PROBLEM #5

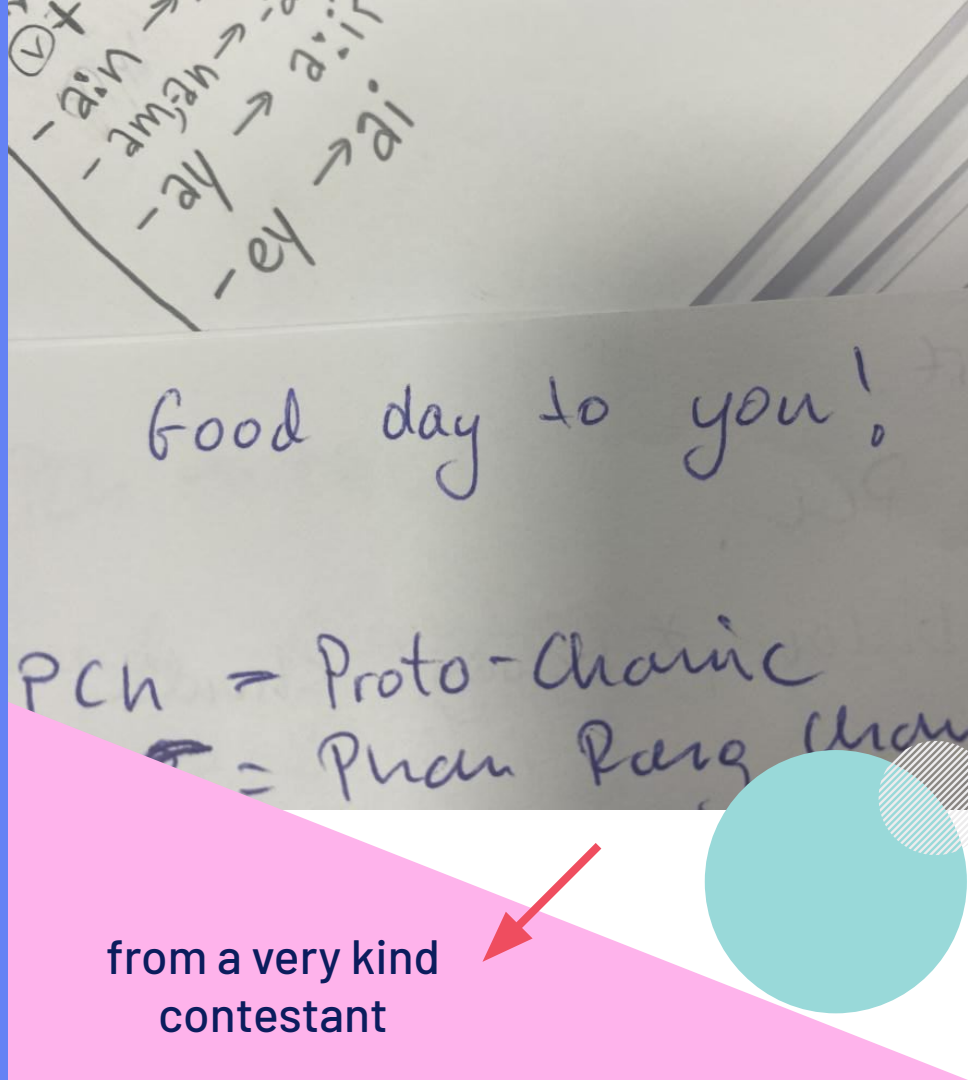
CHAMIC!

moghrey mie!

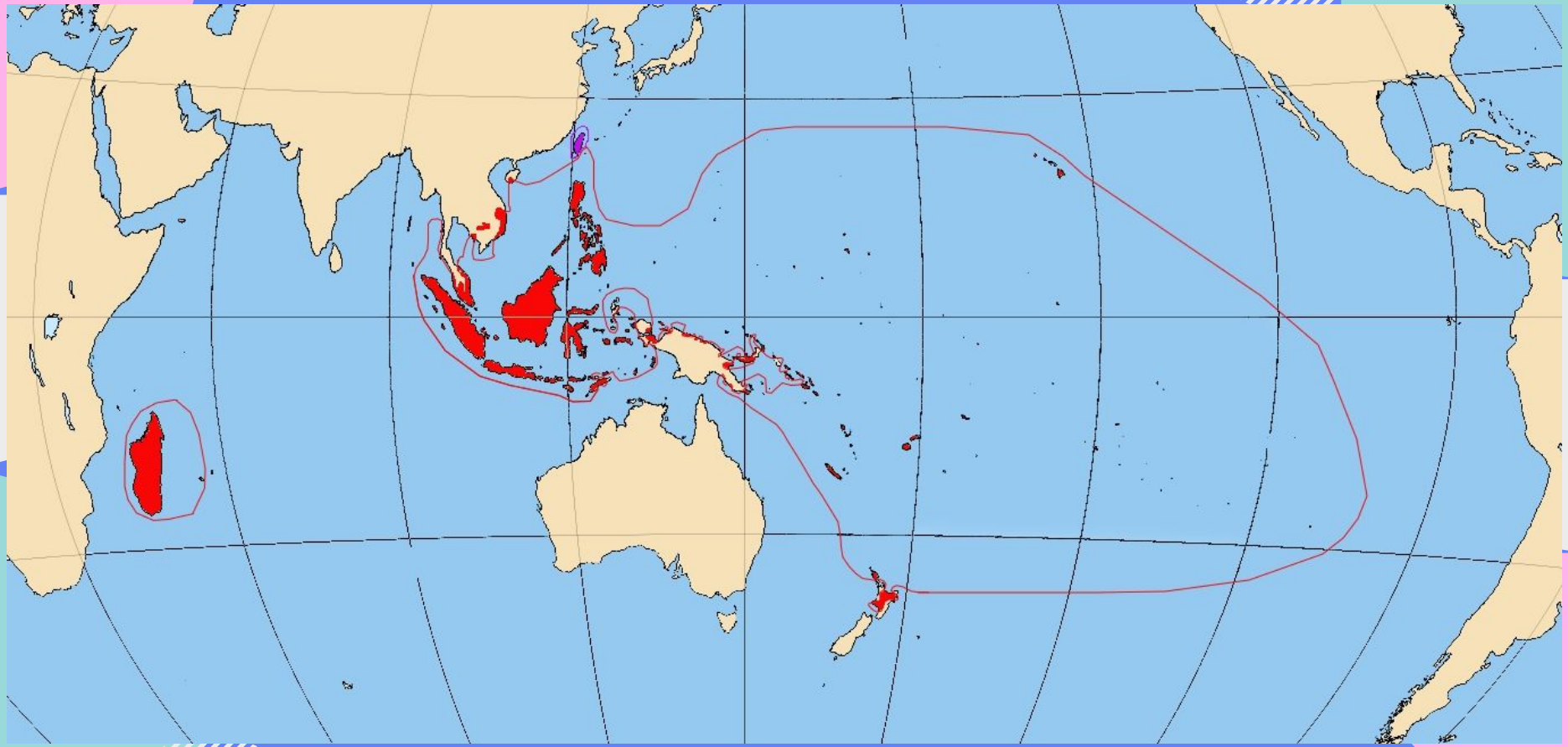
... or so they say in Manx :D

but for today, I want to say:
Salam! (in Phan Rang Cham)
A-selamaleigom! (in Tsat)

