesians of the first millennium.

This isn't to say there could not have been some combination of Malay speakers and Ma'anyan speakers aboard the outrigger canoes bound for Madagascar, but we have no way of knowing who these pioneers actually were.

Cognate Table for Merina and Indonesian Languages

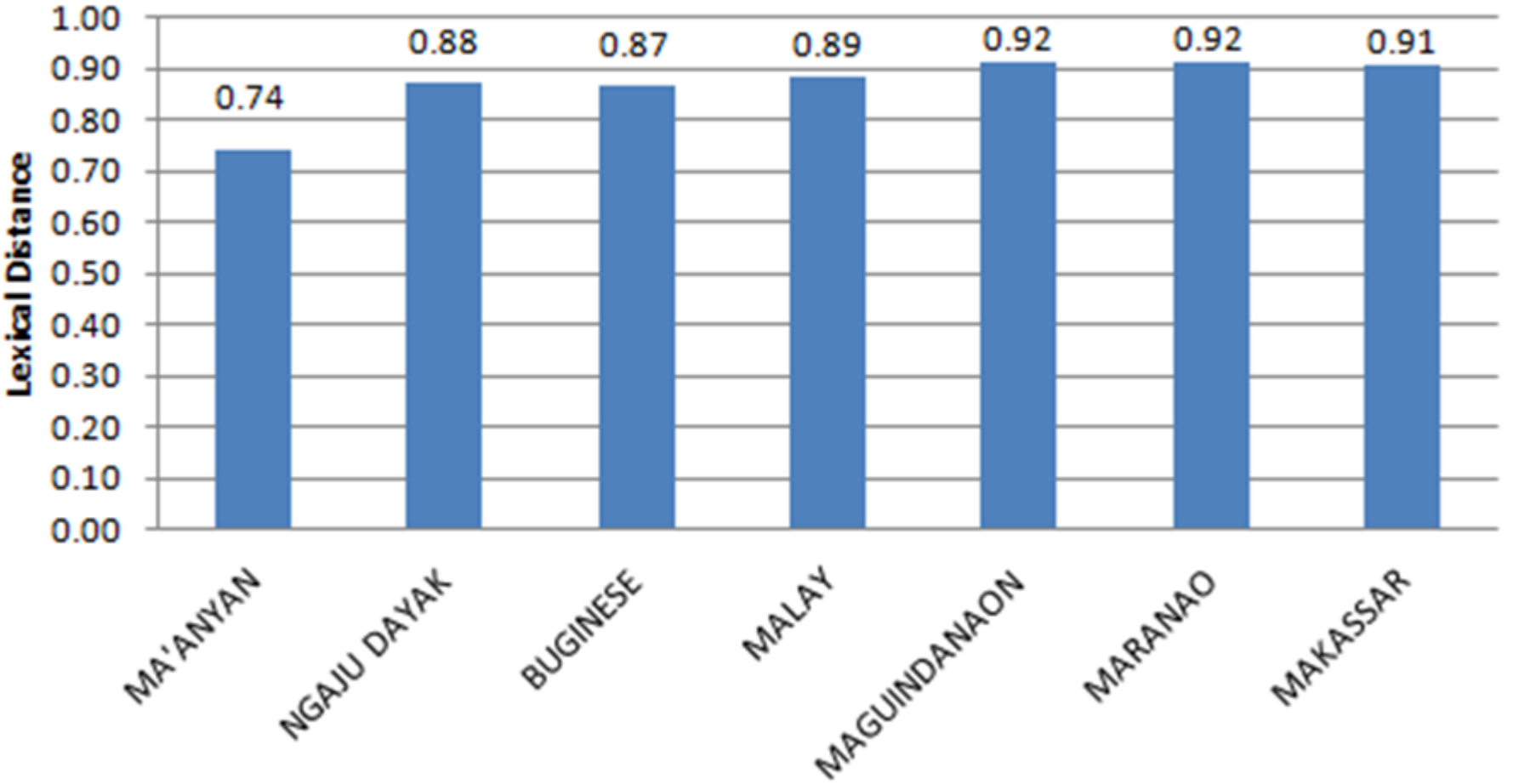
ENGLISH	MERINA	59	MAANYAN	51	NGAJU DAYAK	25	BUGINESE	26	MALAY	23	MAGUINDANAON	17	MARANAO	17	MAKASSAR	18	COGNATES
die	MATT	1	MATEY	1	MATEI	1	MATE	1	MATI	1	MATAY	1	MATAY	1	MATE	1	6
eye	MASO	1	MATE	1	MATE	1	MATA	1	MATA	1	MATA	1	MATA	1	MATA	1	6
fire	AFO	1	APUY	1	APUI	1	API	1	API	1	APUY	1	APOI	1	PEPE		6
five	DIMT	1	DIME	1	LIME	1	LIMA	1	LIMA	1	LIMA	1	LIMA	1	LIMA	1	6
four	EFATRA	1	EPAT	1	EPAT	1	EPPA	1	EMPAT	1	PAT	1	PAT	1	APPA	1	6
sky	LAMITRA	1	LANGIT	1	LANGIT	1	LANGI	1	LANGIT	1	LANGIT	1	LANGIT	1	LANGI	1	6
stone	VATO	1	WATU	1	BATU	1	BATU	1	BATU	1	OATU	1	BATO	1	BATU	1	6
bone	TAOLANA	1	TAULANG	1	TULANG	1	BUKKU		TULANG	1	TULAN	1	TOLAN	1	BUKU		5
liver	ATY	1	ATEY	1	ATEI	1	ISSUNG		HATI	1	ATAY	1	ATAY	1	ATE	1	5
three	TELO	1	TELO	1	TELU	1	TELLU	1	TIGA		TELU	1	TELO	1	TALLU	1	5
tongue	LELA	1	LELA	1	JELA	1	LILA	1	LIDAH		DILA	1	DILAG	1	LILA	1	5
dig	MANGADY	1	NGADI	1	MANGALI	1	MAKKAE	1	MENGGALI	1	KAGKAL		KALI		MAKKALI	1	4
feather	VOLOMBORON	1	WULU	1	BULU	1	BULU	1	BULU	1	BUMBUL		BOLBOL		BULU	1	4
rain	ORANA	1	URAN	1	UJAN	1	BOSI		HUJAN		ULAN	1	ORAN	1	BOSI		4
road	LALANA	1	LALAN	1	KARATAK		LALENG	1	JALAN		LALAN	1	LALAN	1	AGANG		4
rope	TADY	1	TADI	1	TALI	1	TULU		TALI	1	SUMPAAN		TALI	1	OTERE		4
run	MASOANDRO	1	MATEANDRAU	1	MATA ANDAU	1	MATA ASSO	1	MATAHARI	1	SENANG		ALONGAN		MATA ALLO	1	4
year	TAONA	1	TAUN	1	NYELU		TAUNG	1	TAHUN	1	TUHAN	1	RAGON		TAUNG	1	4
bird	VORONA	1	WURUNG	1	BURUNG	1	MANU MANU		BURUNG	1	PAPANUK		PAPANOK		JANGANJANGANG		3
black	MAINTY	1	MAINTEM	1	BABILEM		MALOTONG		HITAM		MAITEM	1	MAITEM	1	LELENG		3
blood	RA	1	IRA	1	DARA		DARRA	1	DARAH	1	LUGU		ROGOG		CERA		3
earth	TANY	1	TANE	1	PETAK		TANA	1	TANAH	1	LUPA		BOTEG		BUTTA		3
name	ANARANA	1	NGARAN	1	ARAN	1	ASENG		NAMA		NGALA		NGARAN	1	ARENG	1	3
smooth	MALAMA	1	MALINEY	1	MALISEN	1	MALONGO	1	LICIN		MATILAK		LANOG		LACCU		3
that	IRY	1	IRU	1	TE		IATU	1	ITU	1	NAN		ANAN		ANTU		3
thin	MANIFY	1	MARIRIS		TIPIS		MANIPI	1	TIPIS		MANIPIS	1	MANIPIS	1	NIPISI	1	3
bite	MANAIKITRA	1	NGIKIT		MANGIRUT	1	OKKO		MENGIGIT	1	EBUT		KEKEB		ANNOKKO		2
day	ANDRO	1	ANDRAW	1	ANDAW	1	ESSO		HARI		GAY		ALONGAN		ALLO		2
guts	TSINAY	1	SANAI	1	BAJAKAH KANAI		PIRU		USUS		TINAY	1	TINAGI		PARRU		2
hair (on the	VOLO	1	WULU	1	BALAW		WELUA	1	RAMBUT		BUK		BOK		GAMMA		2
hand	TANANA	1	TANGAN	1	LENGE		JARI		TANGAN	1	LIMA		LIMA		LIMA		2
hill	MAMONO	1	MUNU	1	PATEI		MABUNO	1	MEMBUNUH		GELA		BONOG		AMBUNO	1	2
live	VELONA	1	WELUM	1	BELUM	1	TUWO		HIDUP		UYAG		OIAG		TALLASA		2
nose	ORONA	1	URUNG	1	URUNG	1	INE		HIDUNG		NGILUNG		NGIRONG		KAMURU		2
person	OLONA	1	ULUN	1	ULUN KALUNEN		TAU		ORANG	1	TAO		TAO		TAU		2
sew	MANJAITRA	1	IKAMIT		MITUR		MAJAI	1	MENJAHIT	1	PAMANAY		PAMANAGI		ANJAI	1	2
sleep	MATORY	1	MANRE	1	BATIRUH		MATINRO	1	TIDUR		TULUG		TOROG		ATTINRO		2
woman	VEHIVAVY	1	WAWEY	1	BAWI	1	MAKUNRAI		PEREMPUAN		BABAY		BEBAY		BANEA		2
breathe	MIAINA	1	MIHEWUK		MANAHASENG		MANNAWA	1	BERNAFAS		GINAOA		PENGGINAOA		AMAI		1
cloud	RAHONA	1	RAKUN	1	BAUN ANDAW		ELLUNG		AWAN		GABUN		GABON		RAMMANG		1
come	AVY	1	HAWI	1	DUMAH		TUMAI		DATANG		ANGAY		DANON		BATTU		1
dry	MAINA	1	MAEYANG	1	KEYANG		MARAKKO		KERING		MAMALA		MAGANO		KALOTORA		1
egg	ATODY	1	ATELUY	1	TANTELUH		ITTELLO		TELUR		LEMAN		ORAK		BAYAEO		1
far	LAVITRA	1	LAWIT	1	KEJAW		MABELA		JAUH		MAOATAN		MAOATAN		BELLA		1
fat	MATANY	1	TAWE	1	ENYAK		LUNRA		LEMAK		LEMBU		SIBOG		JAMEJAME		1
leaf	RAVINA	1	RAWEN	1	DAWEN		DAUNG		DAUN		LAON		RAGON		LEKO		1
lie	MANDRY	1	MANDIRE	1	PENTER		TURU		BERBARING		EDTATAIGA		IGAG		ANRABA		1
man	LEHILAHY	1	UPU		HATUE		ORANE		LELAKI	1	MAMA		MAMA		BURANE		1
mouth	VAVA	1	WAWA	1	NYAMA		TIMU		MULUT		NGALI		NGARIG		BAWA	1	1
new	VAO	1	WAU	1	TAHETA		MABARU		BARU		BAGU		BEGO		BERU		1
night	ALINA	1	KAMALEM		ALEM	1	WENNI		MALAM		MAGABI		GAGAOIGI		BANNI		1
thin	ITY	1	ITI	1	TUH		IAE		INI		NIA		INI		ANNE		1
two	ROA	1	RUEH	1	DUE		DUA		DUA		DUOA		DOA		RUWA		1
water	RANO	1	RANU	1	DANUM		UAE		AIR		IG		AIR		JENE		1
what	INONA	1	INUN	1	NARAI		AGA		APA		NGAYN		AI		APA		1
wind	RIVOTRA	1	RIWUT	1	RIWUT		ANGING		ANGIN		SAMBEL		ANGIN		ANIN		1
wing	ELATRA	1	ELAT	1	PALAPAS		PANNI		SAYAP		PAPAK		PAPAK		KANNI		1
wood	ALA	1	JUMPUN		PARAK KAYU		ALE	1	HUTAN		DAMAKAYU		KALASAN		ROMAN		1
dirty	MALOTO	1	BERE		PAPA		MAROTA	1	KOTOR		MALEDSIK		MARIMOG		KALOTORO		1
all	REHETRA		KATULUH		URAS		TULI		SEMUA		LANGUN		BELOS		KABUSU		0
and	SY		ANRI		EN		SIBAWA		DAN		ENDU		AGO		NA		0
animal	BIBY		SATUA		METU		OLOKOLO		BINATANG		ALIMAO		AIAM		OLOKOLO		0

But it is nevertheless clear, when you look at the list of all 59 cognates to Merina (highlighted in yellow),that Ma'anyan is the closest relative of Merina.

There are 26 "Golden Words" on the list. They have cognates to 3 or more Indonesian languages.

And there are 16 words on the list that are cognate to Merina from only languages other than Ma'anyan. This is further evidence that the true source language was NOT Ma'anyan, but rather a common ancestral tongue.

Lexical Distance of Indonesian Languages to Merina Malagasy



But as I said earlier, Ma’anyan is significantly closer in lexical distance to Merina than any of the other modern Indonesian languages.

So Language analysis and DNA data confirm this theory:
Many Ancestors of the Malagasy People came from Indonesia

Though Derived from Indonesian Language, Merina Malagsy
is farther removed from Indonesian than English is from German.
Malagasy is unintelligible to Indonesians today.

But what about the various dialects of Malagasy spoken today?
Can people throughout the island communicate well with
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How Well Do the Malagasy Communicate?

Here's what foreign auditors have said in historical times:

(1613) *"THEIR LANGUAGE...IS THE SAME THROUGHOUT THE ISLAND...THE NATIVES OF THE SOUTH AND NORTH UNDERSTAND EACH OTHER WITH EASE."* --Fr. Luis Mariano

(1777) *"...I WAS UNDERSTOOD EVERYWHERE. HOWEVER, I RECOGNIZED A DIFFERENCE IN THEIR WAY OF [PRONOUNCING] CERTAIN WORDS FROM ONE PROVINCE TO ANOTHER."*
--Nicolas Mayeur

How Well Do the Malagasy Communicate?

(2012) *"Based on my own experience of staying in a non-Merina region, I feel comfortable to claim that if two speakers from different regions distant from each other speak to each other, they typically have problems communicating if they only use their own speech varieties. However, in an actual situation, such speakers negotiate with words and expressions they know of other varieties, eventually establishing a form of communication."*

--Ritsuko Kikusawa, National Museum of Ethnology, Japan

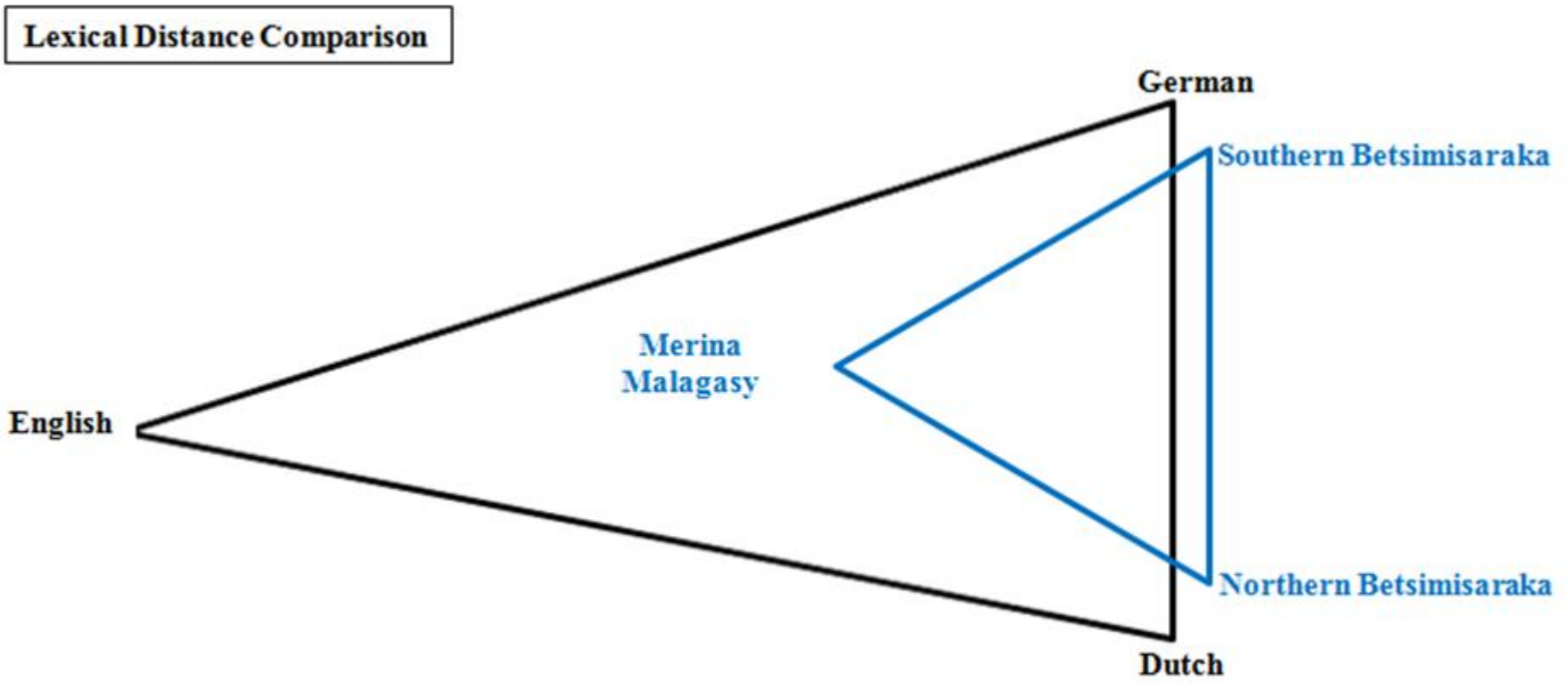
(2011) *"Dialects from close regions are usually perceived as being similar by Malagasy people while distant dialects usually have a low degree of mutual intelligibility. Most of the people are able to understand the Merina dialect, which is the official language, but outside of the Imerina region only cultivated people are able to speak it."*

--Maurizio Serva, Universitá dell'Aquila, Italy

As we see, there seems to have been some increase in the lexical distance between dialects over the centuries. Today, according to expert witnesses, the dialects are not completely mutually intelligible.

