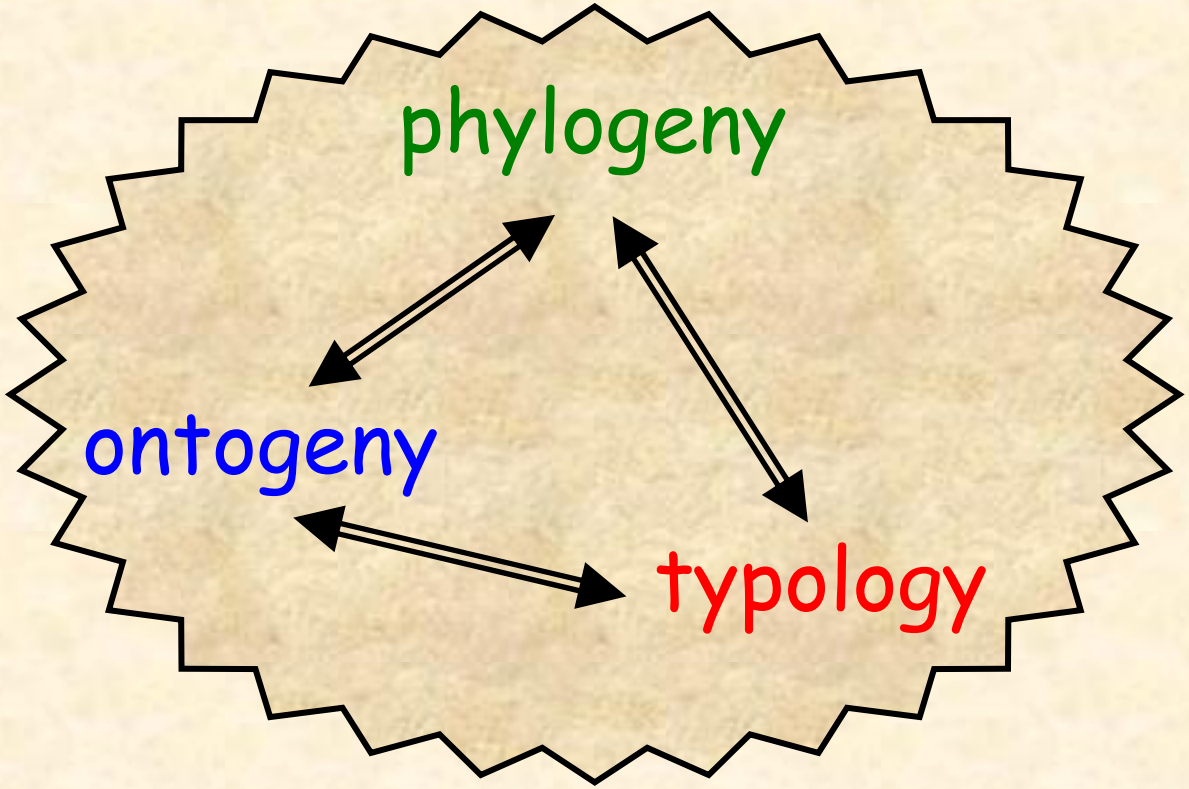
Isolating-Monocategorial-Associational Language: Phylogeny, Ontogeny, Typology

David Gil



Descriptions of languages can be simpler than they often are

Isolating-Monocategorial-Associational

IMA

אמא

'mother'

Isolating-Monocategorial-Associational

- Isolating
  lacking in word-internal morphological structure
- Monocategorial
  lacking in distinct syntactic categories
- Associational
  lacking in distinct construction-specific rules of semantic interpretation, relying instead on default application of the association operator

The Association Operator

Monadic Association Operator

A (X)
'entity associated with X'

in most languages,
observable in genitive construction

The Association Operator

Polyadic Association Operator

A (X, Y)
'entity associated with X and Y'

in most languages,
a default rule for compositional semantics

The Association Operator

tilfanti leavraham

tilfanti leavraham

xxx-telephone xxx-Abraham

A (TELEPHONE, ABRAHAM)

'entity associated with telepone and Avraham'

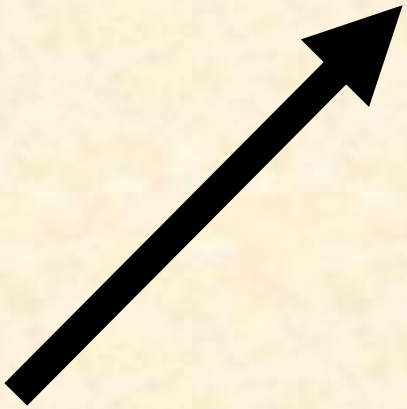
* 'Beavers build dams'

'I telephoned Abraham'

Pictograms as IMA Language:

Pictograms as IMA Language:

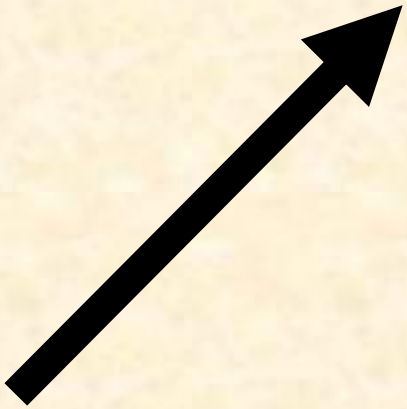
Isolating



monomorphemic monomorphemic

Pictograms as IMA Language:

Monocategorial



S S

S

Pictograms as IMA Language:

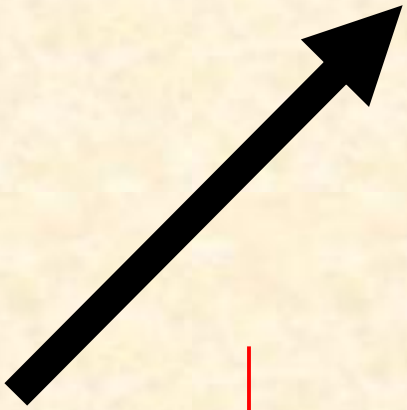
Associational

'to bicycle shop'

'bicycle lane'

Pictograms as IMA Language:

Associational



BICYCLE THATAWAY

A (BICYCLE, THATAWAY)

'entity associated with bicycle and thataway'

Where IMA Language is found:

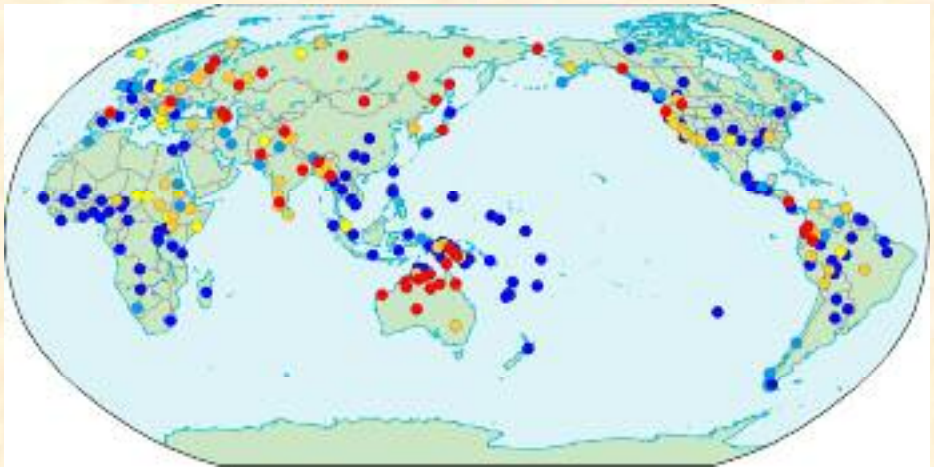
- Phylogeny
  Early human language was IMA language

Where IMA Language is found:

- Phylogeny
  Early human language was IMA language
- Ontogeny
  Early child language is IMA language

Where IMA Language is found:

- Phylogeny
  Early human language was IMA language
- Ontogeny
  Early child language is IMA language
- Typology
  Some languages come closer than others to IMA language



Phylogeny:
Early Human Language as IMA Language

Two hypotheses:

- About cognition:
  At some stage in evolution, the cognitive abilities of humans or pre-humans were limited to the representation of IMA language
- About languages:
  At some stage in evolution,
  all natural languages were IMA languages

Early Human Language as IMA Language

Kinds of Arguments:

- **Cross-Species Comparison**
  Identifying structural elements in the communication of apes

- **Internal Reconstruction**
  Identifying "tree rings" of structure in contemporary language

Captive Ape Communication as IMA Language

Bonobo (Kanzi) using lexigrams	Orangutan (Chantek) using ASL
LIZ HIDE	YOU PULL
HIDE AUSTIN	COME CHANTEK
WATER HIDE	BEARD PULL
HIDE PEANUT	PULL BEARD
Greenfield and Savage-Rumbaugh (1990)	Miles (1990)