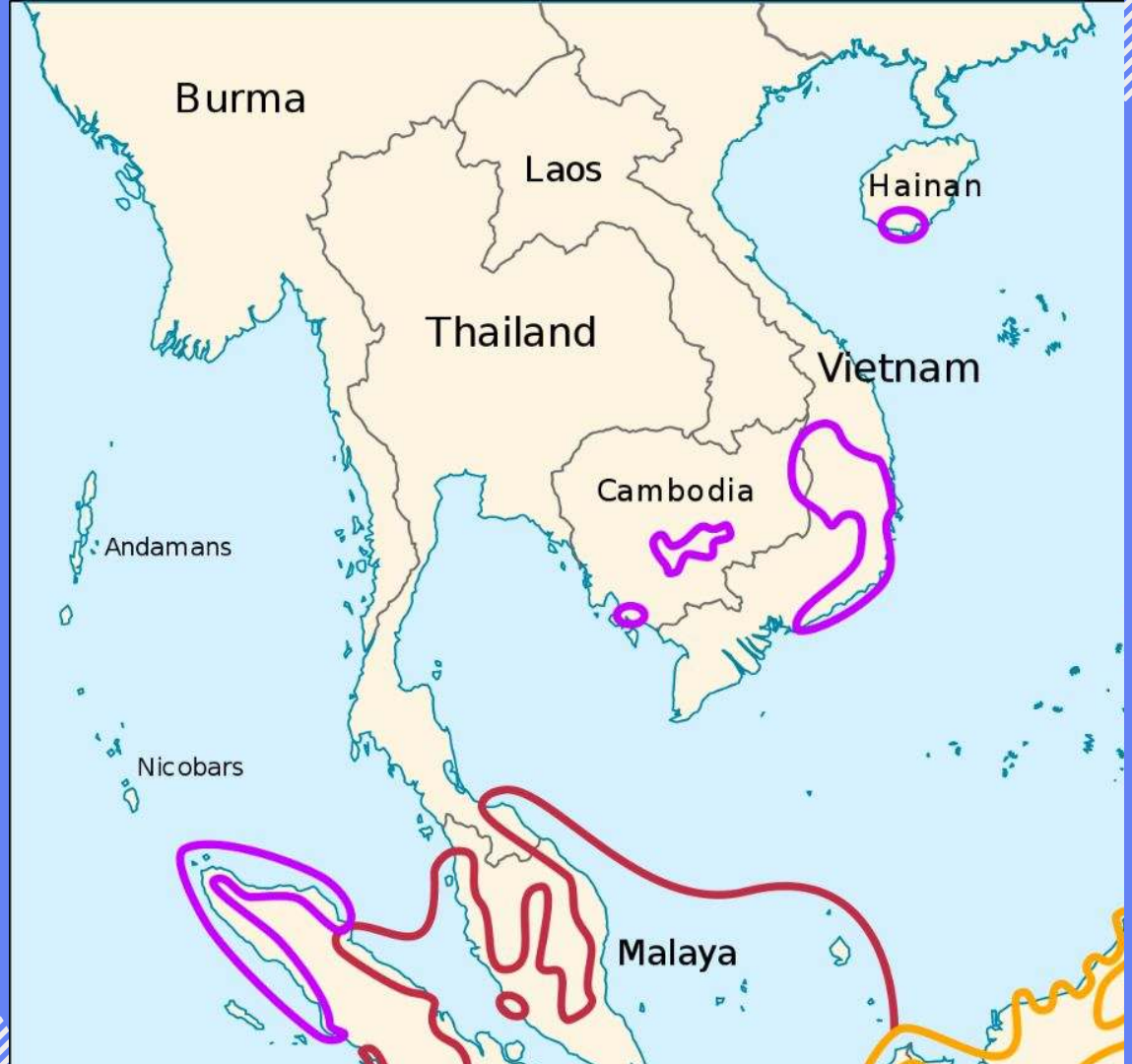
Hope you are also having a great day!
- from the grading team of #5



from a very kind contestant




Malayo-Sumbawan languages
Burma
Laos
Hainan
Thailand
Vietnam
Luzon
Cambodia
Andamans
Palawan
Sulu Sea
Mindanao
Nicobars
Palau
Malaya
Borneo
Sumatra
Halmahera
Sulawesi
Sula
Buru
Ceram
New Guinea
Banda Sea
Madura
Sumbawa
Java
Bali
Flores
Sumba
Mercator Projection
0
500 Kilometres
0
500 Miles
Scale 1:32,000,000 at 5ºN


Burma
Laos
Hainan
Thailand
Vietnam
Cambodia
Andamans
Nicobars
Malaya


Laos
Hainan
ailand
Vietnam
Tsat
Cambodia
Phan Rang Cham

why did I make this problem?

historical phonology

the “origin” of modern linguistics

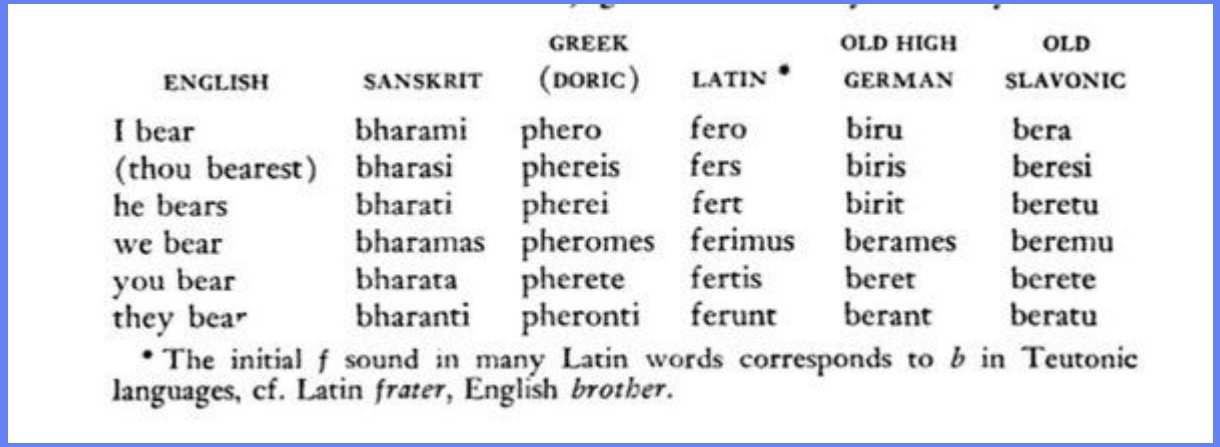
tonogenesis

you have learnt that yes, tones do come out of nowhere

language contact

linguistics makes more than friends :)