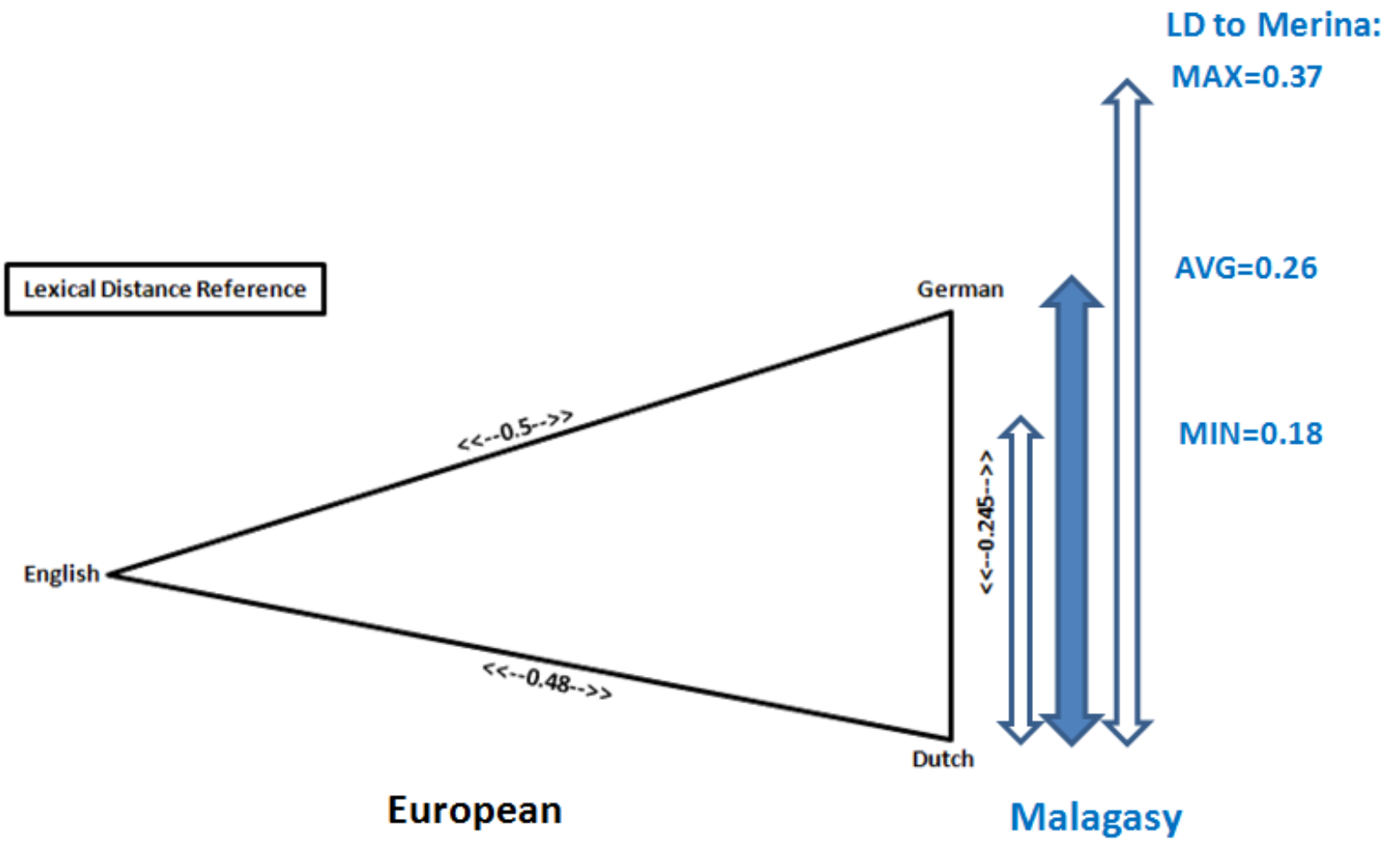
Can lexical analysis help us quantify and understand these dialectical differences?
And can analysis teach us anything about the history of the Malagasy people?

Moderate Malagasy Lexical Distances



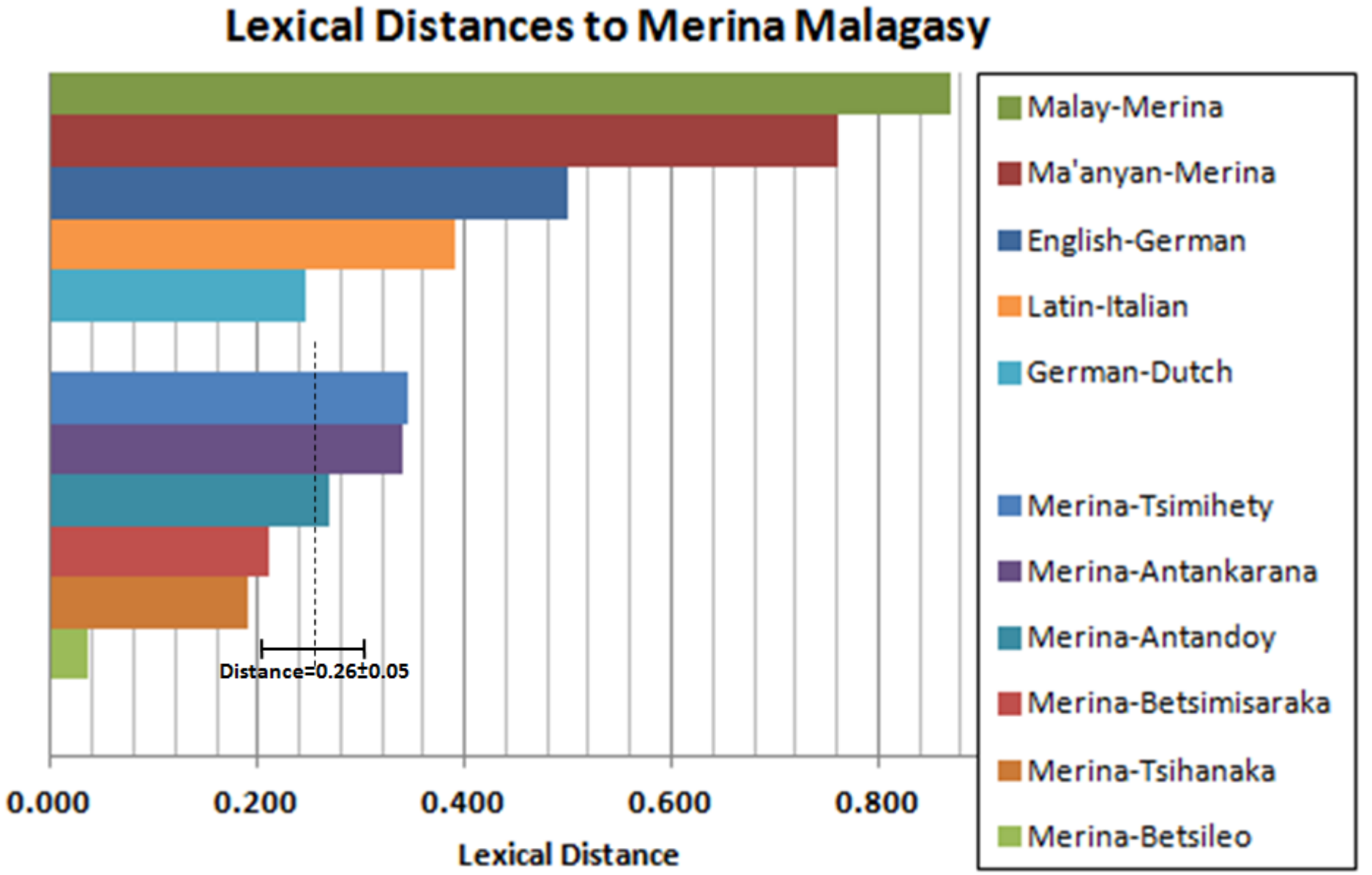
Here is the difference between three Malagasy dialects as compared to our English/German/Dutch reference. As we see, these inter-dialect distances are comparable to the German/Dutch distance.

Comparison of Lexical Distances: Malagasy –vs- European



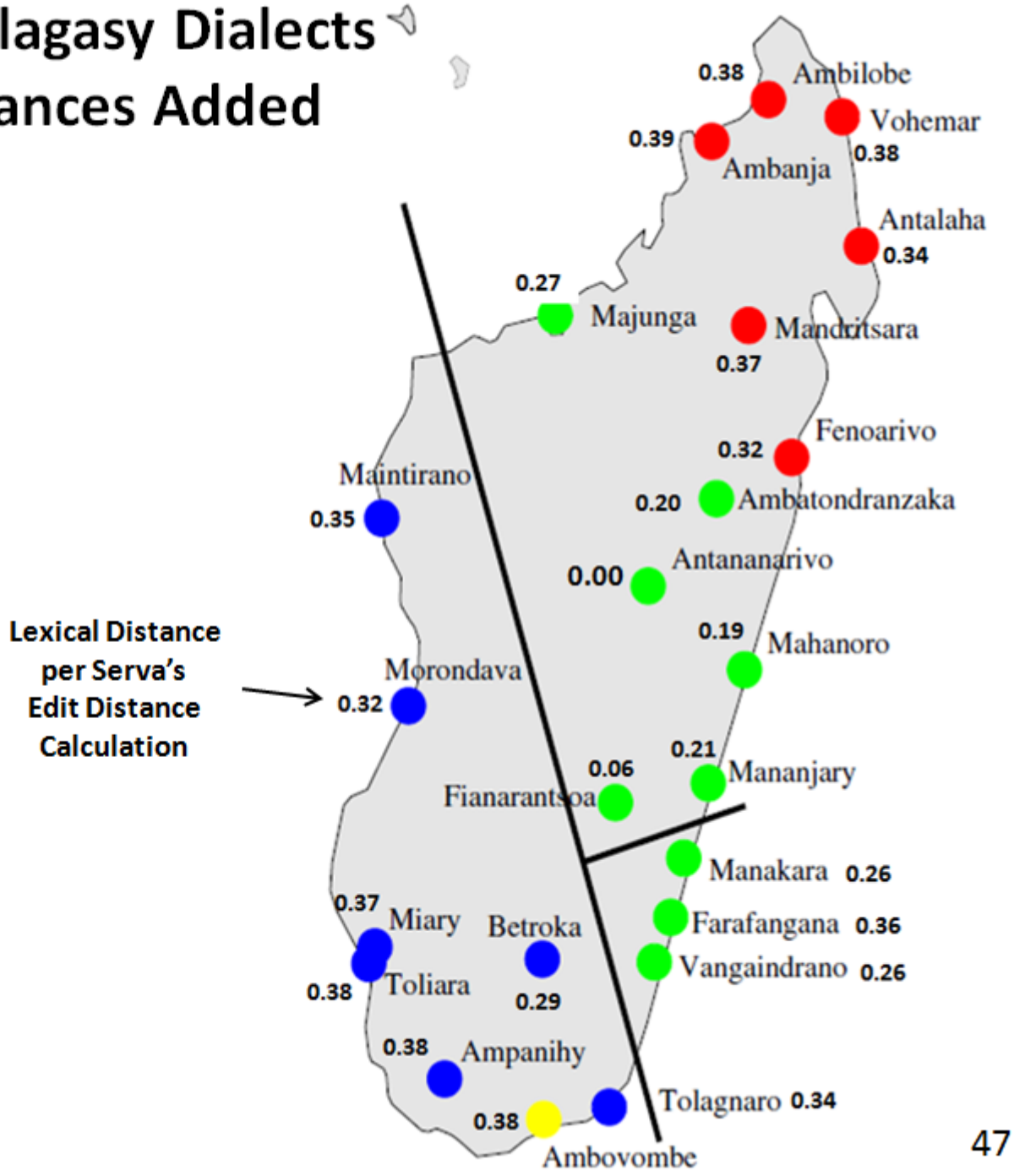
The average lexical distance between Merina and the other Malagasy dialects (omitting Betsileo) is 0.26±0.05, slightly more than the distance from Dutch to German. This gives us some idea of how different these dialects are today.

But the Lexical Distance between all dialects in the matrix is 0.28±0.05. So there is no significant difference between Merina and the mass of other dialects insofar as similarity to other dialects (ex-Betsileo).



Here we see the distances from Indonesian languages to Merina Malagasy, and for reference the Lexical distances for three European languages. We also plot the Lexical Distance from Merina to six different Malagasy dialects. Note that average distance between Merina (ex-Betsileo) and all dialects is 0.26, similar to the distance from German to Dutch.
The Merina and Betsileo dialects are extremely close because the Betsileo, another plateau tribe, were conquered and subjugated by the Merina in the 18th century. {Remember King Andrianampoinamerina?]

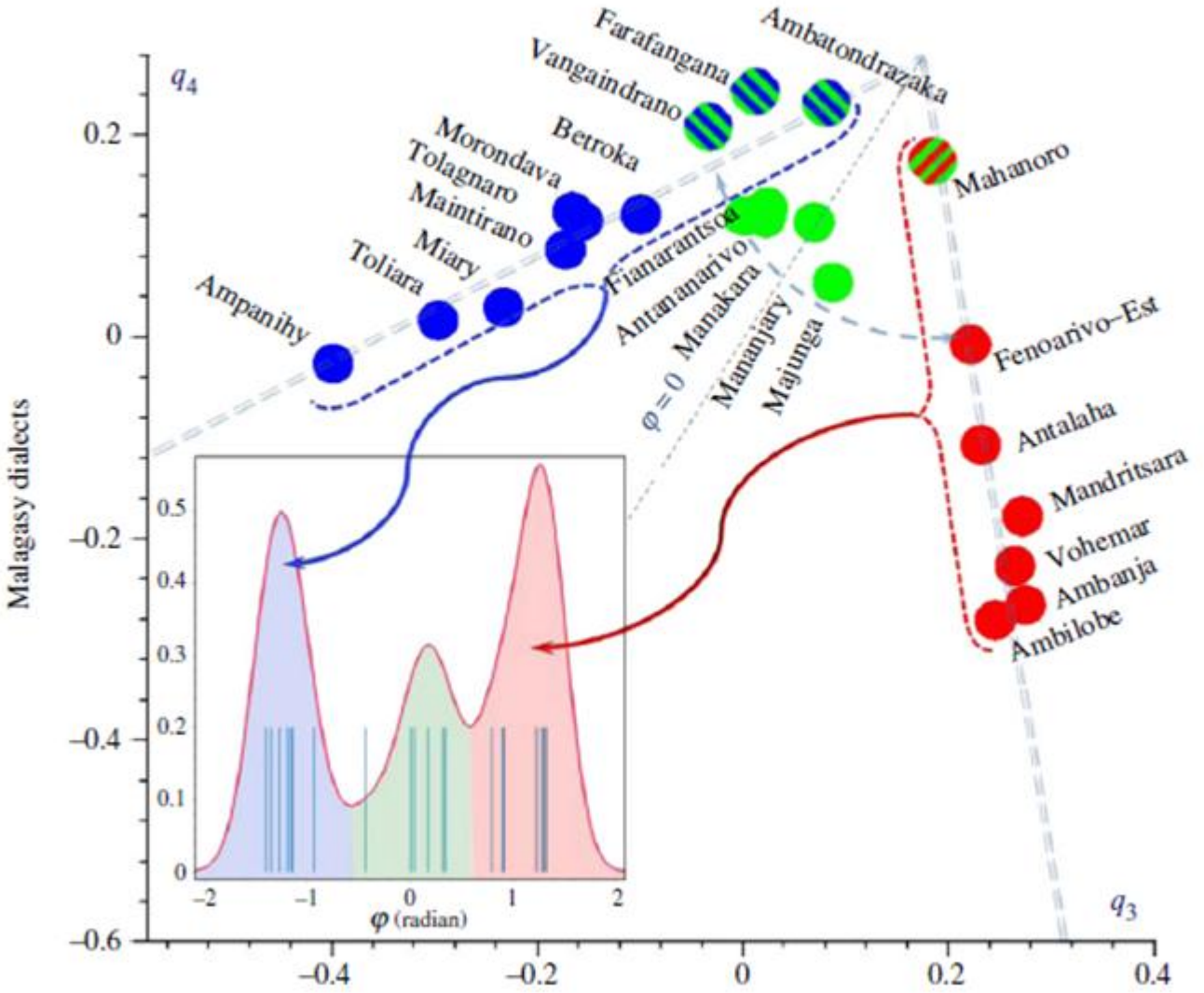
Serva's Map of Malagasy Dialects with Lexical Distances Added



Maurizio Serva produced a phylogenic tree of Malagasy dialects using the UPGMA method. [unweighted pair group method with arithmetic mean = UPGMA]. From this tree, he inferred the above grouping of languages into Northern, Central and Southern branches.

But his analysis did not really explain WHY these groups should be separately identifiable.
(These are Serva's lexical distances)

Serva's Structural Component Analysis of Malagasy Dialects



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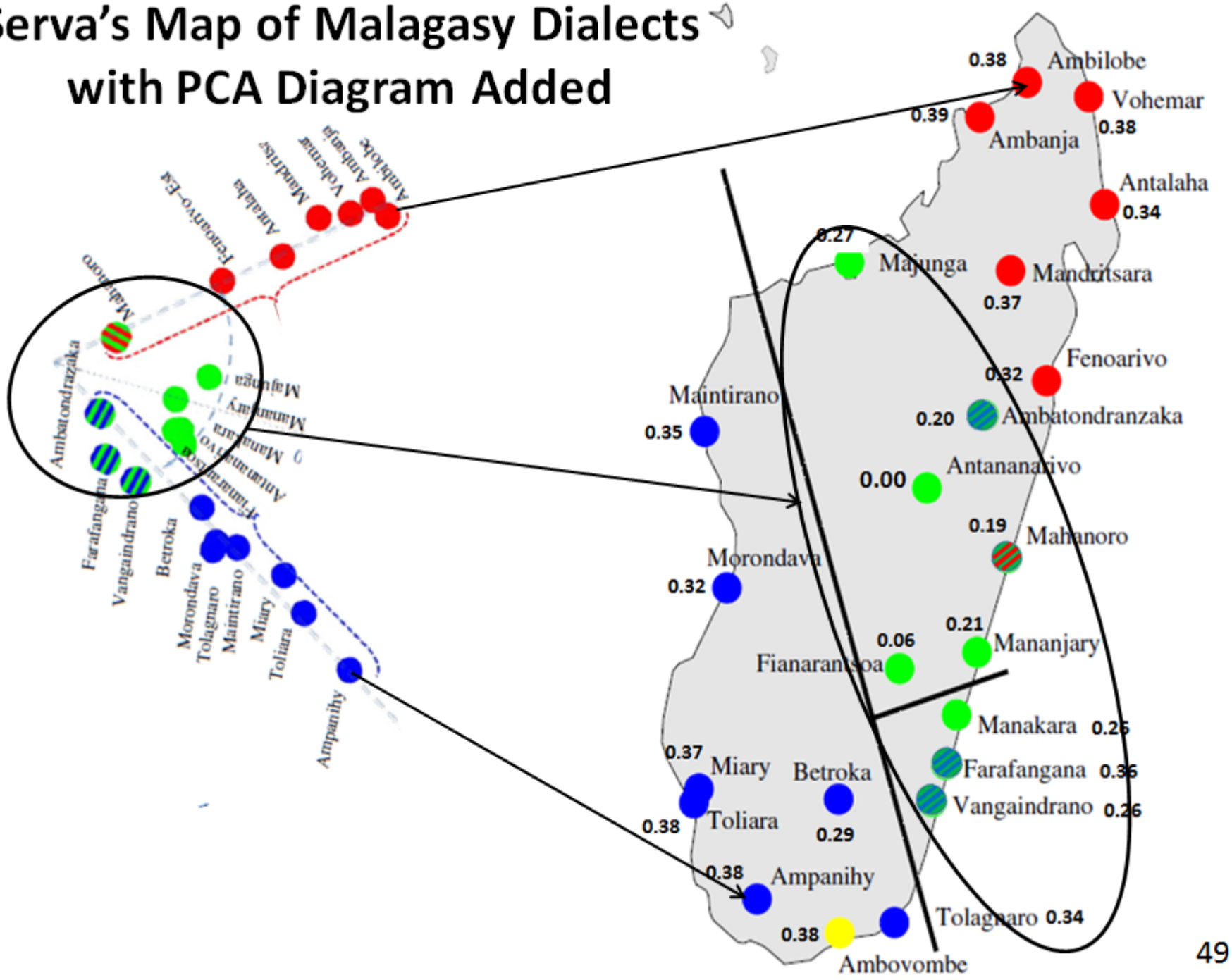
Being a Physicist, he analyzed this data using a sophisticated mathematical technique.