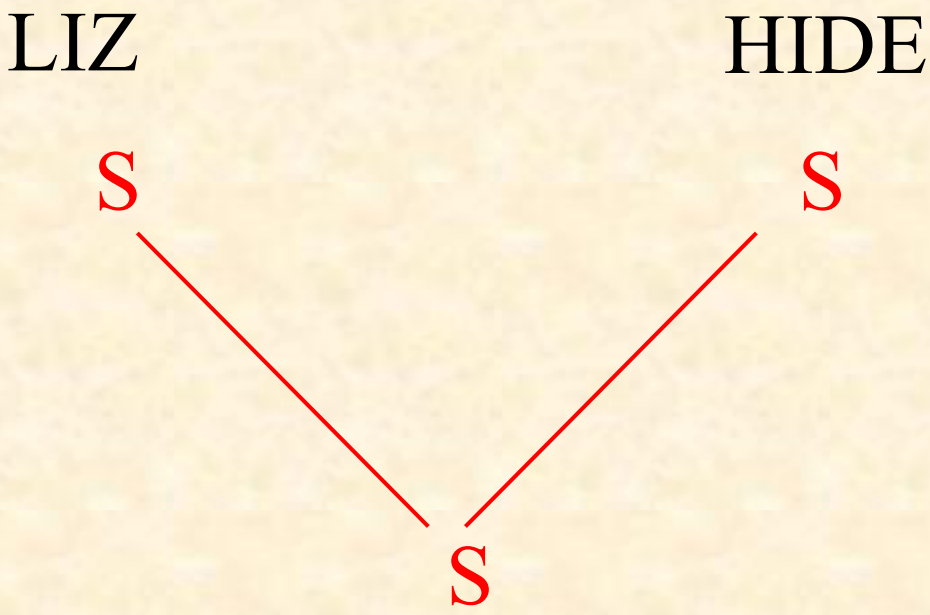
Captive Ape Communication as IMA Language

Isolating

LIZ	HIDE
monomorphemic	monomorphemic

Captive Ape Communication as IMA Language

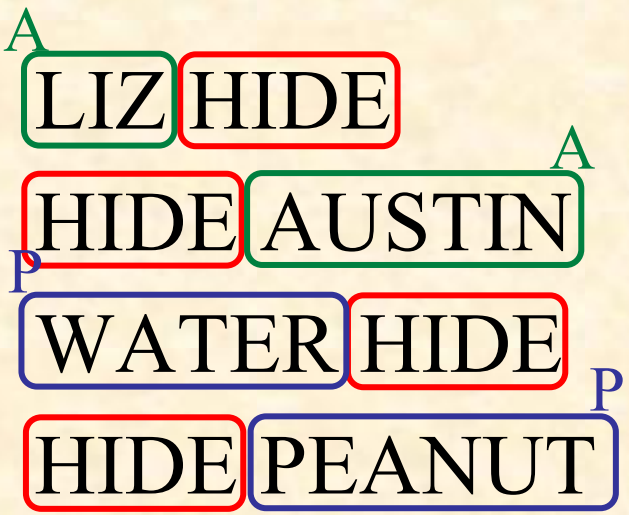
Monocategorial



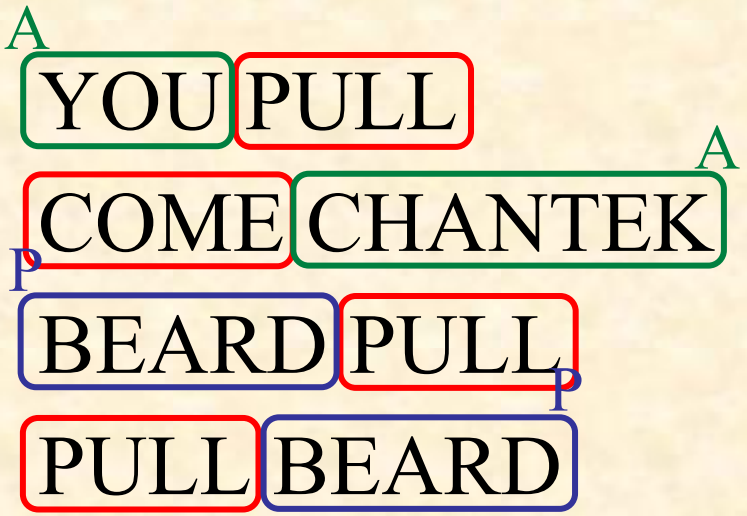
Captive Ape Communication as IMA Language