comparative linguistics



ENGLISH	SANSKRIT	GREEK (DORIC)	LATIN •	OLD HIGH GERMAN	OLD SLAVONIC
I bear	bharami	phero	fero	biru	bera
(thou bearest)	bharasi	phereis	fers	biris	beresi
he bears	bharati	pherei	fert	birit	beretu
we bear	bharamas	pheromes	ferimus	berames	beremu
you bear	bharata	pherete	fertis	beret	berete
they bear	bharanti	pheronti	ferunt	berant	beratu

• The initial *f* sound in many Latin words corresponds to *b* in Teutonic languages, cf. Latin *frater*, English *brother*.

compares modern languages to determine their historical relatedness

OE	brycg ‘bridge’	ecg ‘edge’	hrycg ‘ridge’	mycg ‘midge’	secg I[b] ‘man, hero’	secg II[c] ‘sedge’	wecg ‘wedge’
PGmc[d]	*brugjō/â	*agjō	*hrugjaz	*mugjō	*sagjaz	*sagj-	*wagj-
Gothic					*sagj-		
O Fris	brigge	egg, edze	hregg		siā		
O Du			ruggi, rukgi				
M Du	*brugghe*	*egghe*	*rugge, rucke*	*mugghe, mucke*			*wegge, wigge*
Dutch	*brug*	*egge*	*rug*	*mug*		*zegge*	*wegge*
OS	bruggia	eggia	hruggi-	muggia	segg		weggi
MLG	*brugge*		*rügge, ruckge*	*mugge*		*segge*	*wegge, wigge*
OHG	brucca	egga, ekka	hruggi, hrucki	mucca, mugga		sahor	weggi, wecki
German	*Brücke*	*Ecke*	*Rücken*	*Mücke*		*Saher*	*Weck*
ON[e]	bryggja	egg	hryggr	mȳ	seggr		veggr
Norwegian	*brygg(j)e*	*egg*	*rygg*	*mygg*	*segg*		*vegg*
Swedish	*brygga*	*egg*	*rygg*	*mygga*			*vigg*
Danish			*ryg*	*myg*			*vægge*

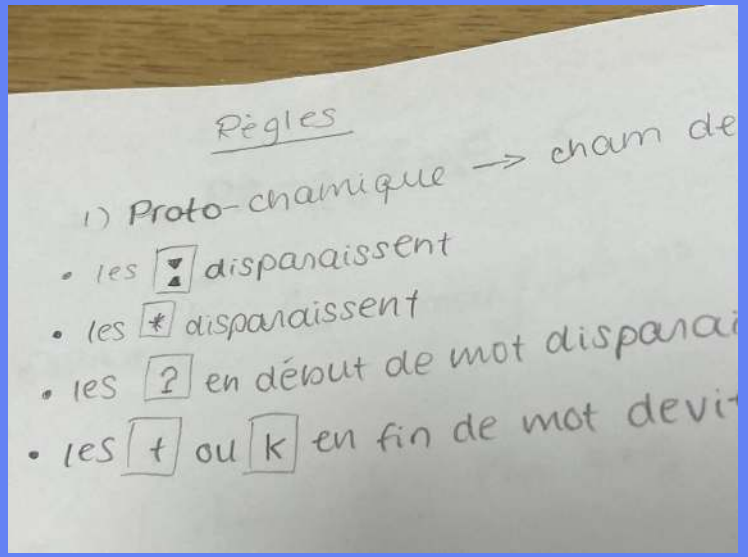
linguists use modern languages to build words and sentences in languages in history which we have no records

in #5, you're doing the same thing...

just the other way around

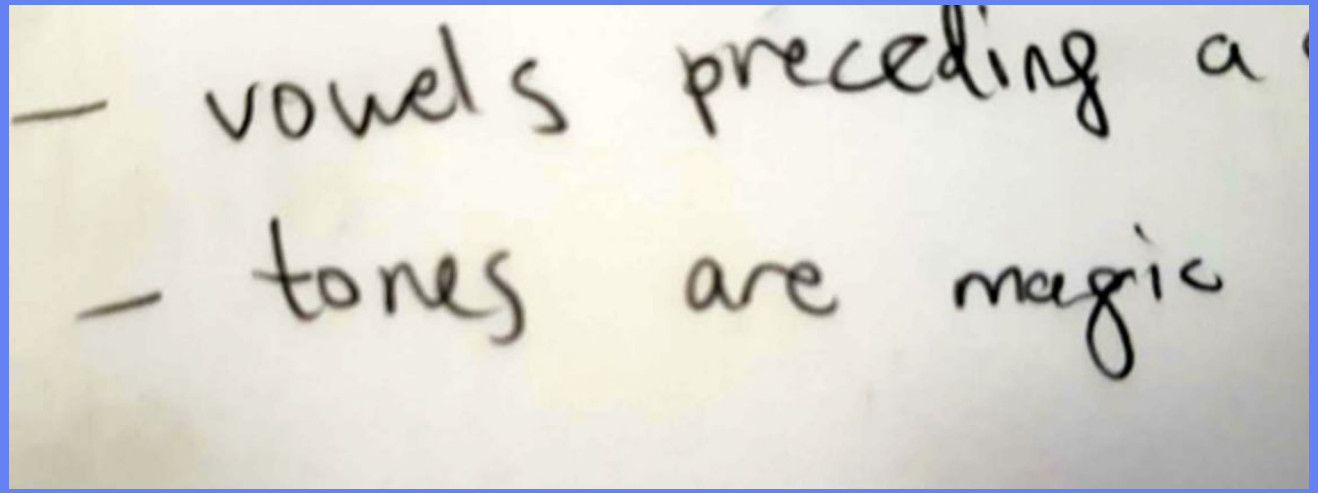
Proto-Chamic	Phan Rang Cham	Tsat	meaning
*ʔikaːn	ikan	kaːn^{33}	*fish*
*dikiʔ	takiʔ	kiʔ^{42}	*few*
*dilah	talàh	la^{55}	*tongue*
*jalaːn	calàn	laːn^{11}	*road*
*lima	limɨ	ma^{33}	*5*
*lanah	linɨh	na^{55}	*pus*
*dua lapan	tàlipan	paːnʔ^{42}	*8*
*labaːt	lipàʔ	phaːʔ^{42}	*to walk*
*bara	pirà	phia^{11}	*shoulder*
*bahrow	piròw	phiə^{11}	*new*
*bulow	pilòw	phiə^{11}	*body hair*
*paley	paley	piai^{33}	*village*
*masam	mɨtham	saːnʔ^{42}	*vinegar*
*basah	pathah	sa^{55}	*wet*
*bəsey	pathey	sai^{11}	*iron*
*mata	mɨta	ta^{33}	*eye*
*rataːk	rataʔ	taːʔ^{24}	*beans*
*hatay	hatay	taːiʔ^{42}	*liver*
*paday	patày	thaːiʔ^{42}	*paddy rice*
*padam	patàm	thaːnʔ^{42}	*to extinguish*
*ʔiduŋ	itùng	thuŋ^{11}	*nose*
*batuk	patuʔ	tuʔ^{42}	*to cough*
*maray	mɨray	zaːiʔ^{42}	*to come*
*ʔurat	uraʔ	zaʔ^{24}	*tendon*
*rək	rəʔ	zəʔ^{24}	*grass*
*bala	pilà	[see (a)]	*widowed*