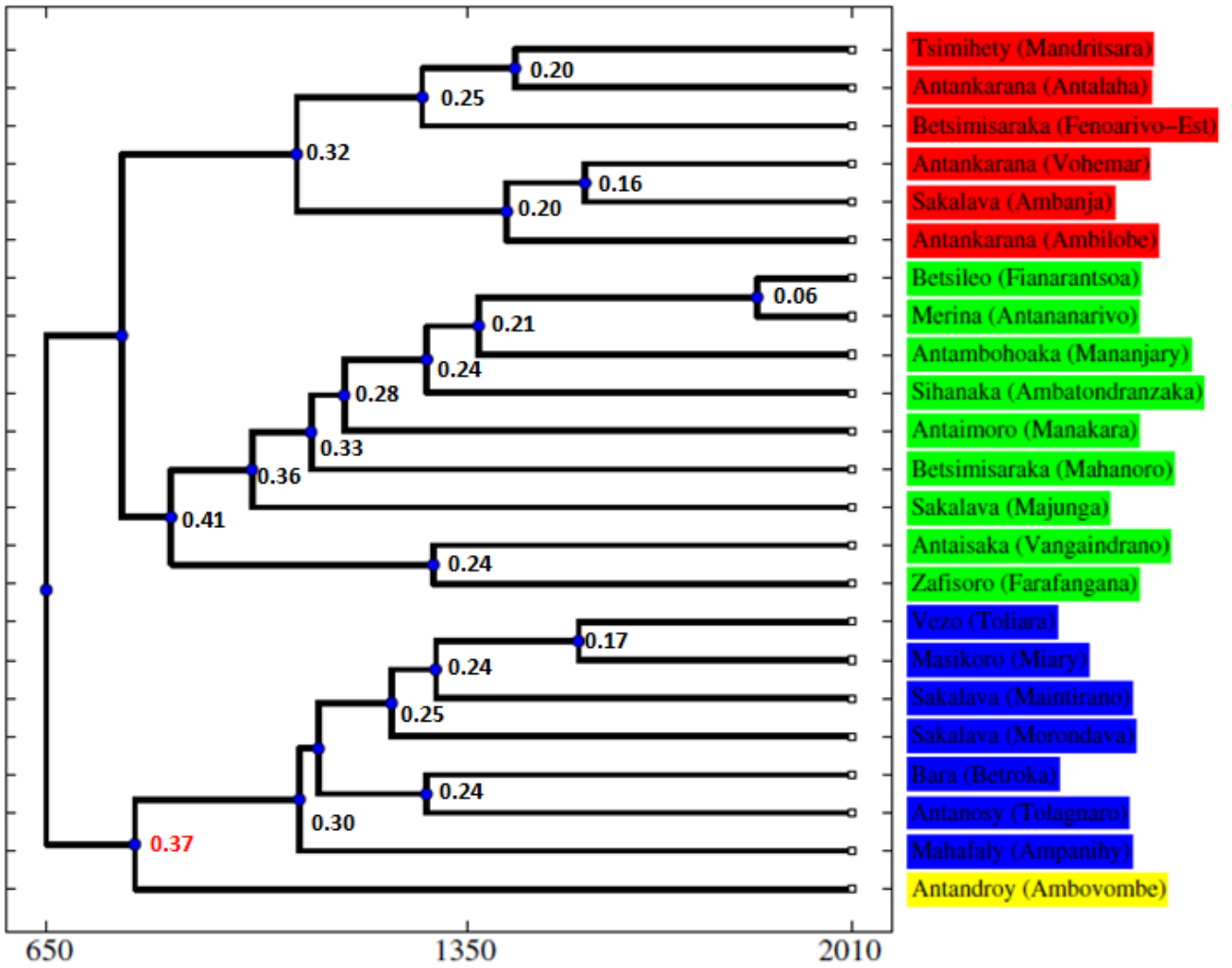
The result was this 2-dimensional plot showing how the languages tended to group together.

Serva's Map of Malagasy Dialects with PCA Diagram Added



Here is how that 2D graph can be mapped onto a geographical map.

Serva's UPGMA Phylogenic Tree



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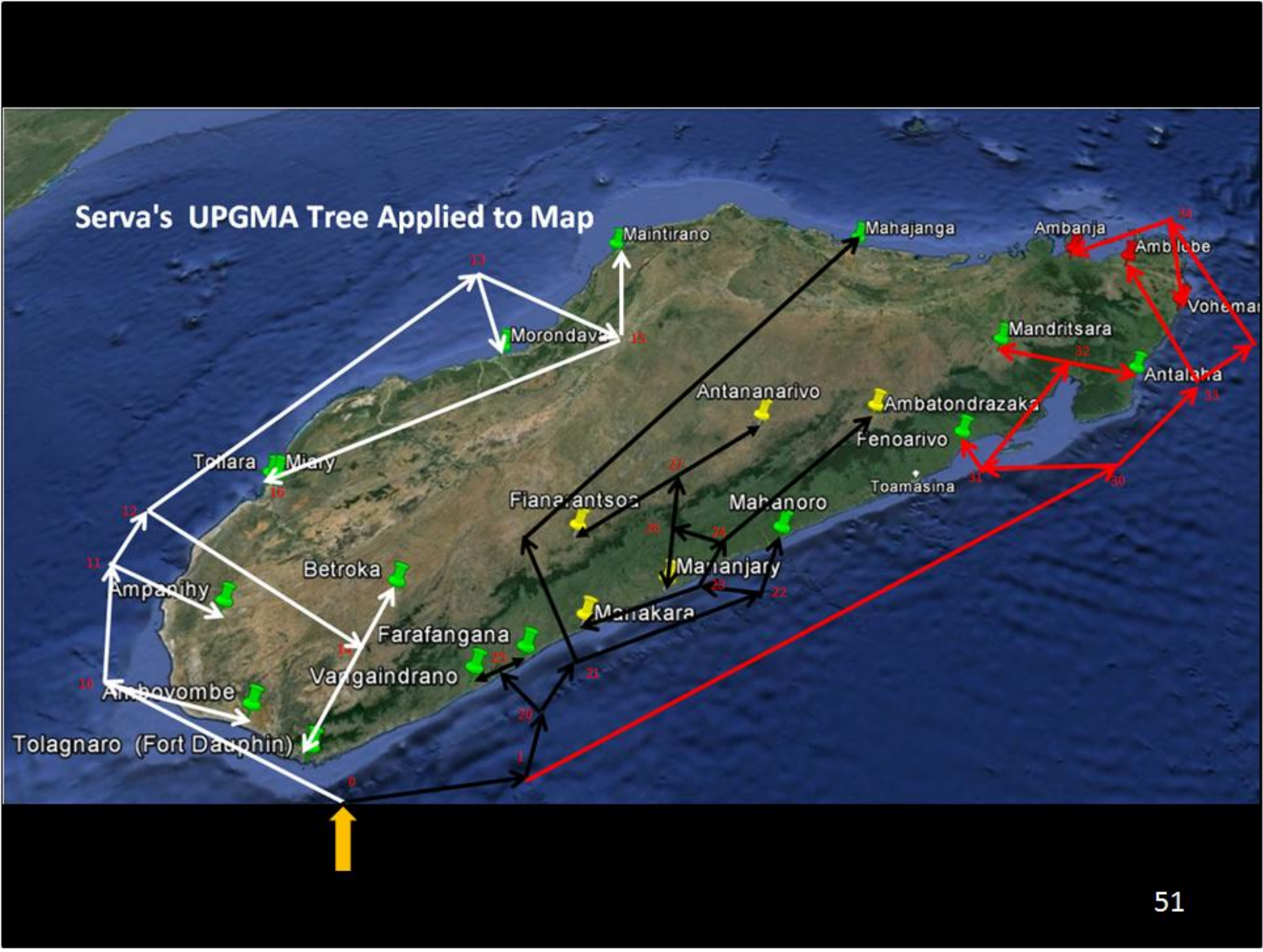
Serva subjected his lexical distance data to an algorithm that generates a phylogenic tree. This tree uses the unweighted pair group method with arithmetic mean (UPGMA) method.

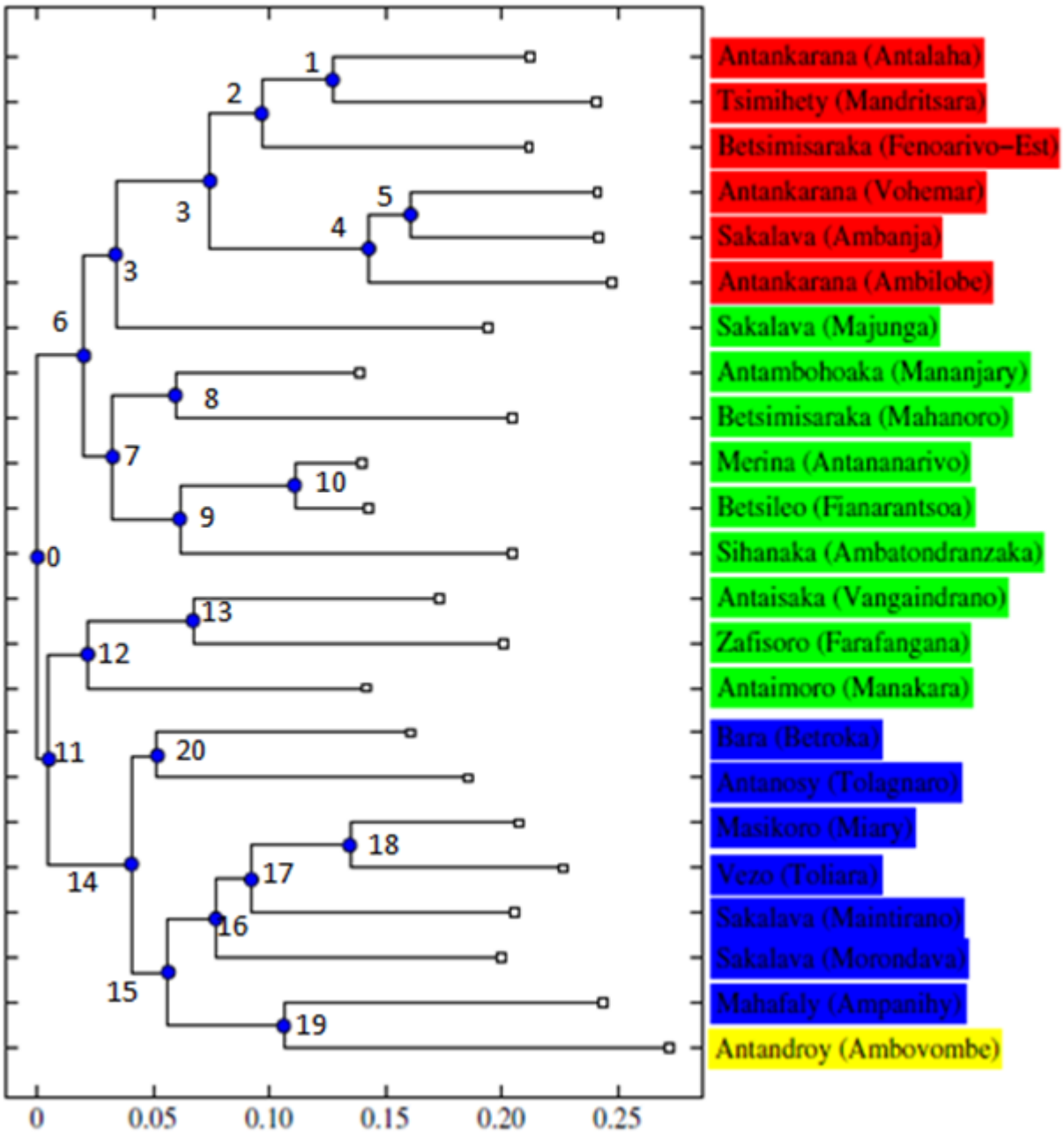
Although languages are not inherited in the way that genes are, this method has found popularity among many analysts. This tree, in fact, was the original basis for Serva's segmenting linguistic zones into Red, Green and Blue zones (The yellow dialect, from Ambovombe, confounded his analysis).
(Numbers at nodes are Serva's Lexical Distances, in some cases averaged by me when multiple leaves are involved.)

Such trees are controversial, however. Many people, including me, think this method of joining related languages together is artificial, may not reflect reality, and may lead to erroneous conclusions about the history of the speakers.

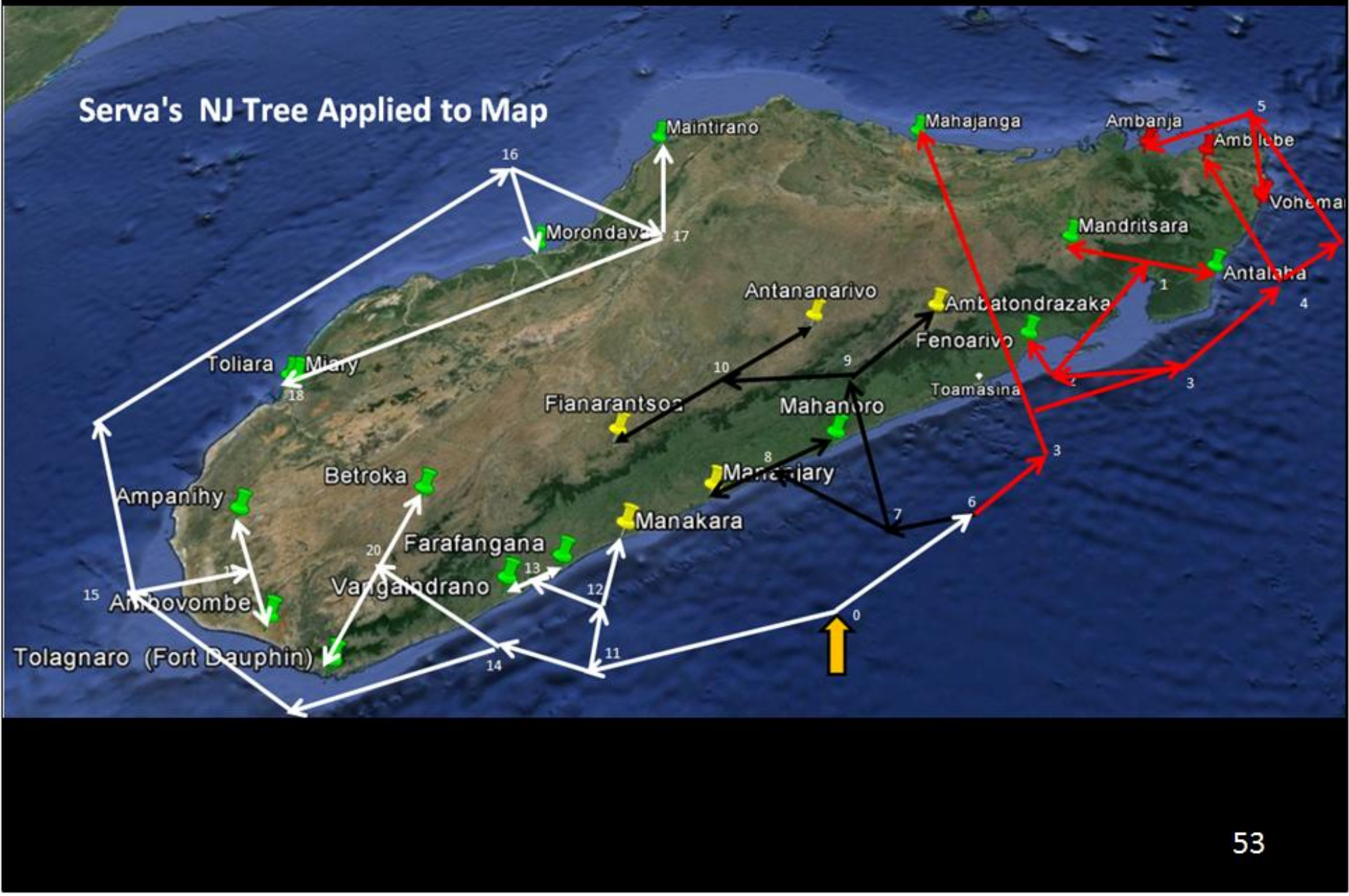


This figure projects Serva's UPGMA phylogenic tree onto the map of Madagascar.
As you can see, it leads to a conclusion about the history of human settlement of Madagascar that seems to be difficult to credit.

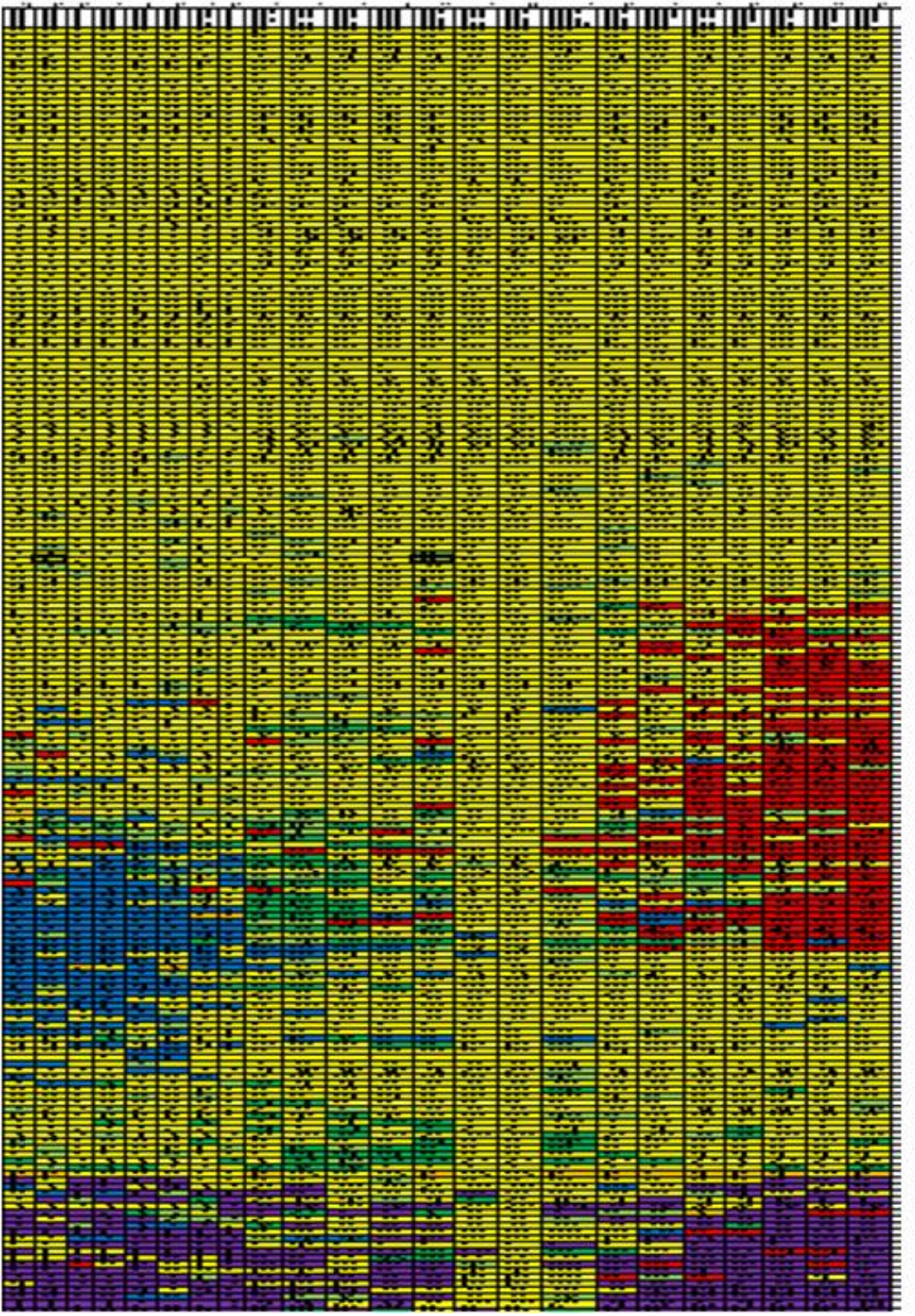
Serva's Neighbor-Joining Phylogenic Tree



Serva applied a second algorithm to produce a *Neighbor-Joining* Tree.
The relationships between dialects are different from the UPGMA tree.
The very fact that you get different results depending on the method used raises questions about the method in general.