reconstructed words are marked with *



(the * disappears when Proto-Chamic → Phan Rang Cham)

tonogenesis



most tonal languages have non-tonal parent languages

short list of languages that has undergone tonogenesis

- Sinitic (Mandarin Chinese, Cantonese, Hokkien, etc.)
- Vietnamese
- Punjabi
- Thai
- Phnom Penh Khmer (ongoing!)
- Eastern Cham & Tsat
- etc...

tonogenesis

- Tones normally emerges when sounds are lost or when they merge together
- Cham and Tsat are one of the few Austronesian languages with tone (along with Cèmuhî, etc.)

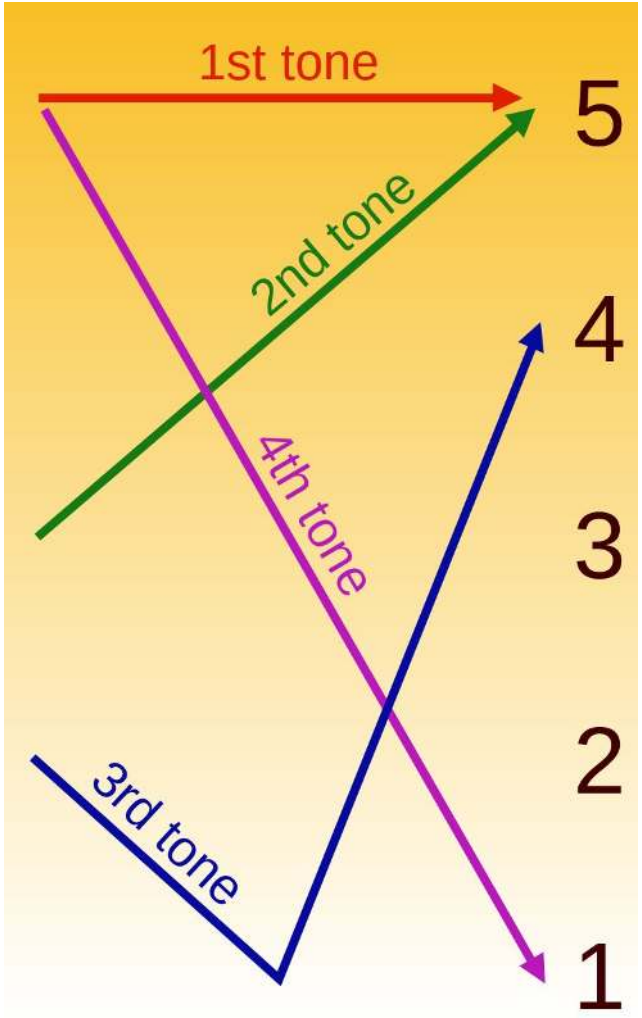
how tones are born (sometimes)

1. Atonal stage	CV		CV?		CVH		CVC_{vl}	
2. Tonogenesis	CV(level)		CV(rising)		CV(falling)		CVC_{vl}(atonal)	
3. Tone split	*t- upper	*d- lower	*t- upper	*d- lower	*t- upper	*d- lower	*t- upper	*d- lower
4. White Hmong	[tɔ^{55}] 'deep'	[tɔ^{53}] 'hill'	[tɔ^{24}] 'mix'	[tɔ^{22}] 'wait'	[tɔ^{33}] 'pierced'	[tɔ^{31}] 'sink'	—	[tɔ^{21ʔ}] 'there'

for example, voicing frequently leads to low pitch, which will be preserved when voicing is lot

(image: White Hmong tonogenesis)

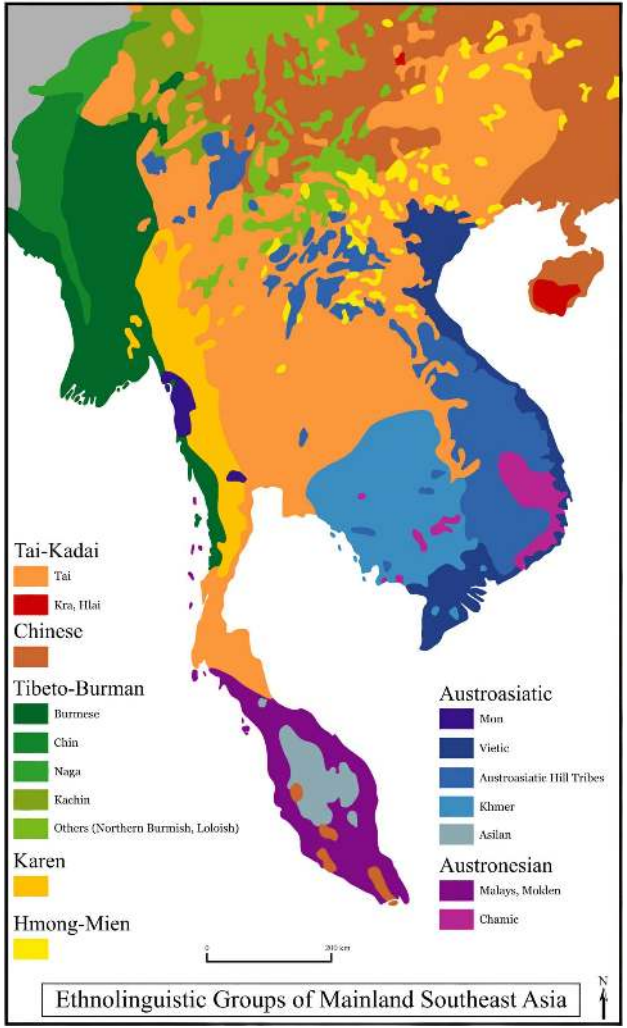
In this problem, we used tone numbers, commonly employed to describe tone contours



sprachbund

languages from different families in the same region tend to borrow features from one another

Mainland Southeast Asia Linguistic Area

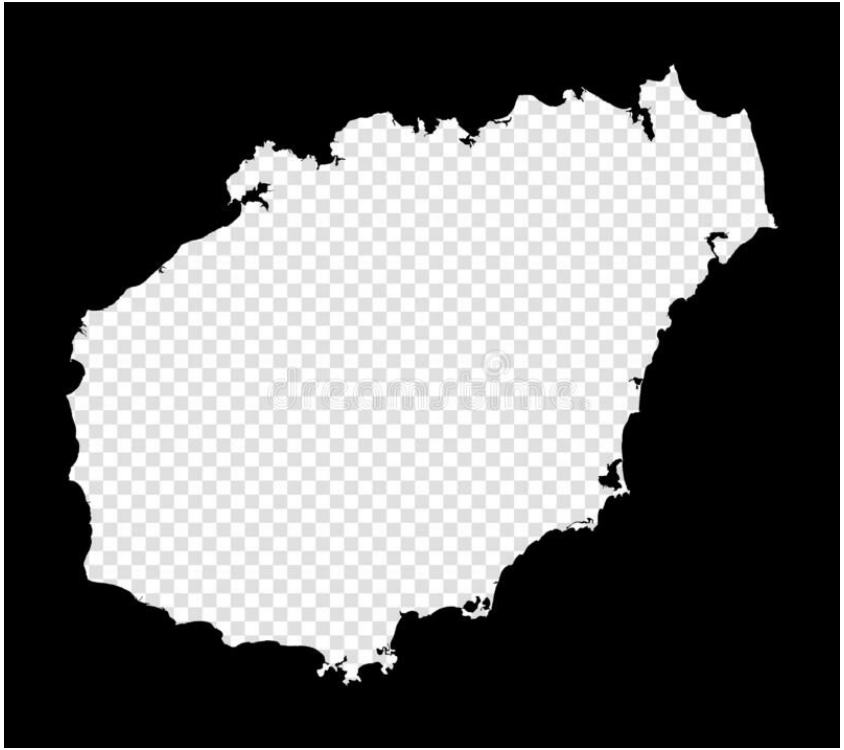


Hainan is also an island!

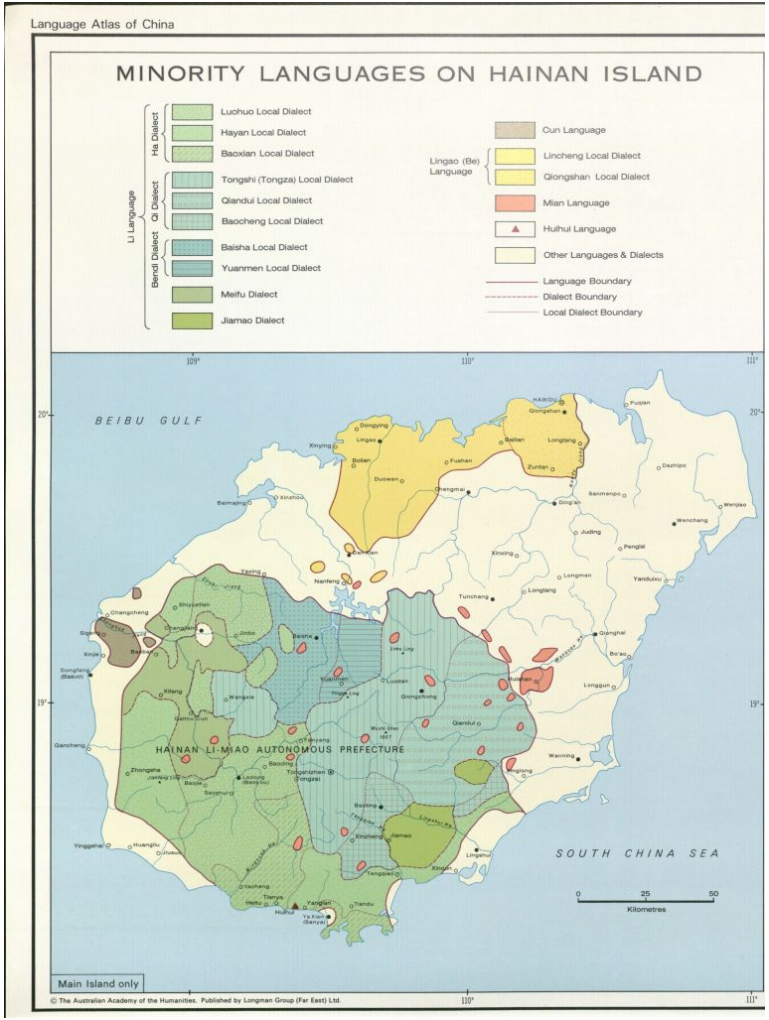
Guess how many times larger it is than the Isle of Man!

the answer is 61 :)

(comparison on the right not to scale)



Hainan Island in China is especially a hotspot of linguistic diversity



Hainan Island alone contains these languages

- Sinitic
  - Standard Mandarin
    - Mandarin dialects (called “military speech”
  - Standard Cantonese (in Haikou)
    - Mai dialect
  - Min (Hainanese)
- Li, Limgao (Tai-Kadai)
- Miao (Hmong-Mien)
- Tsat (Austronesian)