Here is the Neighbor Joining tree projected onto the map of Madagascar. The implied settlement pattern is different from UPGMA but equally difficult to accept.



Serva's Lists Analyzed for Clusters of Cognacy

76% Cognate to Merina

5% Individually non-Cognate toMerina

5% in Southern Clusters

5% in Northern Clusters

6% both North & South

3% in Central Clusters

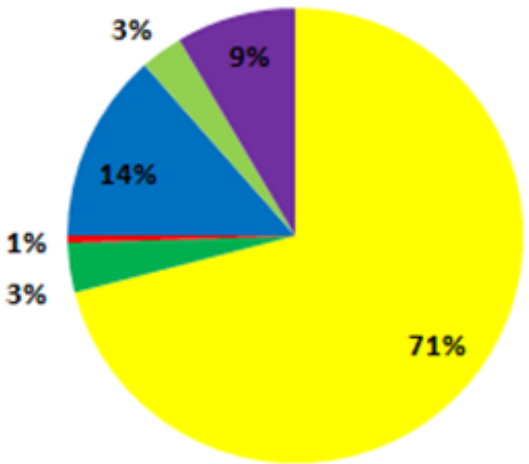
To really understand what's going on, we need to look at the words themselves, in gory detail.

Here, the 23 dialects are arrayed in columns and the 200 words in rows. I've sorted them into categories of cognacy and color-coded them as indicated.

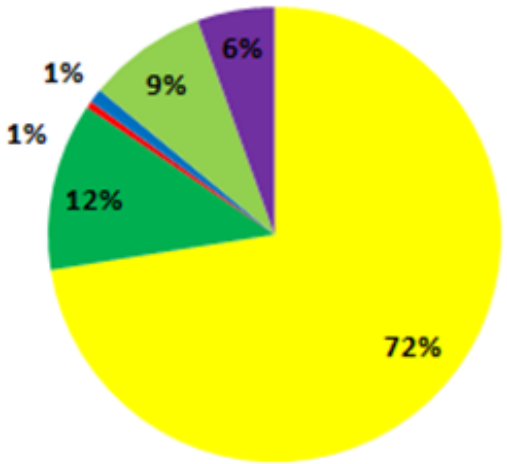
Examples of Word Distribution in Three Zones

West Coast	East Coast	North Cape

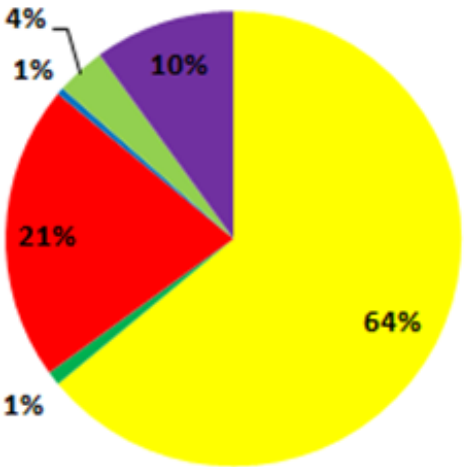
Toliara (Vezo)



Farafangana



Vohemar



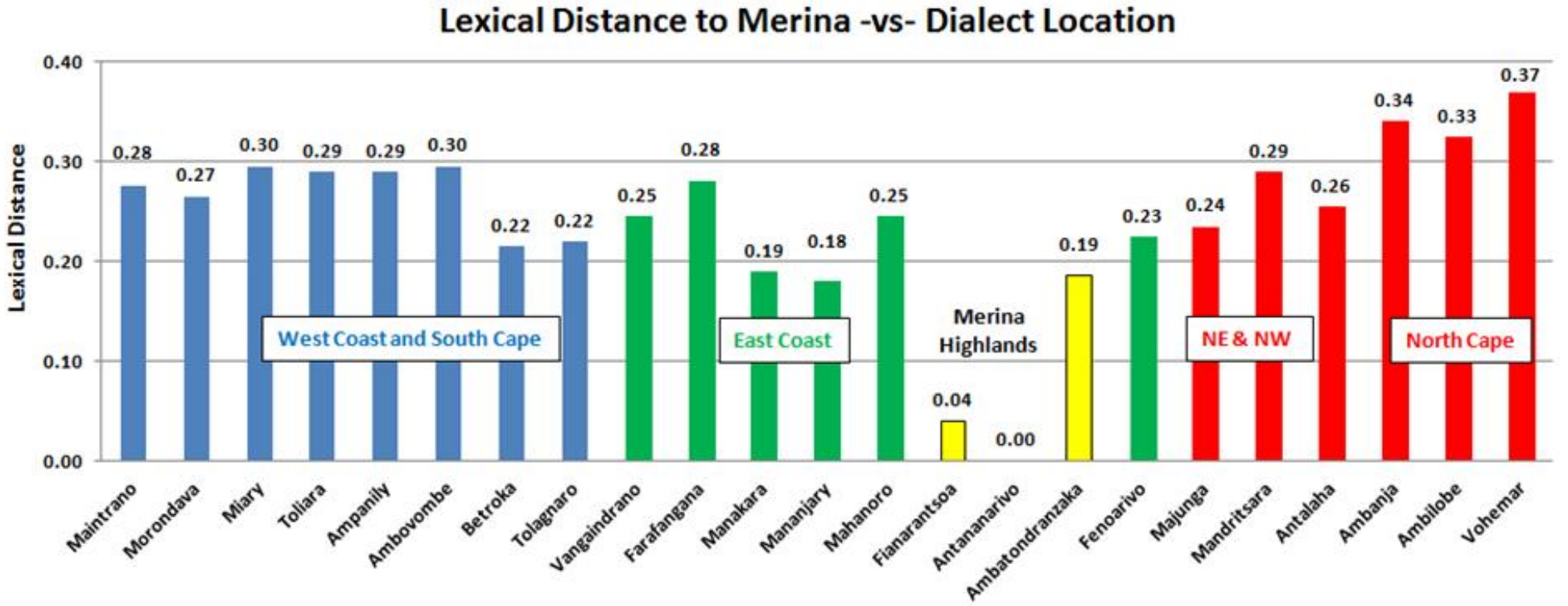
Shared non-Cognates:

Cognate to Indonesian	Northern non-Cognate	Southern non-Cognate	Central non-Cognate	Coastal non-Cognate

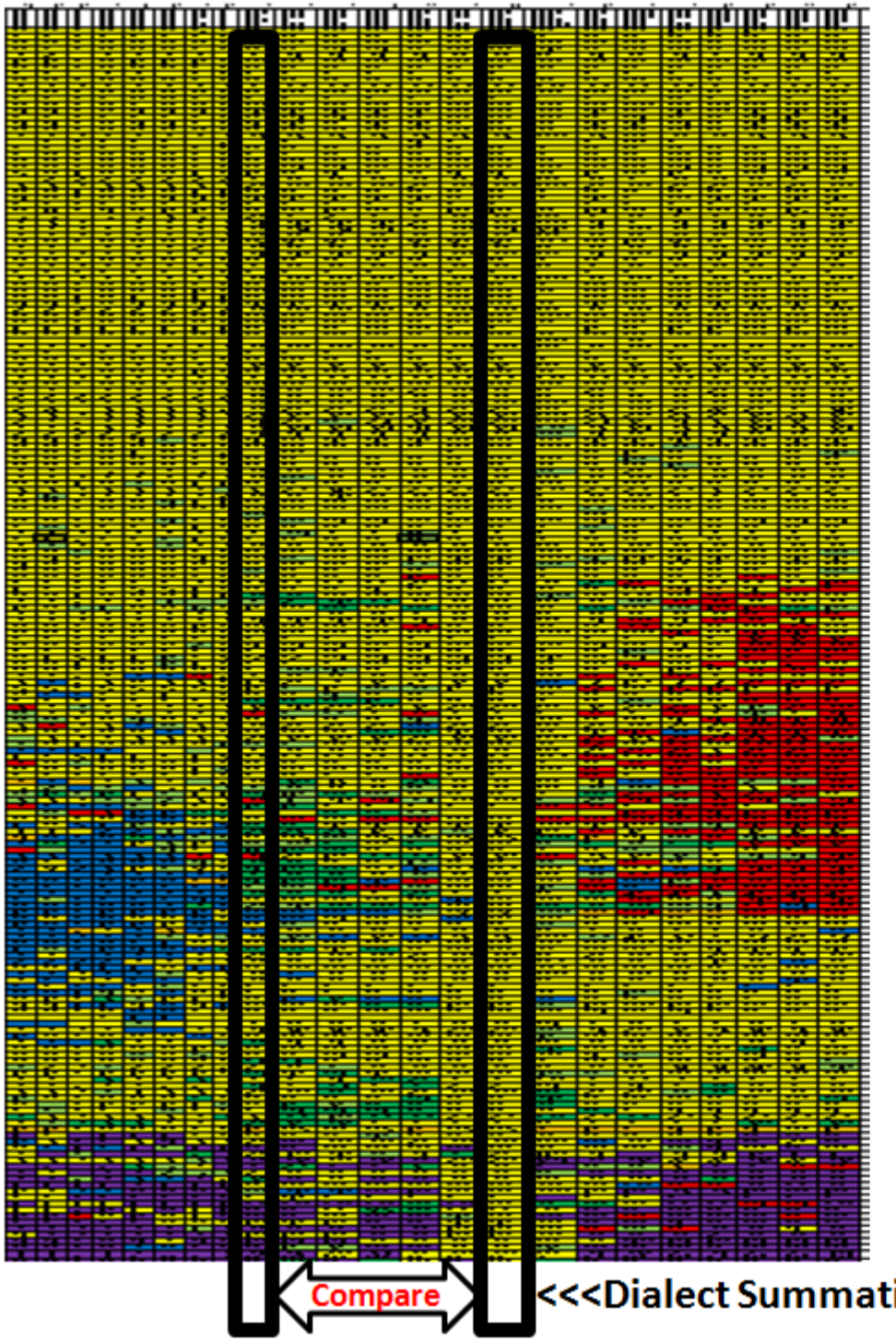
55

Isolated non-Cognates

Here is how the lexicons of three dialects break down as far as local affinity is concerned.
ALL dialects are comprised mostly of Merina cognate words, shown in Yellow.
All these dialects are from coastal regions, and they all share a significant number of purple words – words not cognate to Merina but cognate to other coastal dialects throughout the island.
On the West Coast, we see 14% of the words are cognate to other dialects in the south and west
On the East Coast, about 12% are cognate to other East Coast dialects.
And in the north, fully 21% of the words are shared with or are cognate with other northern dialects.
All this suggests that there may be FOUR characteristic language zones in Madagascar.



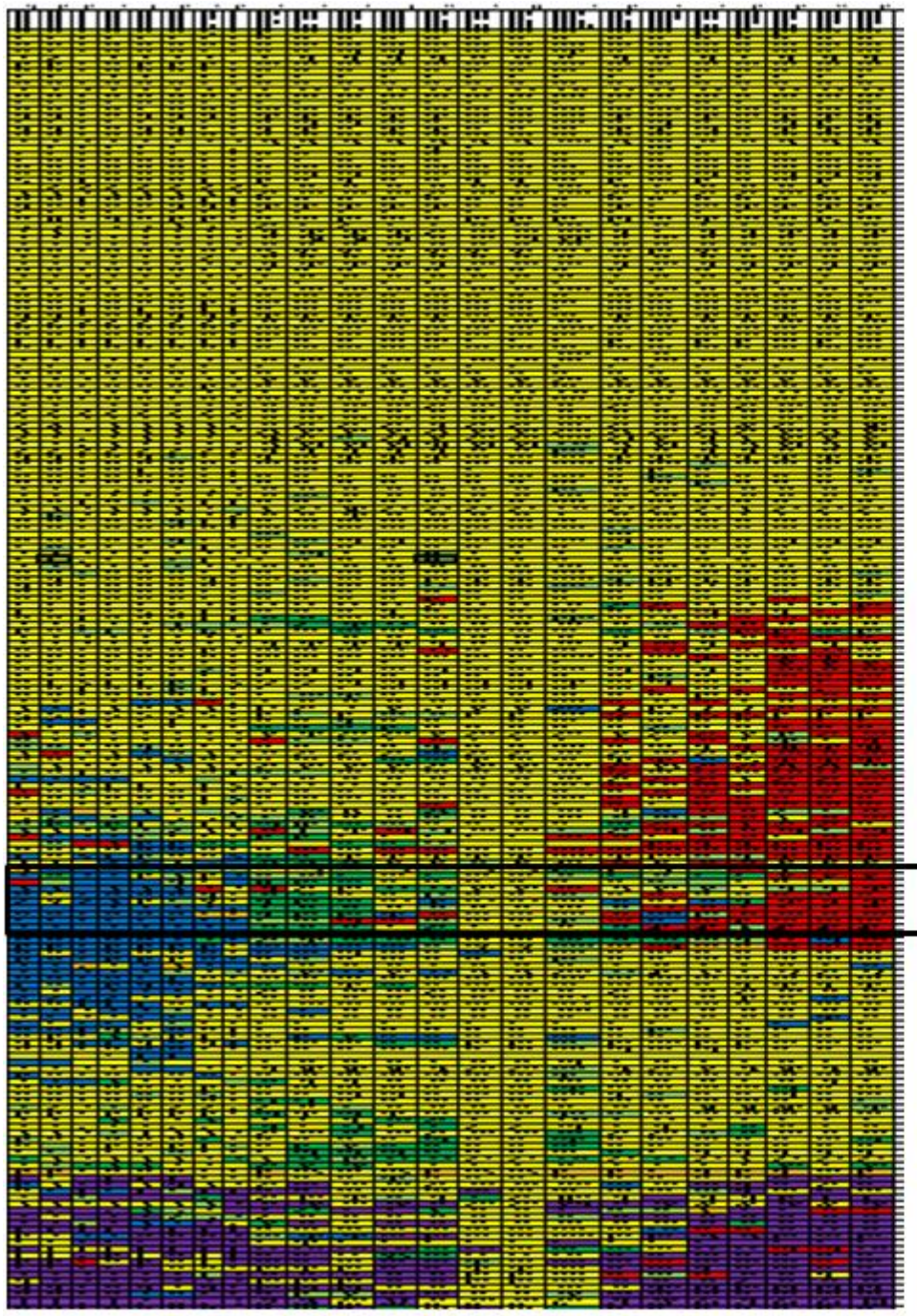
Here is a plot of how lexical distance to the Merina dialect varies by location.
Note that the Betsileo dialect is nearly identical to Merina, because the Betsileo were subjugated by the Merina in the 18th century.
But outside the Plateau region, there is no apparent correlation between lexical distance and location.
Unfortunately, lexical distance doesn't seem to tell us much about how languages propagated through Madagascar.



Method 1: Lexical Distance Between Dialects

We have two basic ways to slice the data: Vertically and Horizontally.

The vertical method, the one we've discussed so far, counts the number of cognate differences between dialects to obtain a single number for each dialect pair: the Lexical distance.



Method 2: Compare Across All Dialects on a Word-by-Word Basis

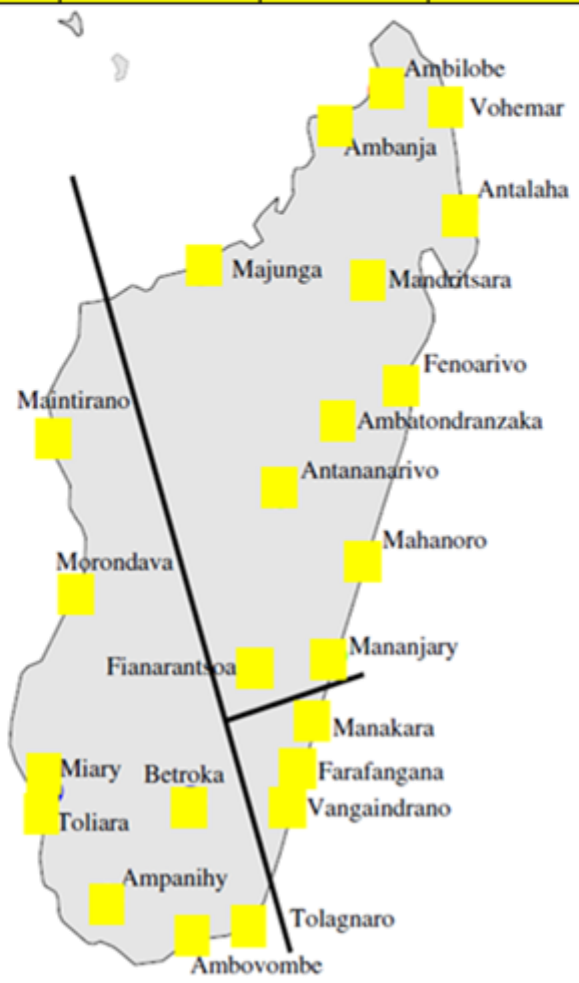
<<< Track Each Word Across All Dialects

The second method, the one we'll be discussing now, takes a horizontal slice through the data and studies the way each word changes from dialect to dialect across all 23 dialects.

Case 1: Minor Changes Between Dialects

Merina ⇩

	mamono	mamono	mamono	mamono	mamono	mamono	mamono	mamono	mamono	mamono	mamono
	velo	velogne	velo	velo	velo	velogny	velogna	velogna	velogno	velona	velona
	atene	ate	aty	aty	aty	aty	aty	aty	aty	aty	aty
	fitava	vava	vava	vava	vava	vava	vava	vava	vava	vava	vava
	agnare	agnaragne	agnara	agnara	agnara	agnarana	agnara	agnarana	agnaragna	anarana	anarana
	lala	lalagne	lala	lala	lala	lalagna	lalagna	lalana	lalana	lalana	lalana



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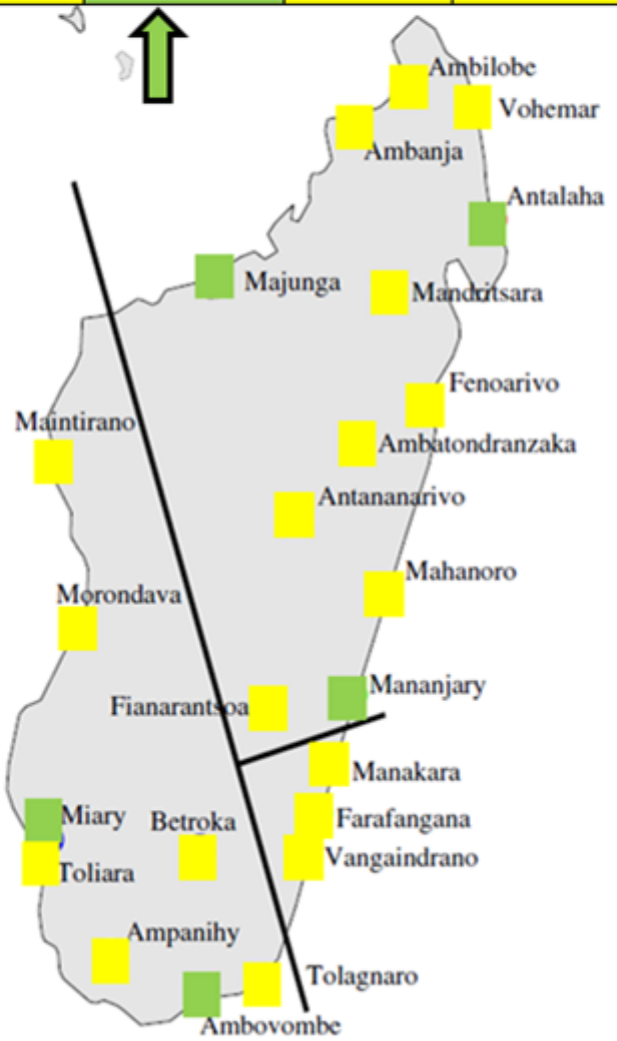
Most of the words vary not at all, or only slightly, across the island.
The differences that have evolved result in slightly different pronunciation, that's all.

Case 2: Independent Innovations…No Sharing

Merina ⇩

	oro	fagnatsogne	oro	oro	oro	vatagnoro	orogna	orogna	orona	orona	orona
	taly	taly	tady	taly	tady	tady	tady	tady	tady	tady	tady
	mate	mate	maty	maty	maty	mangatsiaka	maty	maty	diso	maty	maty
	ala	ala	ala	ala	hazo	ala	ala	ala	atiala	ala	ala



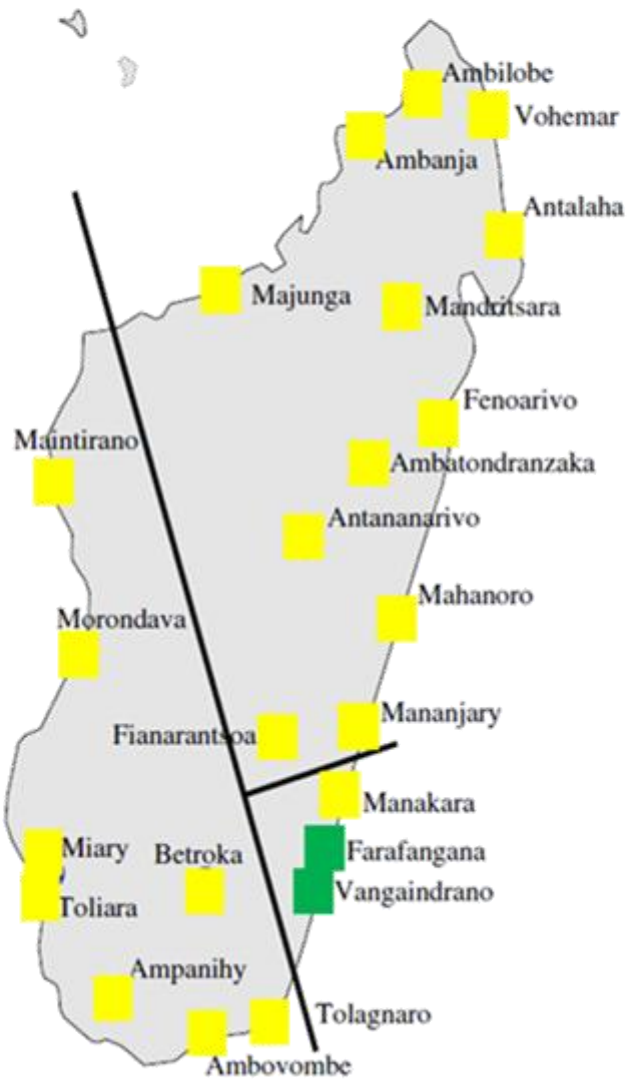
60

But in every language you find innovations, words that just pop up seemingly from nowhere, and replace the standard word IN THAT LANGUAGE ONLY.
Some of these "innovations" aren't innovative at all. For example, in this figure you see a line of the word "Ala". This means "Woods". Right in the middle pops up the word "Hazo" [pronounced "Ahz"]. Well it just so happens that "Hazo" means "Tree". And in Malagasy, "Hazo" also means "Trees". So this is just a re-purposing of the plural form of "Tree" to mean a group of trees: "Woods". There are undoubtedly other cases like this among 5% of the words on the Swadesh List that appear to be independent innovations.

Case 3: Independent Innovations with Local Sharing

Merina ⇩

rahongne	rahogne	raho	raho	mika	mikagny	rahogna	rahogna	rahona	rahona	rahona

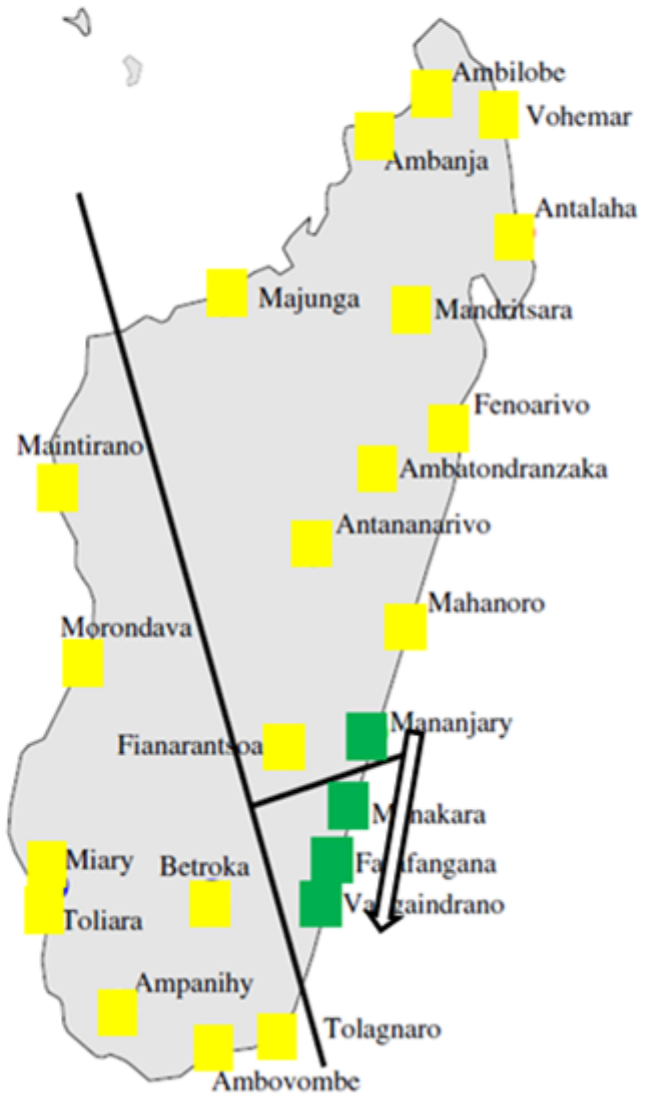


Sometimes, these local innovations are shared with a single neighbor language. But this is pretty rare, occurring less than 1% of the time.

Case 3: Independent Innovations with Local Sharing

Merina

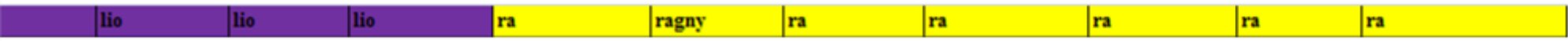
tsinay	sinay	oliky	oliky	oliky	tsikoliky	tsine	tsinay	tsinay

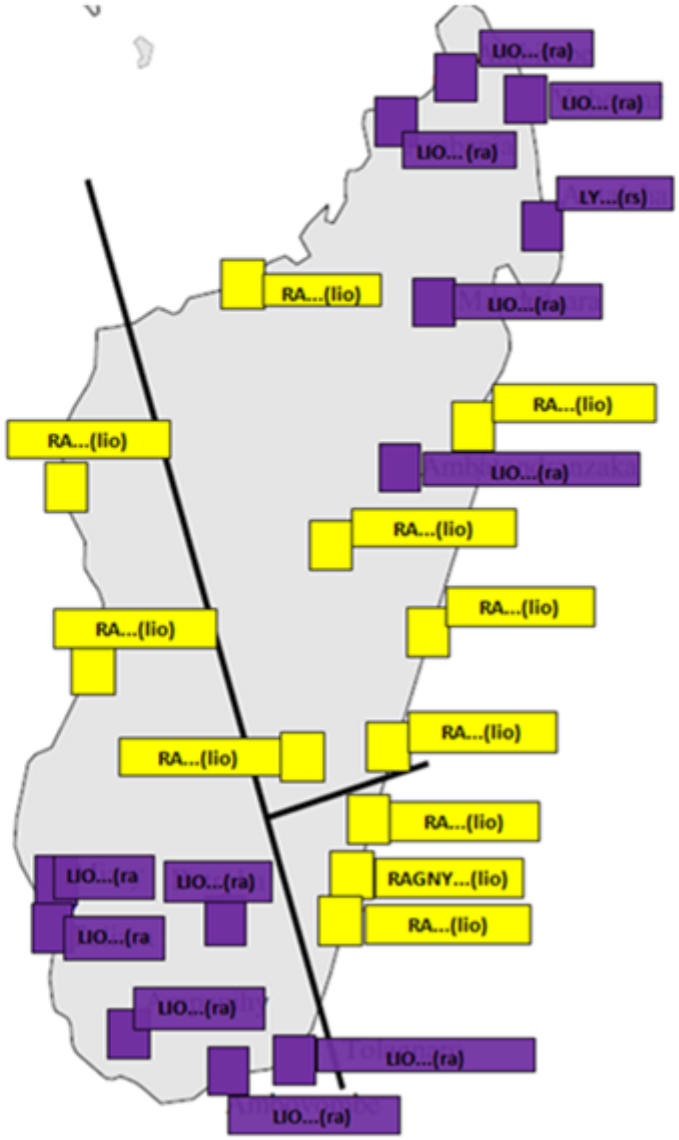


First, TSINE gets elaborated into TSIKOLIKY. Only the first syllable is retained.
Then, as the word moves south, the first syllable is abandoned altogether, leaving just OLIKY.
But the original word TSINAY dominates outside the local area on the east coast where the innovation occurred.

Case 4: Shared Substitutions

Merina





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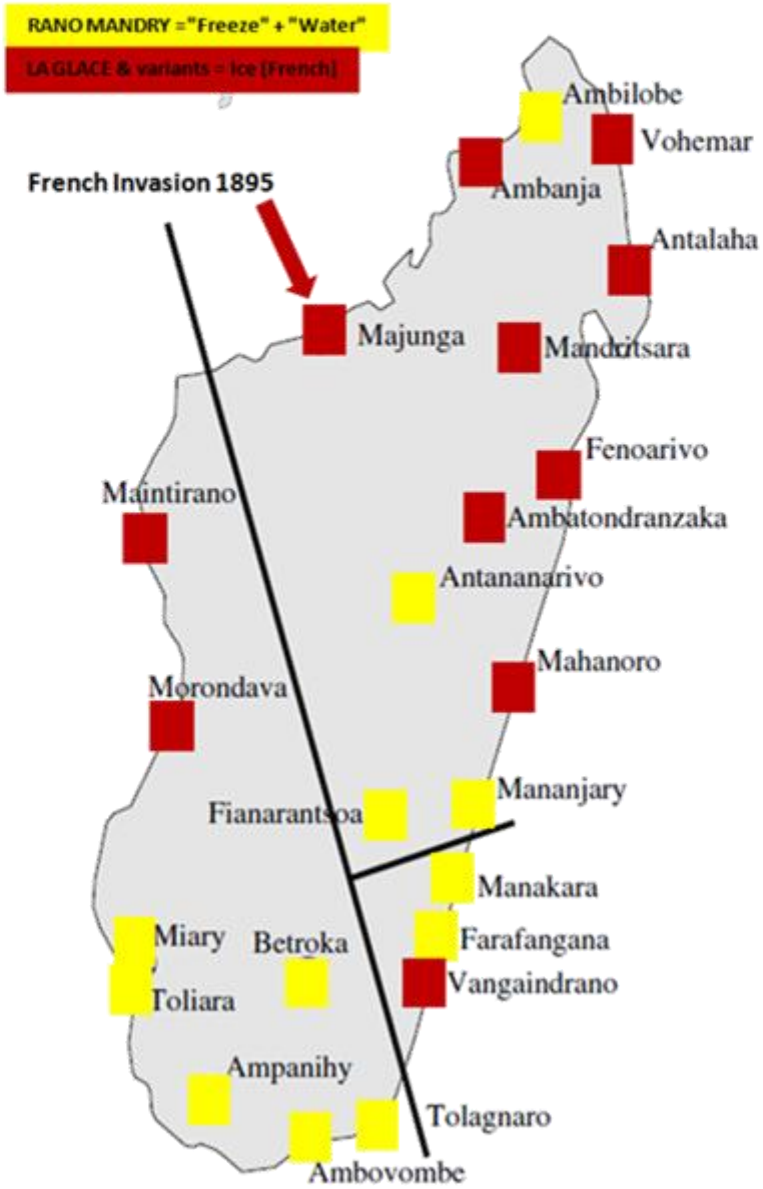
Frequently, it appears that some words travel together as synonyms, and change places in popularity along the way.
[Remember, this is a problem with Swadesh lists – they do not contain synonyms, so may miss relationships.]
And remember Serva's observation that synonyms are common in the dialects.

Merina

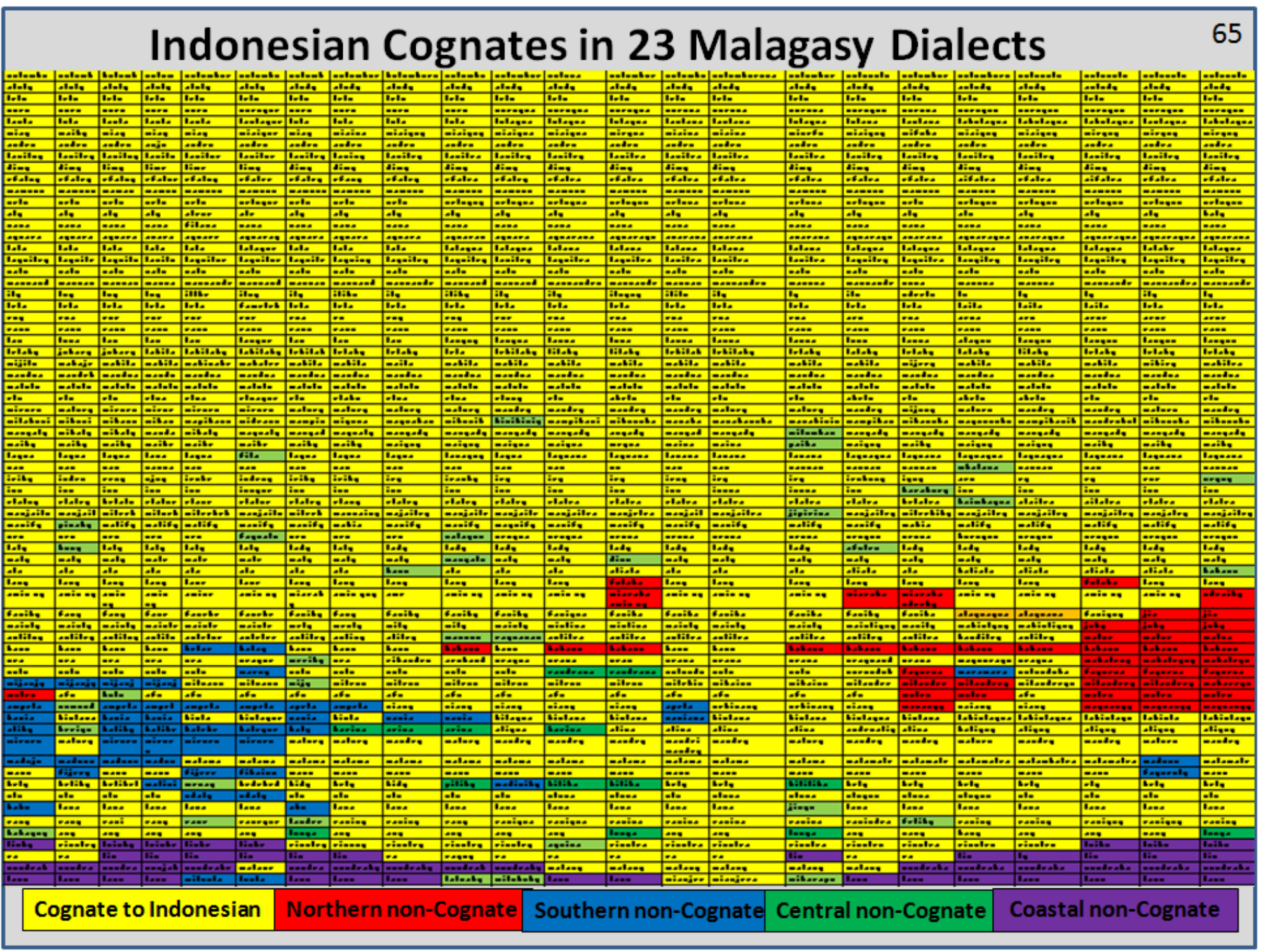
Case 5: Imported Words…"Borrowings"

rano mandry	giasy	gilasy	la glace	lagilasy	gilasy	lagilasy	ranomandry	gila



And in a couple of cases, it's obvious that a foreign word has been taken up and used preferentially, as in the case of the French word for "Ice"

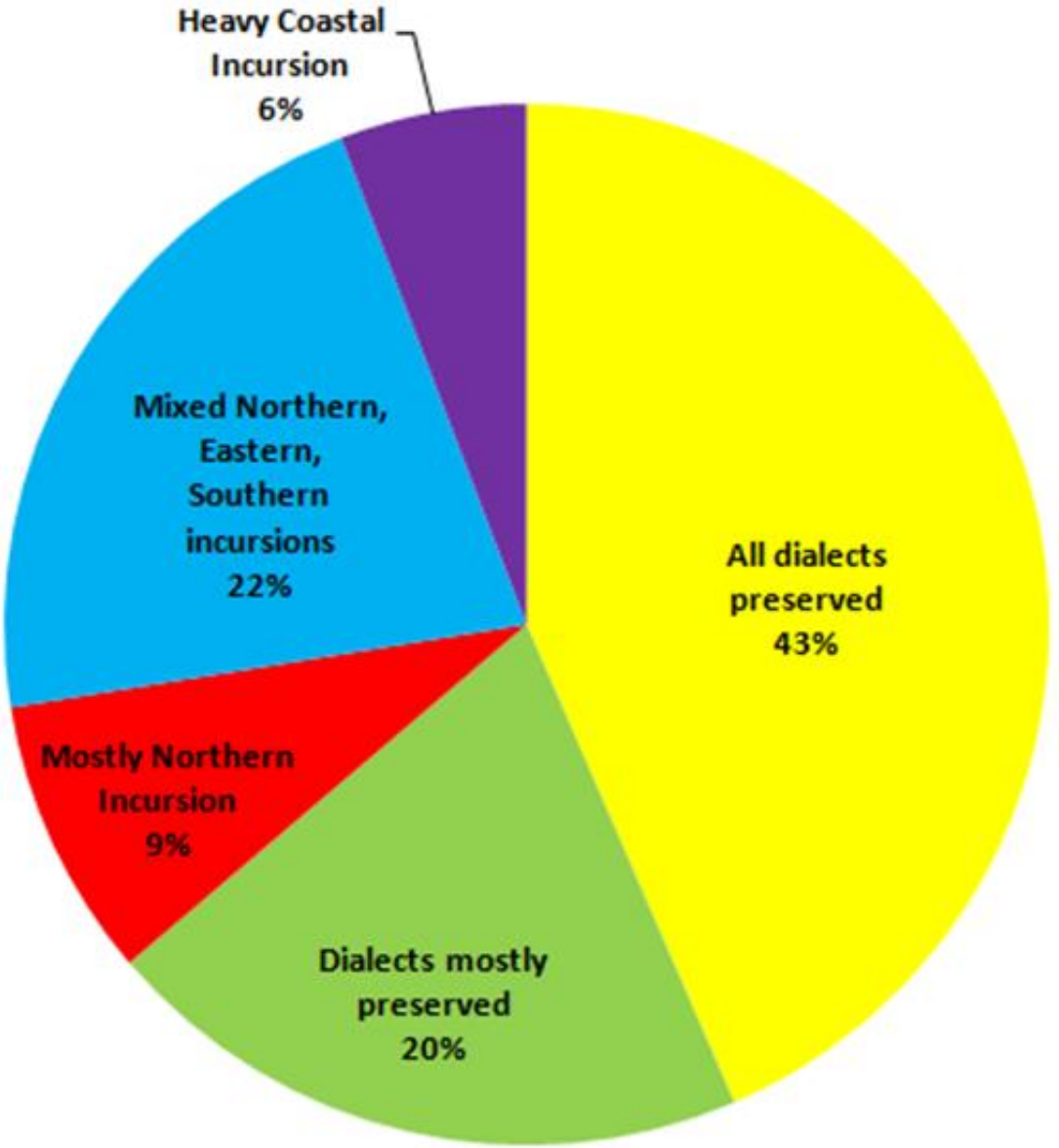
Indonesian Cognates in 23 Malagasy Dialects



Cognate to Indonesian | Northern non-Cognate | Southern non-Cognate | Central non-Cognate | Coastal non-Cognate

From what we can tell, at least 69 of the 200 words on the complete list were carried by emigrants all the way from Indonesia. Here is our word matrix pruned down to contain only those words which are known to be cognate to an Indonesian word. The colors other than yellow indicate these words are not cognate to the Merina dialect, which for words on this list is cognate to one of five Indonesian languages studied.