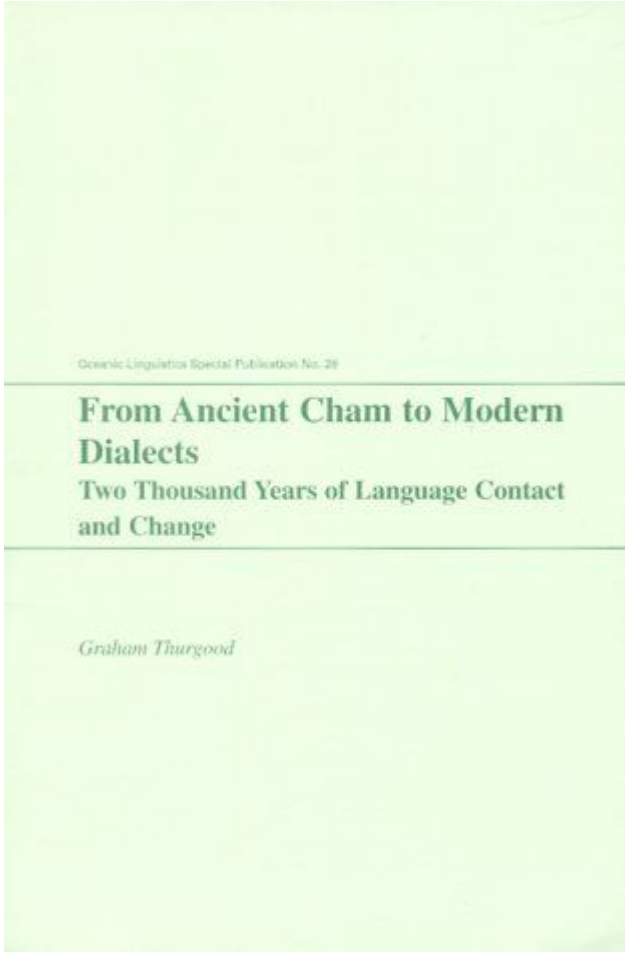
It is said that Tsat might have acquired tones by being in contact with neighbouring Tai-Kadai and Hmong-Mien languages

whereas Eastern Cham most likely have been affected by Vietnamese... which was in turn affected by Chinese

other stuff I drew inspiration from:

From Ancient Cham to Modern Dialects: Two Thousand Years of Language Contact and Change: With an Appendix of Chamic Reconstructions and Loanwords

by Graham Thurgood



and many more works such as...

Phan Rang Cham and Utsat: Tonogenetic Themes and Variants by Graham Thurgood

and

Language Contact and the Directionality of Internal Drift: The Development of Tones and Registers in Chamic

by... you guessed it, Graham Thurgood

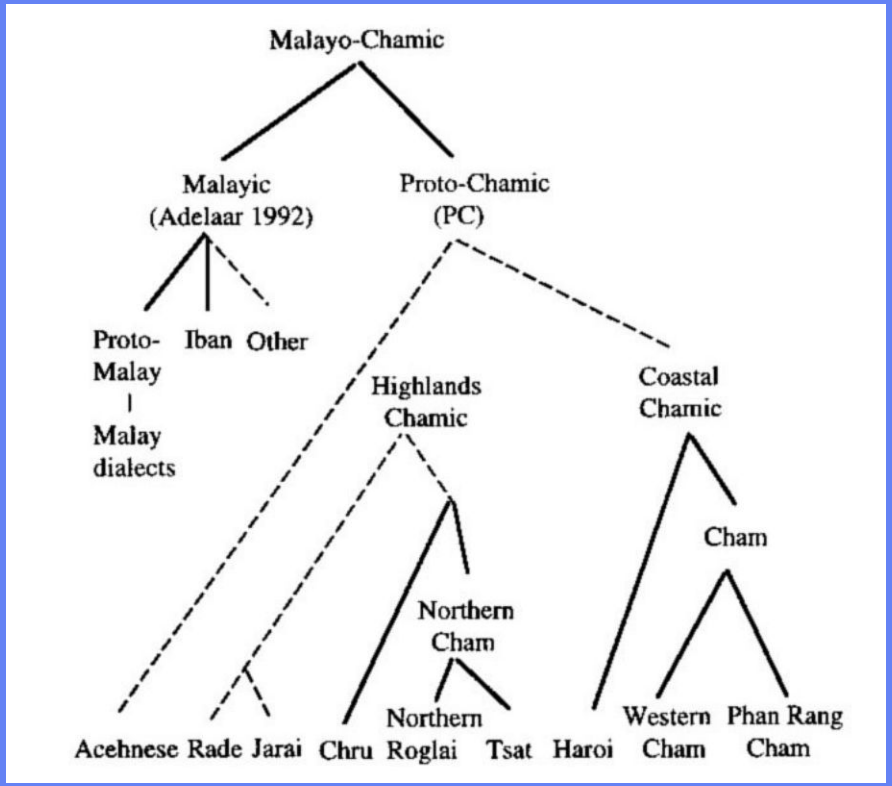
Hainanese chicken rice

arguably one of the best chicken rice dishes in the world

some words look similar across most Austronesian languages...

for instance...

Phan Rang Cham	Malay
ikan	ikan
lima	lima
tàlipan	delapan
piròw	baru
itùng	hidung
mɨta	mata



Chamic and Malay ARE very closely related...

but knowing Malay will help you nothing with solving the problem

team malaysia when they see a word in problem #5

Chams

The Chams once ruled over huge parts of Southeast Asia under the kingdom of Champa

The Chamic script was the earliest script to be developed in Southeast Asia

Phan Rang (Tháp Chàm), formerly Panduranga, was once the capital of the Kingdom of Champa

Po Klong Garai Temple

map of Hainan

Sanya

the southernmost city of China

Tsat is one of the few minority languages that is spoken exclusively in urban / suburban areas

Tsat is a language of many names

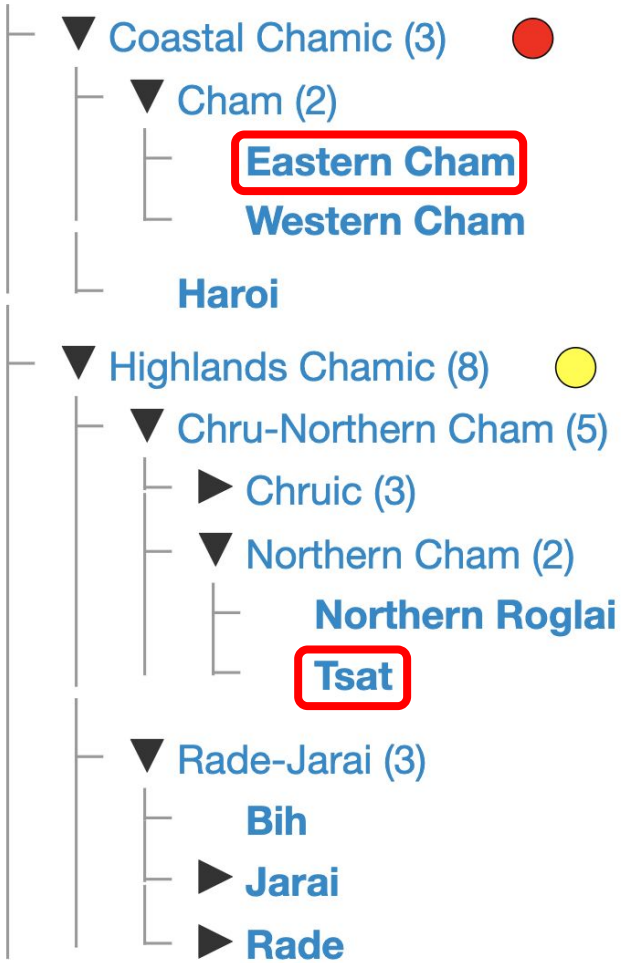
- Tsat is called 回輝語 (huíhuīyǔ, kaikigo) in both the Chinese and Japanese versions of the problem set

- Moreover, the ethnic group can be called Utsul, Utsat, Utset, Huihui, Hui or just Hainan Cham

we've strayed away too much

let's get back to the problem!

chamic group

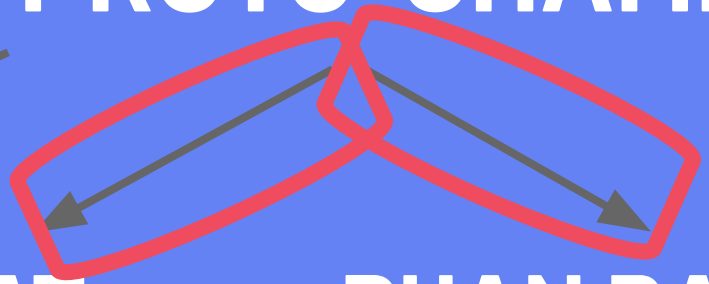


ROGLAI

PROTO-CHAMIC

HAROI

RADE



TSAT

PHAN RANG CHAM

Phan Rang Cham tone rules

***paday**

↓

patày

the vowel in the final syllable receives a low tone

IF

the consonant before the vowel is a voiced stop / affricate

(b, d, j)

Phan Rang Cham tone rules

*jala:n

↓

calàn

OR IF

the consonant is a liquid (l or r) and the consonant before it is a voiced stop / affricate

Tsat tone rules

*dilah

↓

la^{55}

_^{55}

final syllable ends with *-h

Tsat tone rules

*masam

↓

saːnʔ^{42}

-aːnʔ^{42}

final syllable ends with *-aN (but not aːn)

(N = nasal)

Tsat tone rules

*maray

↓

za:i?^{42}

-a:i?^{42}

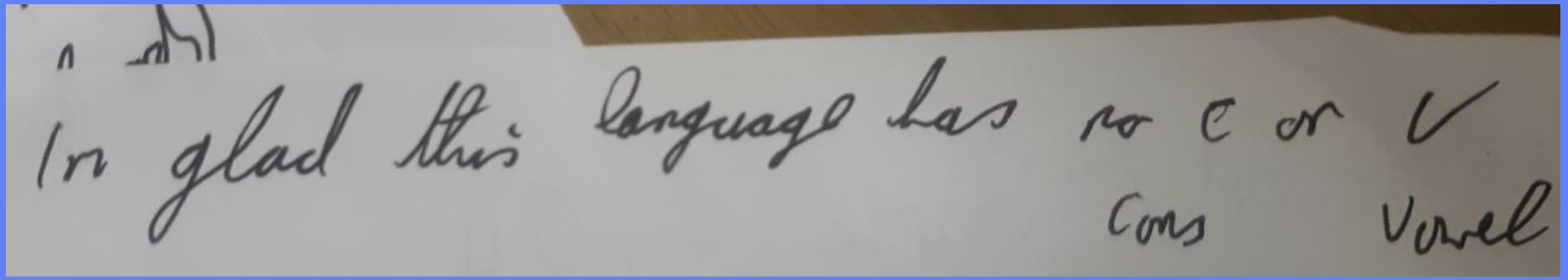
final syllable ends with *-ay

Tsat tone rules

the rest of the words are assigned according to this paradigm

IF ends with -p, -t, -k (or -ʔ in Tsat)	IF contains voiced stop or affricate (anywhere)	
	***batuk** → **tuʔ**^{42}	***rataːk** → **taːʔ**^{24}
	***bəsey** → **sai**^{11}	***paley** → **piai**^{33}

this problem, however, is not just about tones



... as much as one of you would like to think

PRC sound changes

*diki?

↓

taki?

all voiced obstruents (b, d, j) become unvoiced

PRC sound changes

*maray

↓

miray

a becomes i after a nasal consonant

PRC sound changes

*ʔikaːn

↓

ikan

aː is shortened to a

PRC sound changes

*ʔikaːn

↓

ikan

word initial ʔ- is removed

PRC sound changes

*bala

↓

pilà

word initial bV (h) {l, r} > pi {l, r}

(V = vowel)

PRC sound changes

*hitam

↓

hatam

otherwise, *CV- becomes *Ca-

PRC sound changes

*basah

↓

pathah

s > th

PRC, Tsat sound changes

*rək

↓

rəʔ

-p, -t, -k → ʔ

Tsat sound changes

*paley

↓

piai[33]

unless it starts with *{b, p} V {l, r}

which becomes phi or pi

Tsat sound changes

*bara

↓

phia[11]

Voiced stops become devoiced and aspirated

Tsat sound changes

*bulow

↓

phiə[11]

-{*ow, *ey} > {ə, ai}

Tsat sound changes

*ʔurat

↓

zaʔ[24]

r > z

(a) *phia*^{11}

(b)