Distribution of Indonesian-Derived Words



30/69 of these words (43%) survived with only minor variations in all dialects

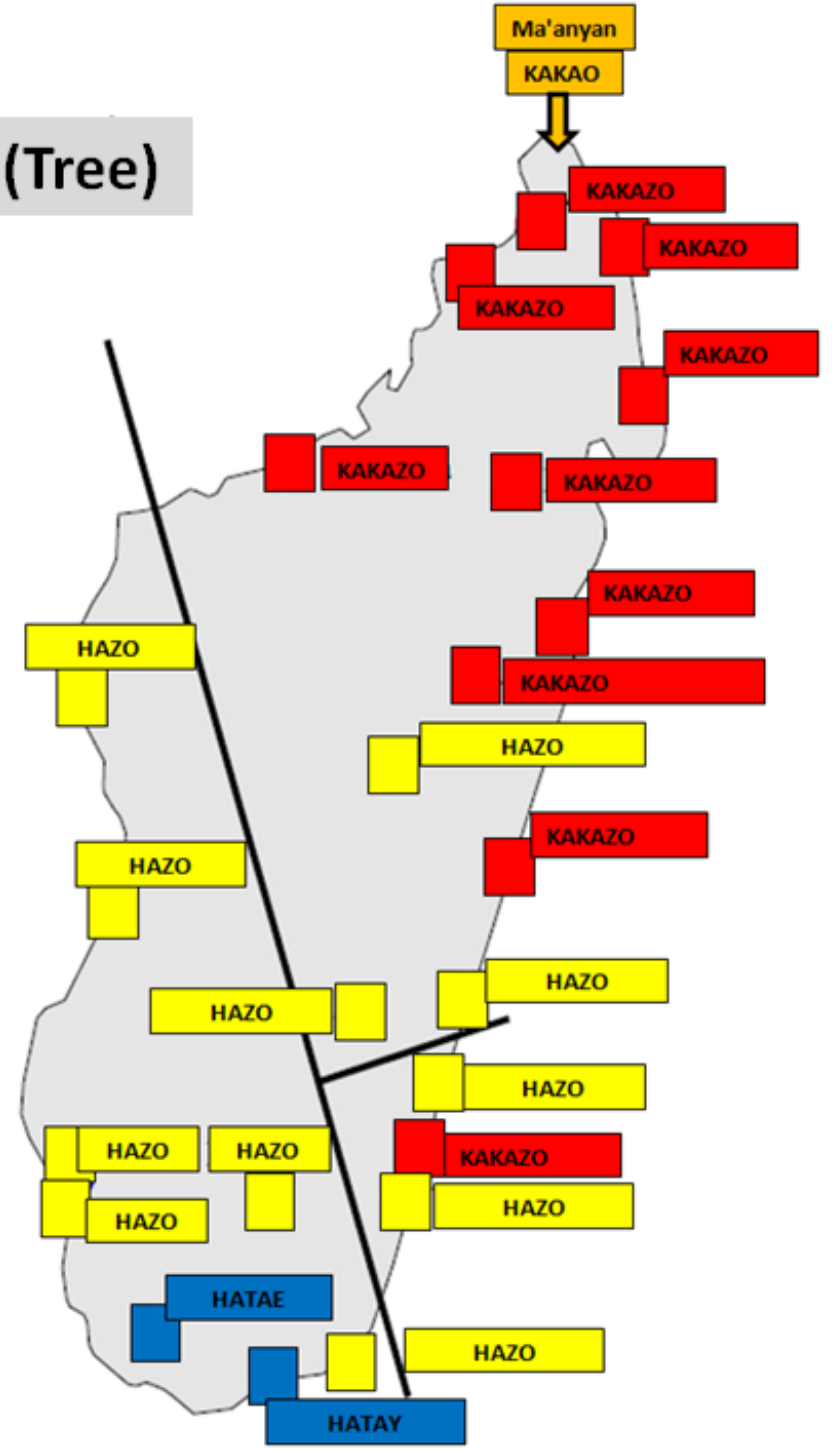
An additional 14/69 words (20%) survived in most dialects, with only occasional local innovations.

The remaining 25/69 words (37%) were subjected to widespread substitutions, some from Bantu but for the most part from unknown sources.

Let's have a look at some of these Indonesian-cognate words…

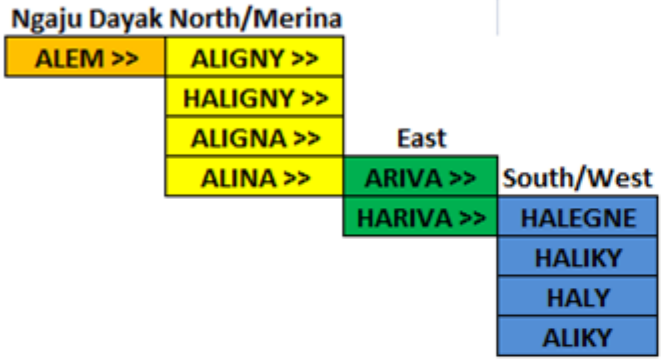
Evolution of a Word: KAKAZO (Tree)

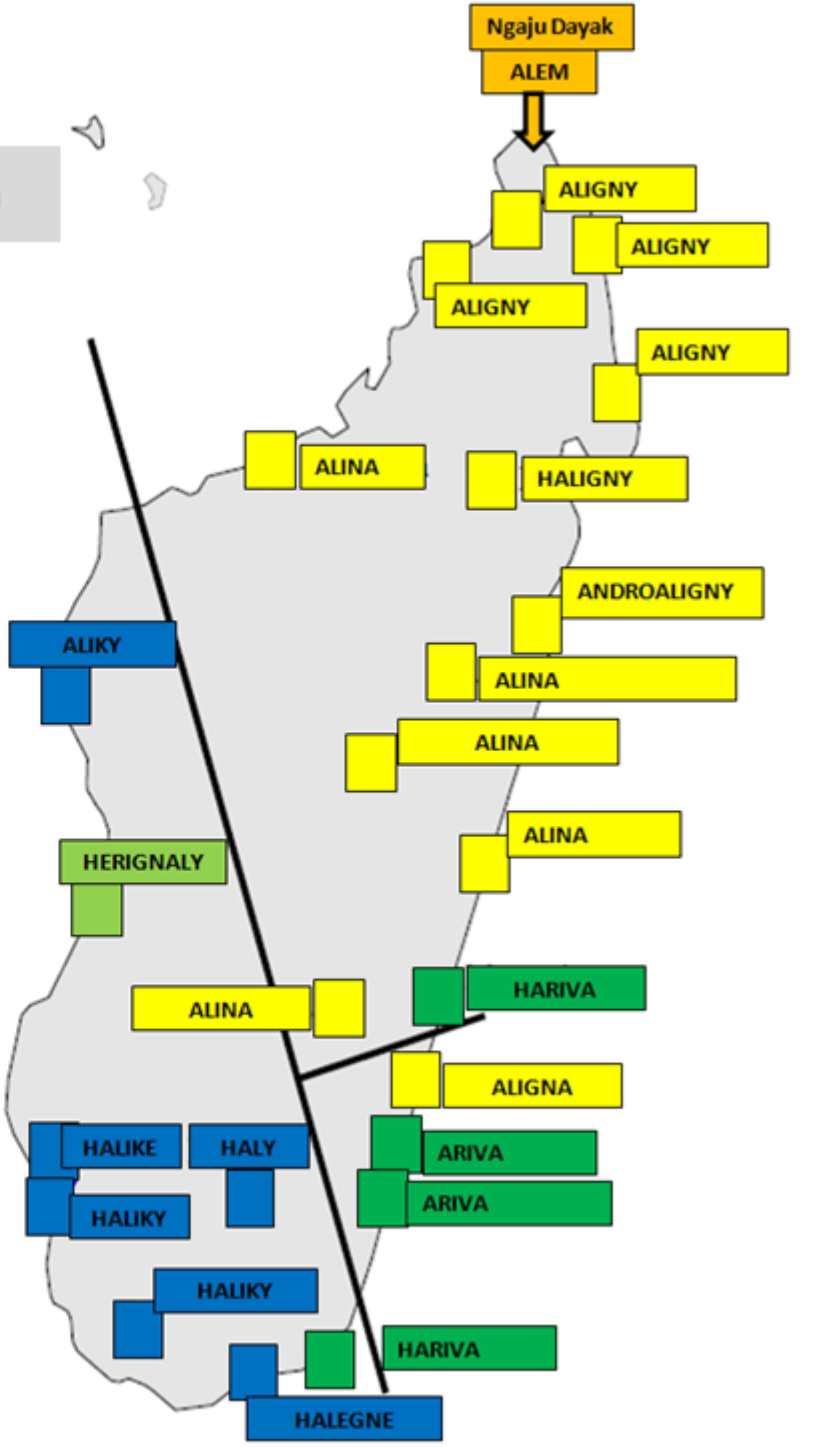
Ma'anyan	North	Merina	South
KAKAO >>	KAKAZO >>	HAZO >>	HATAY



Support for a North-to-South migration hypothesis comes from the Ma'anyan word KAKAO, meaning "Tree". In the north of the island it is rendered as KAKAZO. In the east coast and central highlands it was shortened to HAZO. In the far south it morphed in HATAY.

Evolution of a Word: ALINA (Night)





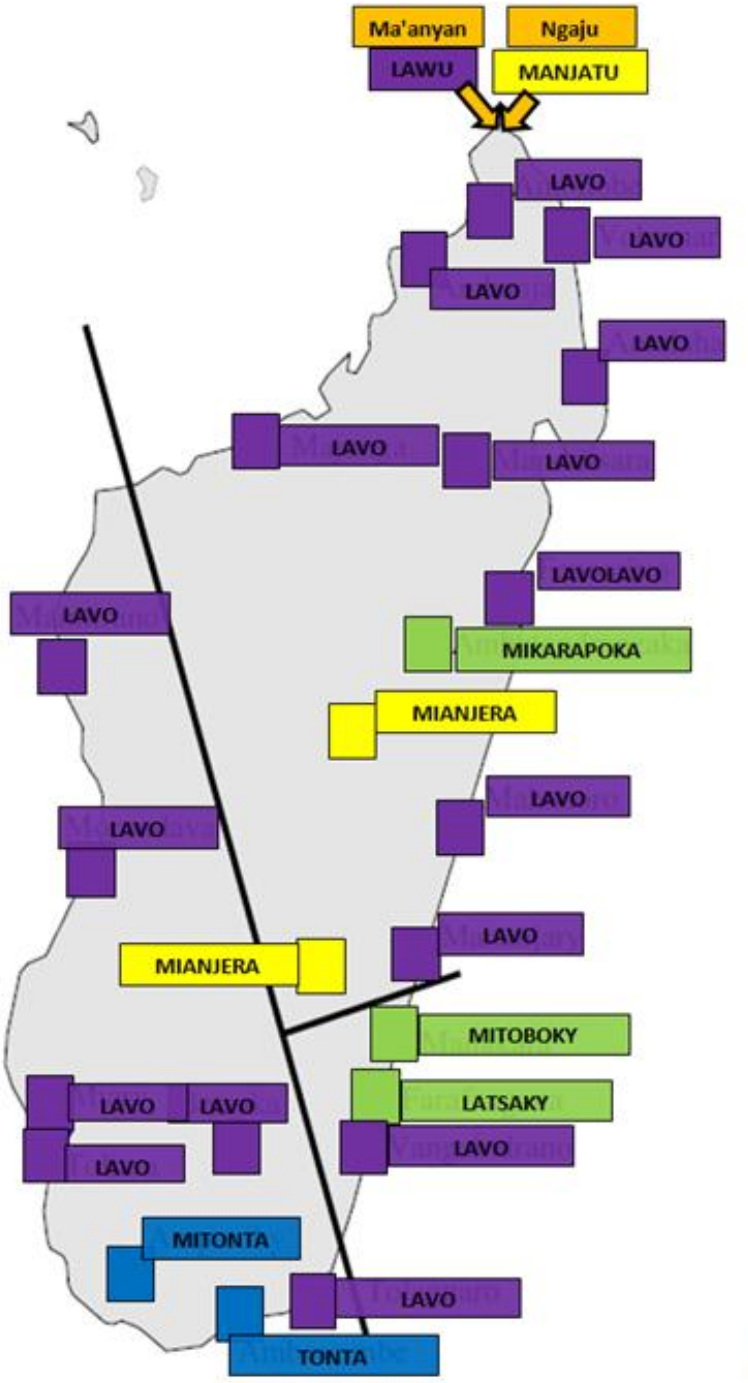
Another case is that of the word ALEM from Ngaju Dayak, meaning “Night”.

It continually evolved as it moved south, eventually becoming ALINA in Merina.

It further evolved along the east coast into ARIVA, finally becoming ALIKY on the west coast after a series of stepwise changes.

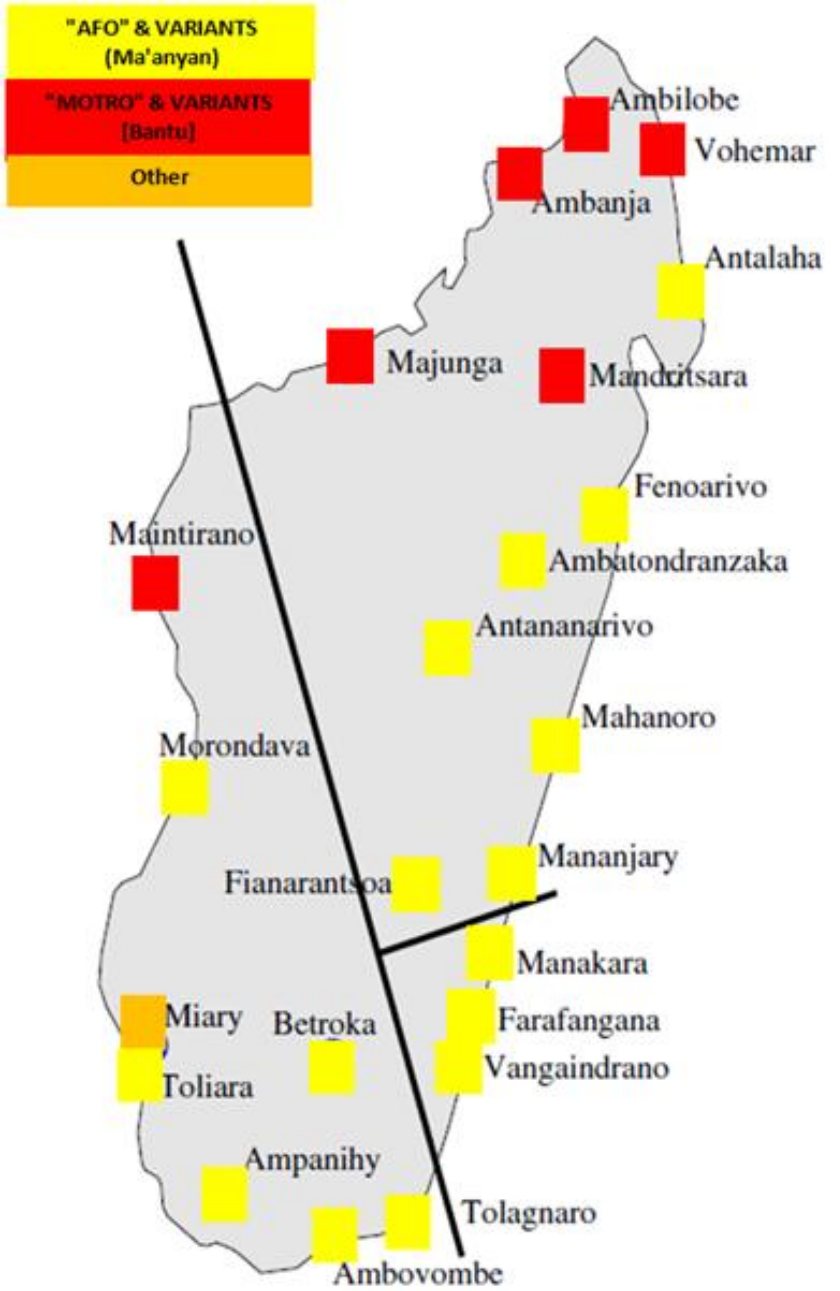
Co-Propagation:

Two synonyms for "Fall" work their way through the Island.
Merina follows the Ngaju: "Manjatu"
Most others follow the Ma'anyan: "Lawu"



Here is a clear case of TWO Indonesian words surviving in the Malagasy dialects. The Ma'anyan LAWU became LAVO in most dialects, but the Merina and Betsileo stuck with the Ngaju Dayak word MANJATU which became MIANJERA. This is clear evidence that synonyms must have co-propagated through the settlement of the island. And the fact that the innovations (shown in green and blue) occurred toward the south, supports the notion that the words were introduced in the north.

Bantu Influence: “Fire”

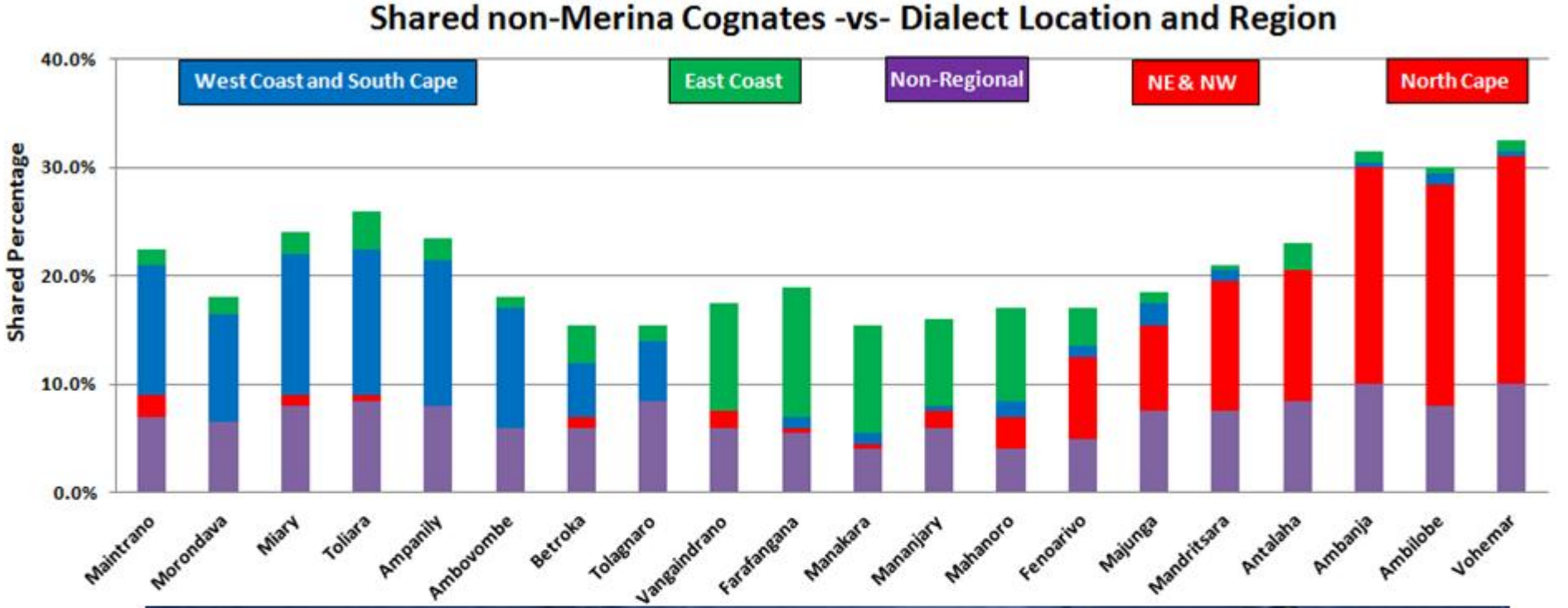


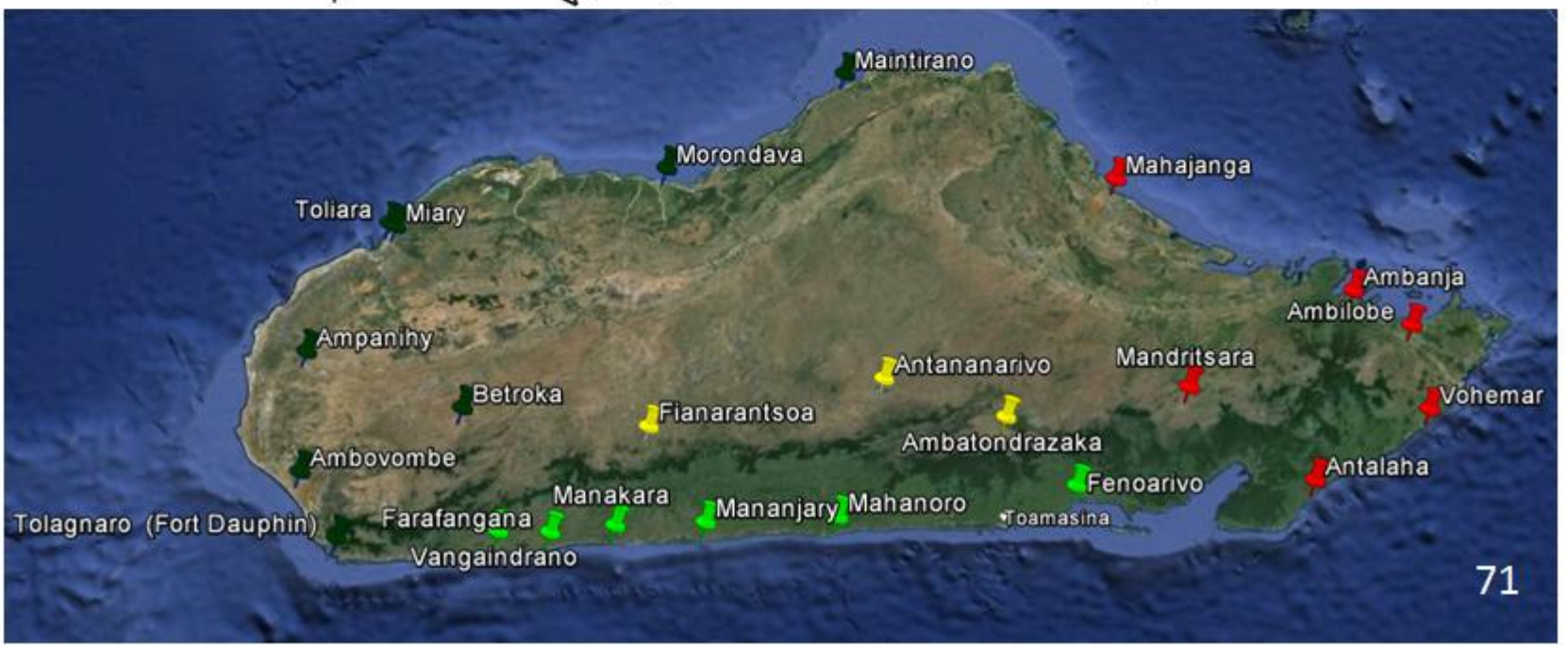
The Bantu word for “Fire”, MOTO, became MOTRO in the northwest of the island.

AFO, is the Ma’anyan cognate for “Fire” is used in most other dialects.

It’s possible that the Bantu influence was a later introduction, due to later immigration or trading.

But it’s just as likely it was introduced by the original Bantu settlers.

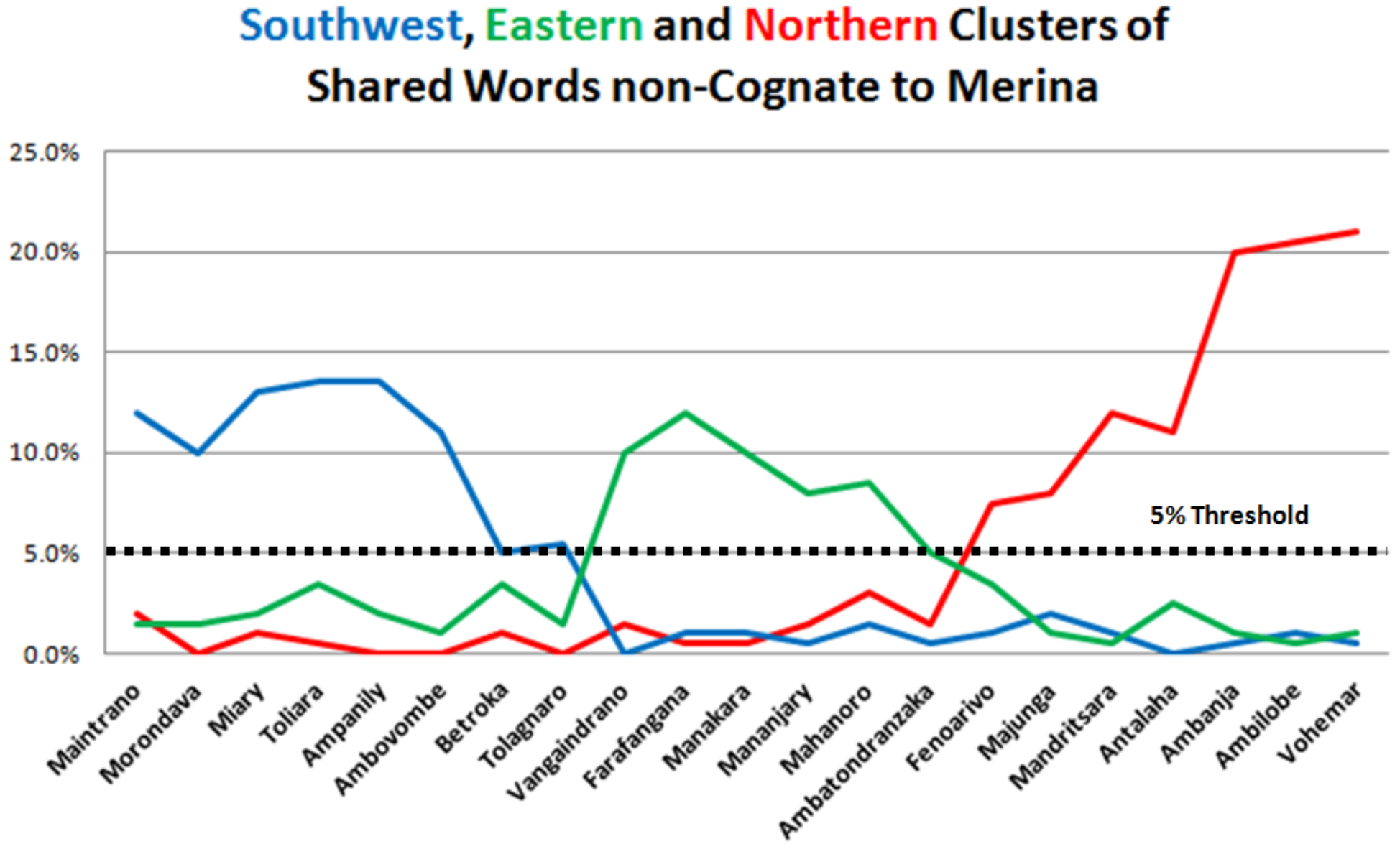




So let's see how these words that tend to be shared regionally stack up.

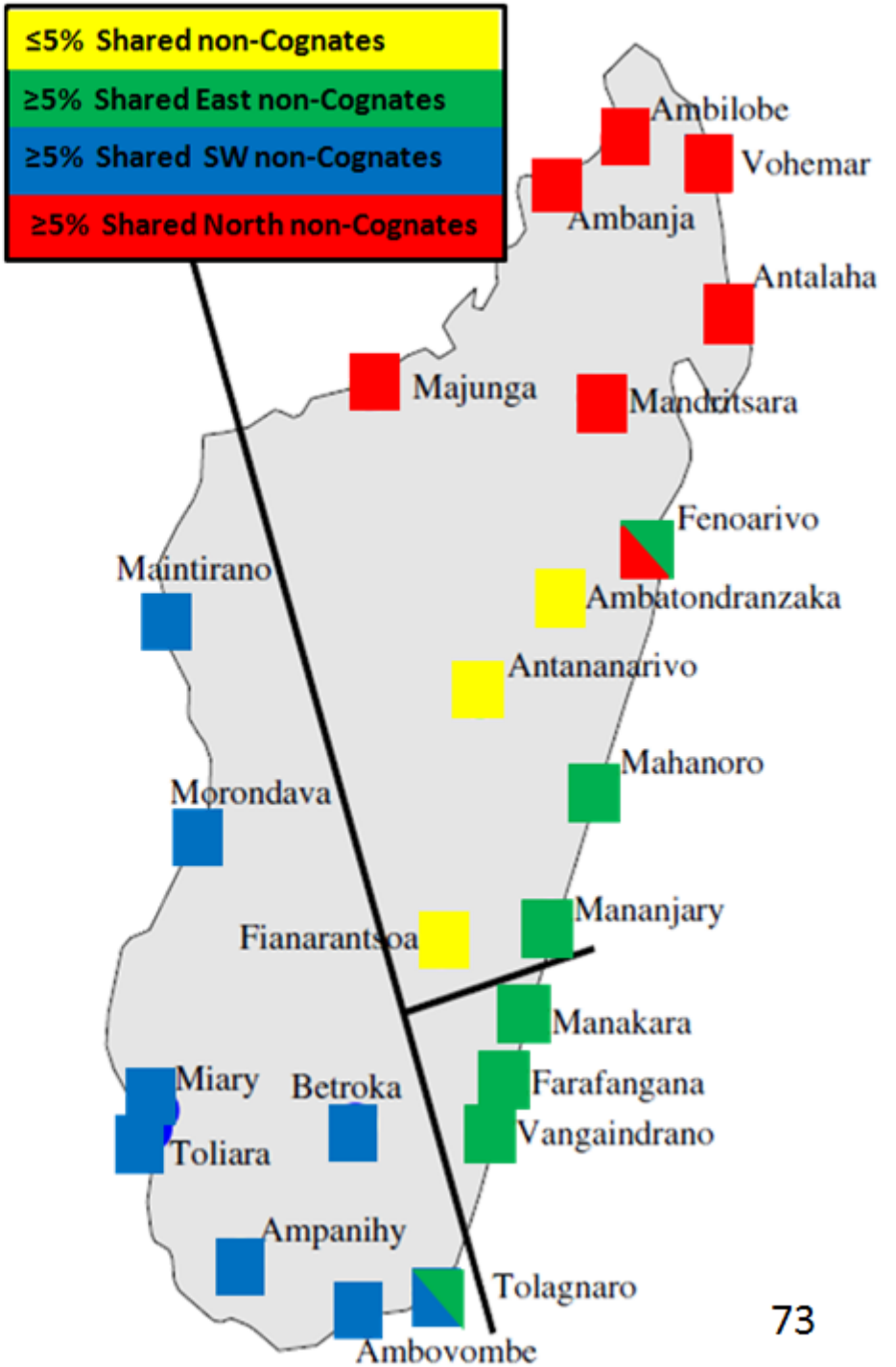
Here we have excluded the highland dialects and plotted the percentage of words in the coastal regions that are NOT cognate to Merina and ARE shared with other dialects. We have identified the zones over which they are shared by color code. Purple indicates words shared throughout the island in the coastal regions, Red- mostly in the northern region, green in the East coastal region and Blue in the South Cape and West coast.

The profile is similar to Lexical Distance, with increasing value the farther the geographical distance from Merina. But this plot shows that the words are shared regionally. There must be a reason for this.



When we plot the frequency of these regionally-clustered words versus location, a pattern begins to emerge. If we set a threshold of 5% as a definition for the regional boundaries, we can justify the lumping of these words into regions.

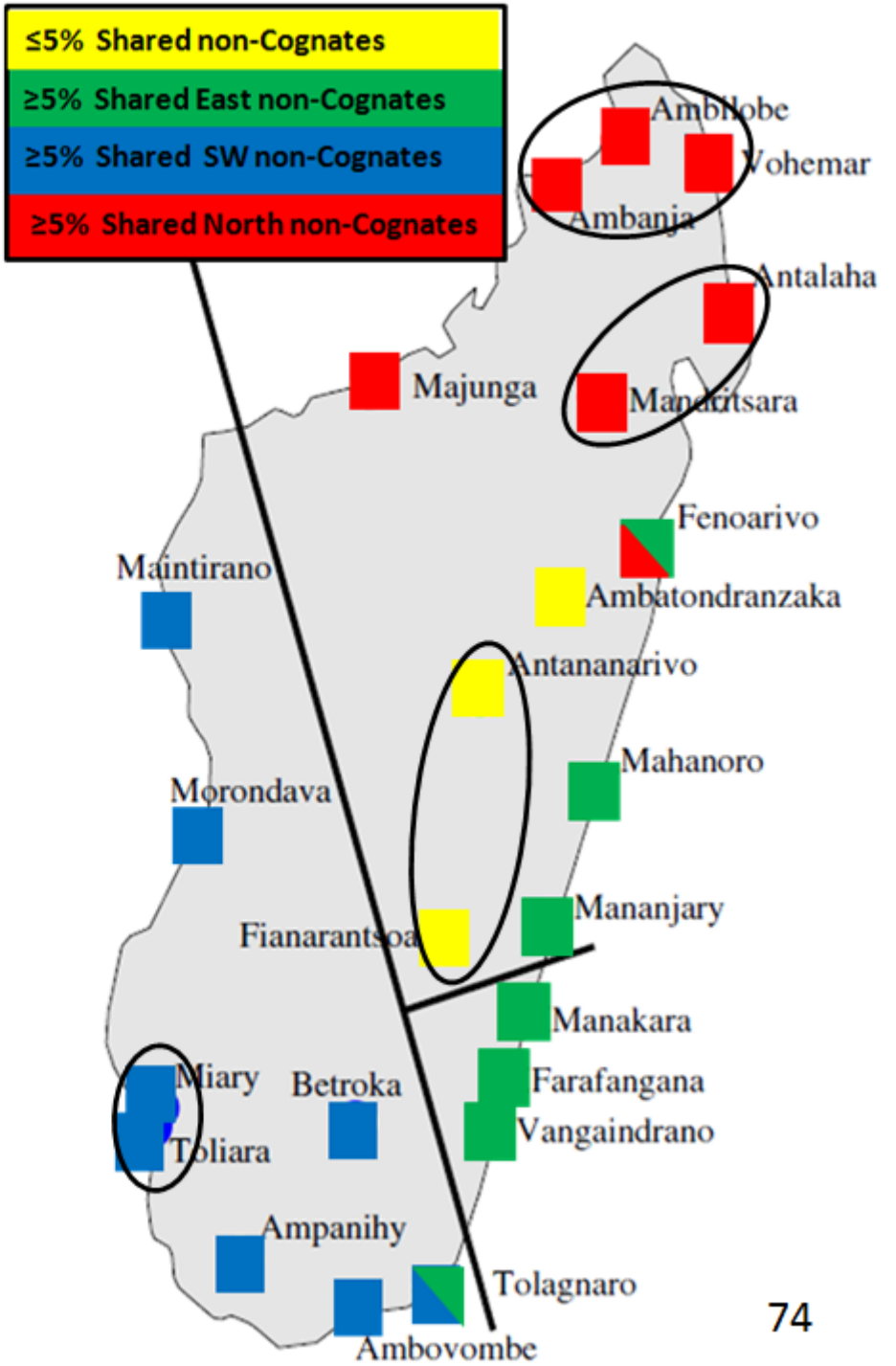
Linguistic Affinity Map



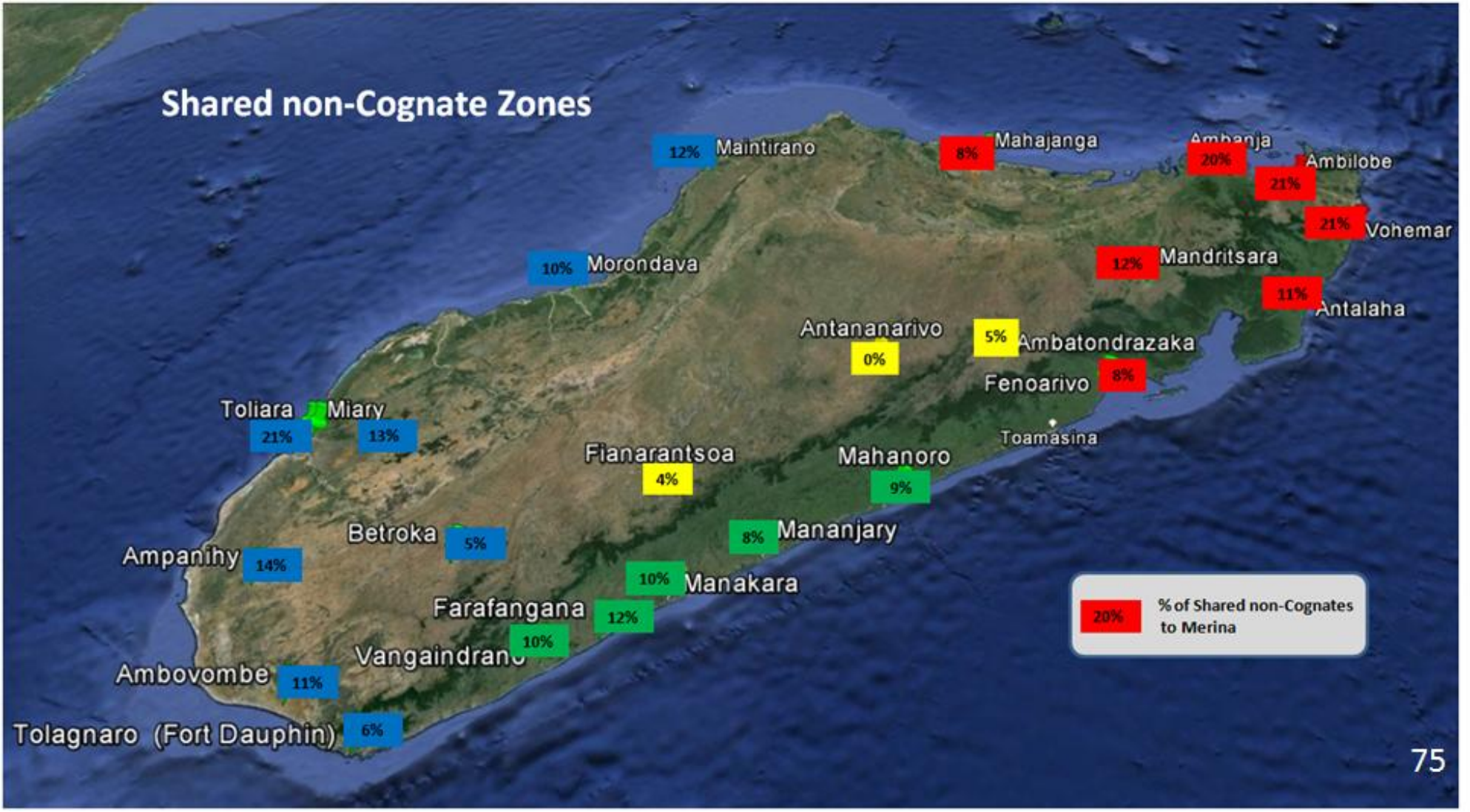
The regions we get using this cognate-counting approach with 5% discrimination threshold fall into four categories:
Yellow: The Plateau region (Merina, Betsileo and Sihanaka only) with ≤5% non-cognates
Red: The northern zone with ≥5% non-cognates shared only in this region;
Green: The east coast zone with ≥5% non-cognates shared only in this region;
Blue: The South Cape and West coast zone with ≥5% non-cognates shared only in this region.
These zones are slightly different from the ones Serva defined, but have the same general north-central-south organization.
To my eye, this analysis represents the most sensible organization of the dialects: Northern, Eastern, Southwest and Highland.