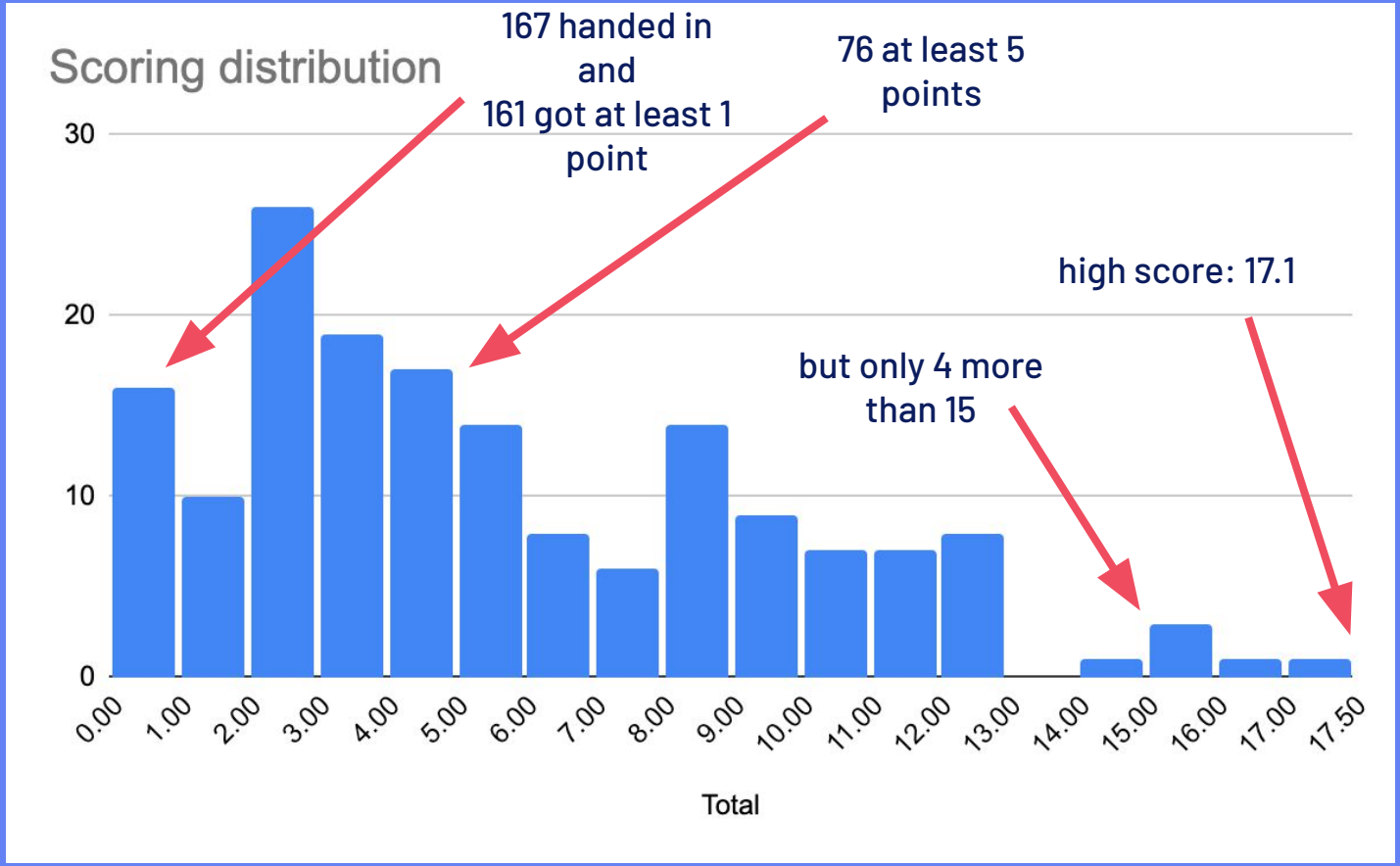
Proto-Chamic	Phan Rang Cham	Tsat	English
*kulit	kali?	(1) *li?*^{24}	*skin*
*hitam	hatam	(2) *ta:n?*^{42}	*black*
*bubah	papàh	(3) *pha*^{55}	*mouth*
*?ikat	(4) *ika?*	(5) *ka?*^{24}	*to tie*
*dəpa	(6) *tapa*	(7) *pa*^{11}	*arm span*
*matay	(8) *mɨtay*	(9) *ta:i?*^{42}	*die*
*dalam	(10) *talàm*	(11) *la:n?*^{42}	*inside*
*labuh	(12) *lipùh*	(13) *phu*^{55}	*fall down*
*bula:n	(14) *pilàn*	(15) *phia:n*^{11}	*moon*
**pVla*	pala	(16) *pia*^{33}	*to plant*
**dVbuh / *tVbuh*	tapùh	(17) *phu*^{55}	*ransom*
**dVda / *tVda*	tatà	(18) *tha*^{11}	*chest*

kudos

I appreciate every single drop of effort from the members of our “Group of Death”

Dan, Masha, Nathan & Sasha

with special thanks to Ellie, Daniel & Przemek :)


Scoring distribution
167 handed in and 161 got at least 1 point
76 at least 5 points
high score: 17.1
but only 4 more than 15
30
20
10
0
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
17.50
Total

other statistics

(for the nerds inside of us I guess)

5.6

is the average (but the median is 4.5 🥲)

19

voted this problem as most difficult
(but we're actually the second hardest problem!)

12

voted this problem as the easiest
(well you better get high scores for this)

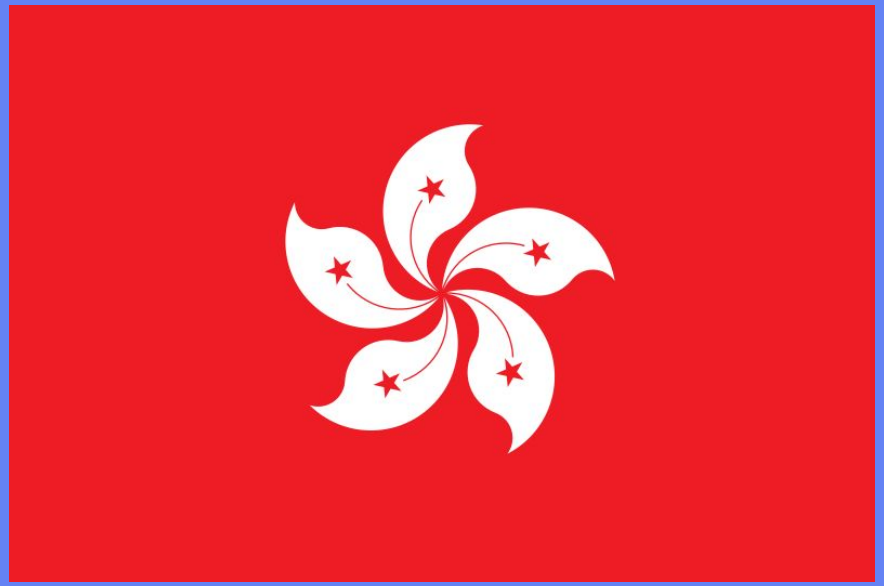
I guess that's all from me.
am I forgetting something?

and the best solution goes to...

Konstantin Georgiev
Bulgaria 2

what?
there’s one more?

drumroll please...



Henry Wong
Hong Kong