Linguistic Affinity Map

= Lexical Distance ≤ 0.16



There is also a clear geographical correlation on Lexical Distance. Some – but not all – of the languages close to each other are quite similar to one another. The circles indicate lexical distances <0.16. For all languages, the mean lexical distance is 0.28±0.05. So the circled languages are significantly closer in the statistical sense than other languages.

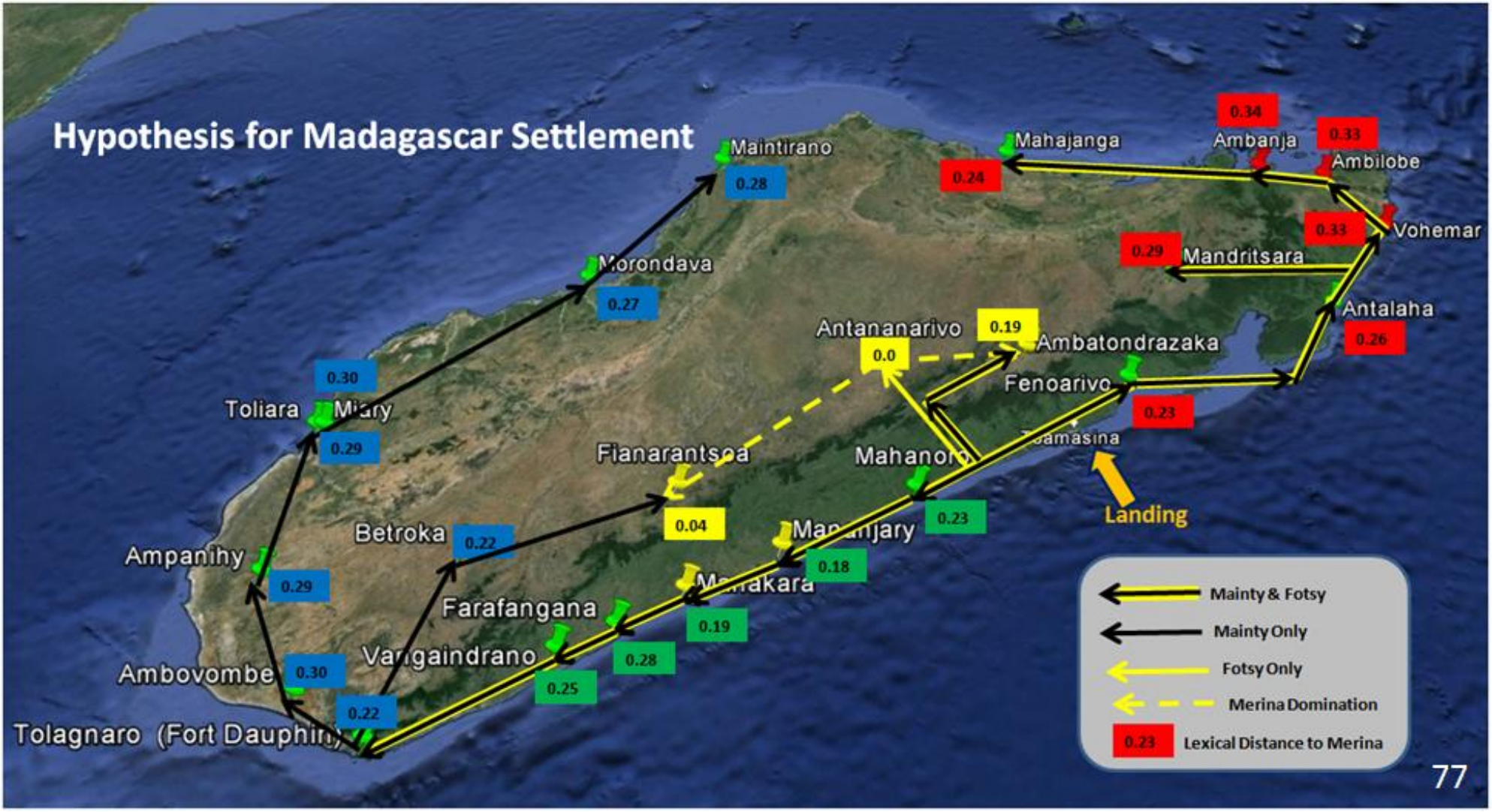


When we view these zones on a Google Earth map, it becomes clear that there are geographical features separating the zones. On the East coast is the Bay of Antagonil which blocks land passage north-to-south. Settlers moving between regions would probably have come by sea, since the land route is nearly impassable, even today.

On the West coast, the North/South division is a protrusion of the highlands to the west, forming a barrier to travel between Maintirano and Majunga. The East coast towns were all settled near the mouths of rivers, and the people there continue to depend on these rivers for their sustenance. So can we put together what we've learned about the Malagasy dialects with what we see about the geography and come up with some idea of how people may have settled the land?

ETIENNE DE FLACOURT WROTE (1658) THAT THE AREA SURROUNDING FORT DAUPHIN WAS DIVIDED INTO TWO HIERARCHIES, ONE CLASSIFIED AS 'WHITE' (FOTSY), THE OTHER 'BLACK' (MAINTY). THE ROYAL FAMILY, AT THE TOP OF THE 'WHITE' HIERARCHY, WAS DESCENDED FROM A GROUP OF IMMIGRANTS KNOWN AS *ZAFIRAMININA* WHO HAD REACHED MADAGASCAR SOME SEVENTEEN GENERATIONS PREVIOUSLY AND MIGRATED GRADUALLY DOWN THE EAST COAST BEFORE ARRIVING IN THE FAR SOUTHEAST. THE SYSTEM OF DOUBLE AUTHORITY REFLECTED AN ACCOMMODATION BETWEEN THE *ZAFIRAMININA* IMMIGRANTS AND THE LOCAL PEOPLES.

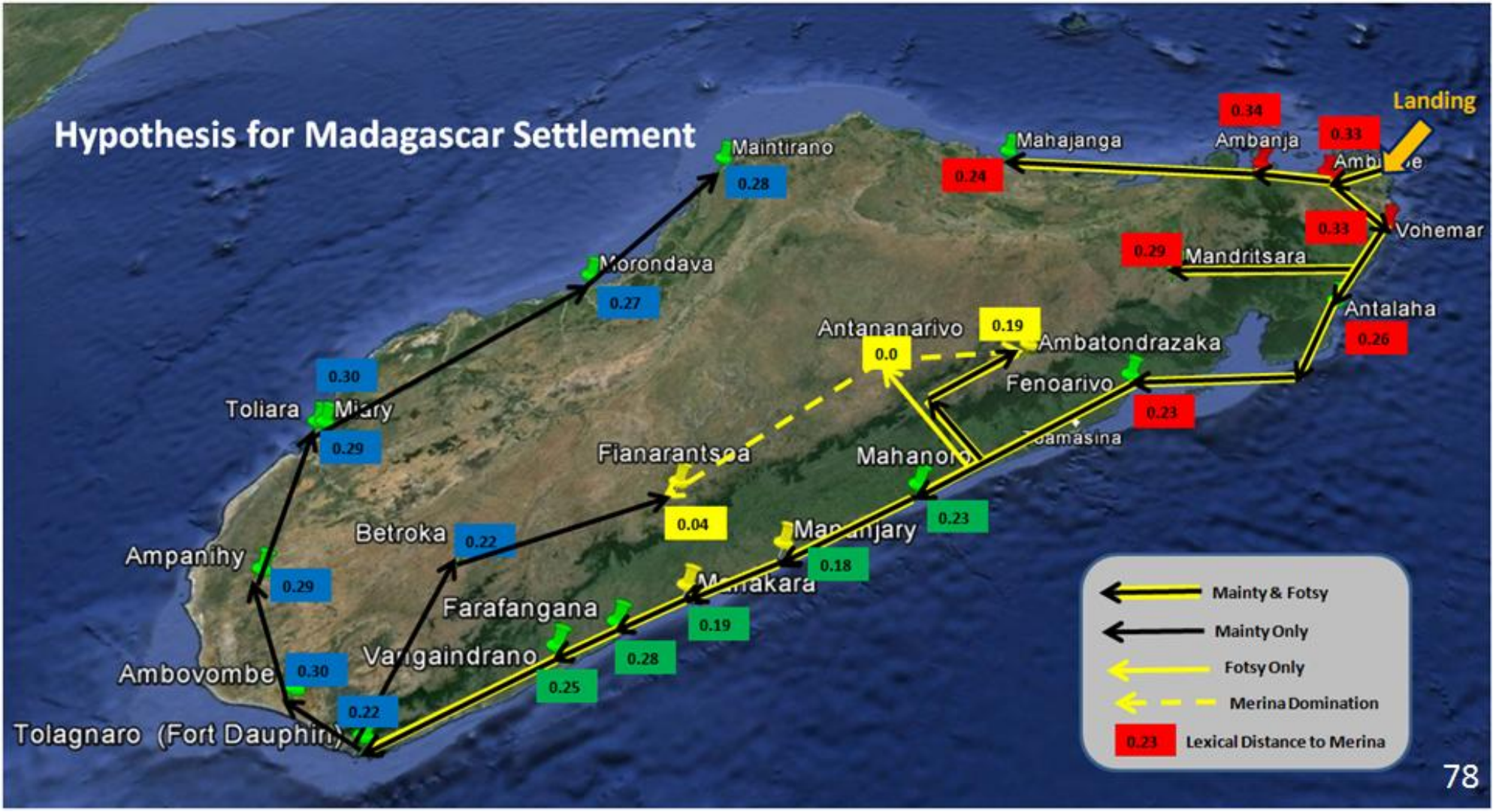
A historical clue appears in the 1658 testimony of French explorer Etienne de Flacourt.
This might explain the pattern of word transmission we observe in the Malagasy dialects.
But of course, this is only speculation.



Here is a map of one hypothesis for Madagascar settlement. Indonesians and Africans landed on the east coast and spread together, as Flacourt recorded, but both northward and southward. The south and west was settled mostly by Africans as Indonesians dominated the other areas and the Merina conquered and developed the high plains.

The biggest problem with this hypothesis is the unlikelihood of an east coast landing by a mixed African/Indonesian group. Why there, when better landings are on the other coasts? The possibility of Africans and Indonesians not meeting until the Indonesians had landed is remote, given the huge expanse of the island and the small number of ancestors of today's Malagasy.

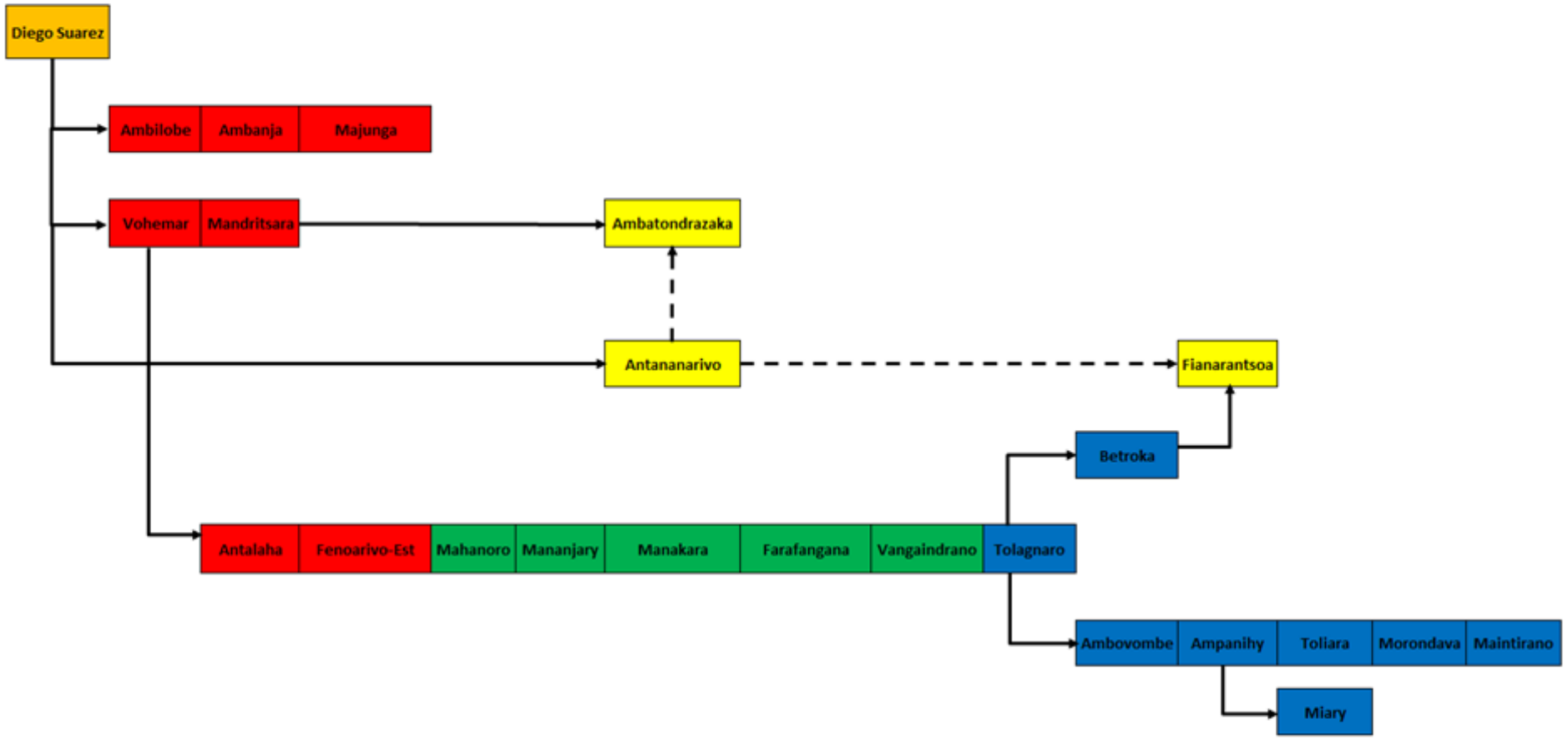
There must be a better hypothesis!



Here my best hypothesis for Madagascar settlement, driven by historical and archaeological findings and by common sense, and supported by the linguistic results. It assumes that the Fotsy and Mainty people had migrated together from the North Cape all the way to the south.

Here is the narrative: A mixed band of African and Indonesian voyagers arrived together on Indonesian outriggers, carrying Indonesian rice for planting. The Africans brought a type of cattle called Zebu. There were both men and women from the Indonesian and African groups. They landed at what the Portuguese later called Diego Suarez bay on the north cape. They struggled to survive in this new land, but thanks to the wet climate they could grow rice in abundance. They tried, for reasons apparently built in to the human psyche, to maintain a separation between the races. As their population increased, however, they moved south, interbreeding along the way. Their language evolved, word by word, as they progressed south over hundreds of years. Eventually the more Indonesian group, the Merina, became strong enough to split off and conquer the highlands. The south cape and west coast was then settled by mostly African groups. Highland groups were heavily influenced by the Merina. Fianarantsoa was settled by a mostly African group but was later conquered by the Merina who imposed their version of the language and interbred extensively with them. The Red/Green/Blue words are explained by the carrying of synonyms as people moved south. Along the way, certain synonyms became the favored version of the word, replacing the version the Merina chose to keep.

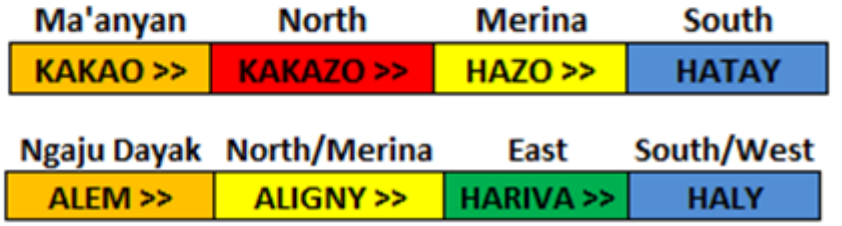
Phylogenic Tree Derived from Settlement Hypothesis



This tree diagrams my settlement hypothesis. It is not based on Lexical Distance, but rather on a hypothetical settlement history supported by lexical data, not driven by it.
From the northern landing at Diego Suarez, the Fotsy and Mainty migrated southward while keeping their linguistic preferences. The Mainty became the coastal dwellers shown in Red, Green and Blue variations, while the Fotsy maintained the purest Indonesian dialect, eventually becoming the Merina and exerting their lingustic domination over the Betsileo and Tsimehety highland tribes.
My conclusion is that lexical analysis seems not to be able to accurately derive a logical settlement pattern for Madagascar. But a logical settlement hypothesis could be supported or rejected by lexical analysis.

Support for Northern Immigration Hypothesis

- Early Archaeological Remains (685-745 CE) in Caves near Diego Suarez, the most likely landing spot for a joint expedition from Africa.
- Unlikelihood of East Coast Landing
- Flacourt's story about Mainty/Fotsy N>>S Migration
- North-to-South Word Evolution:



- Evidence for Synonym Co-Propagation Explains how words introduced in the North could exist in North and South but not on the East Coast or Highlands

An accumulation of archaeological, practical, historical and linguistic evidence argues for a northern landing of combined Indonesian and Bantu settlers

Conclusions

- Lexicography and DNA indicate Borneo and Mozambique are Origins of Malagasy People
- Malagasy Languages Evolved from a Prototype Austronesian Language no Longer Extant
- Lexical Distance Analysis Does Not Accurately Predict Settlement Patterns
- But Analysis of Shared Cognates and Lexical Distances Do Inform Understanding of Settlement
- North-to-South Mainty/Fotsy Settlement Hypothesis Supported, but not Proved

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YouTube Videos:

Tsimihety Girls (Music Video):
https://www.youtube.com/watch?v=bvoFt3UvO3w

How to Speak Malagasy (taught by a cool instructor):
https://www.youtube.com/watch?v=Dl3oMPLUNwY

Trials and Tribulations of Road Transport in Northern Madagascar:
https://www.youtube.com/watch?v=UOjxSNbuTqM

Vezo Fishing People at Toliara, West Coast:
https://www.youtube.com/watch?v=xEmPJC6soAA

Antananarivo City:
https://www.youtube.com/watch?v=oyi_dUQVi-I