Associational

Bonobo (Kanzi) using lexigrams

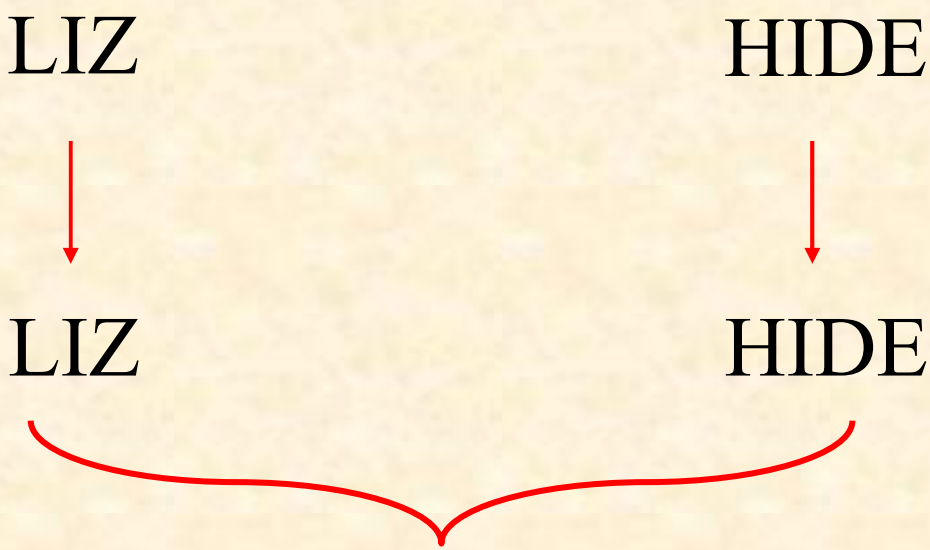


Orangutan (Chantek) using ASL



Captive Ape Communication as IMA Language

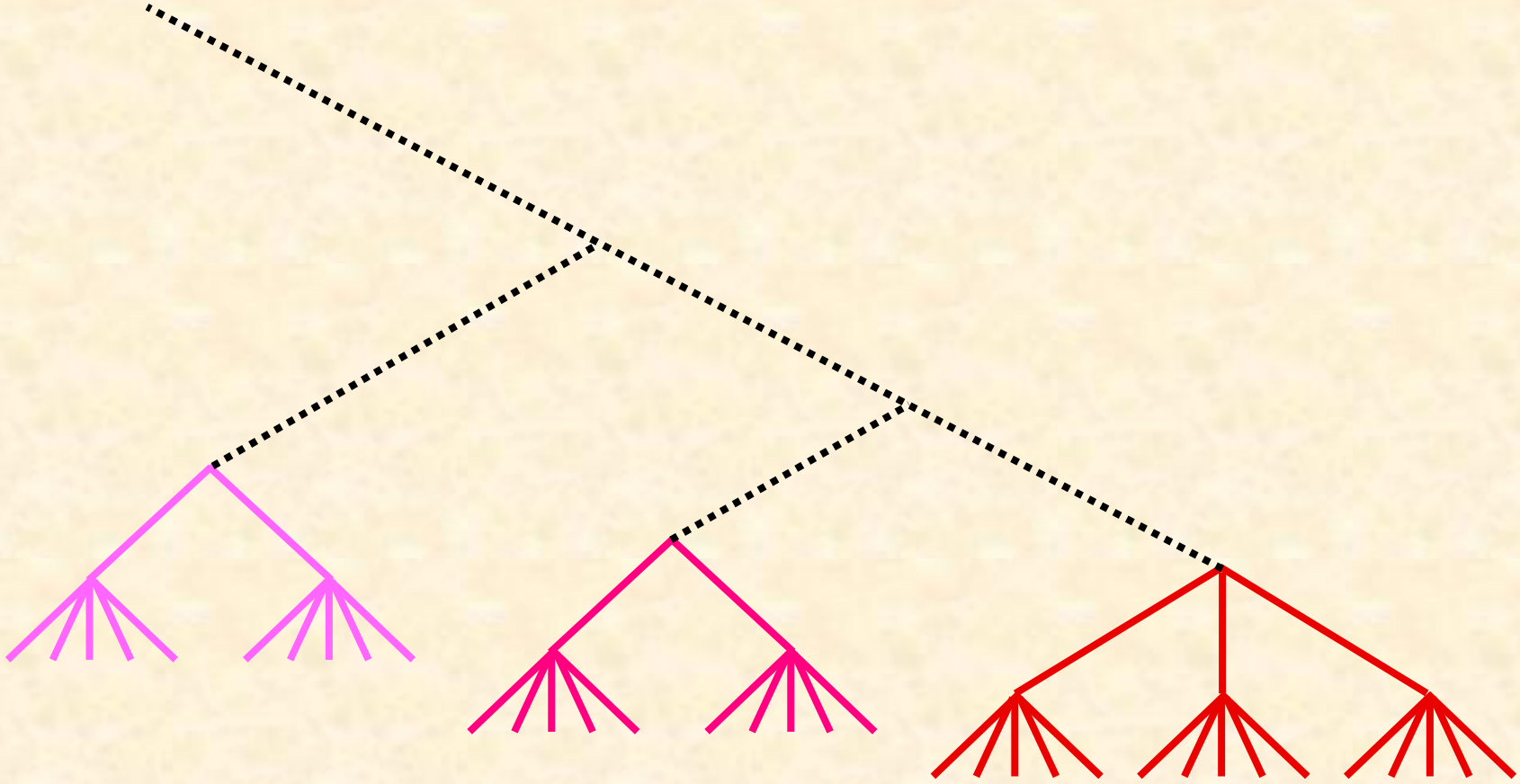
Associational



Conclusions:

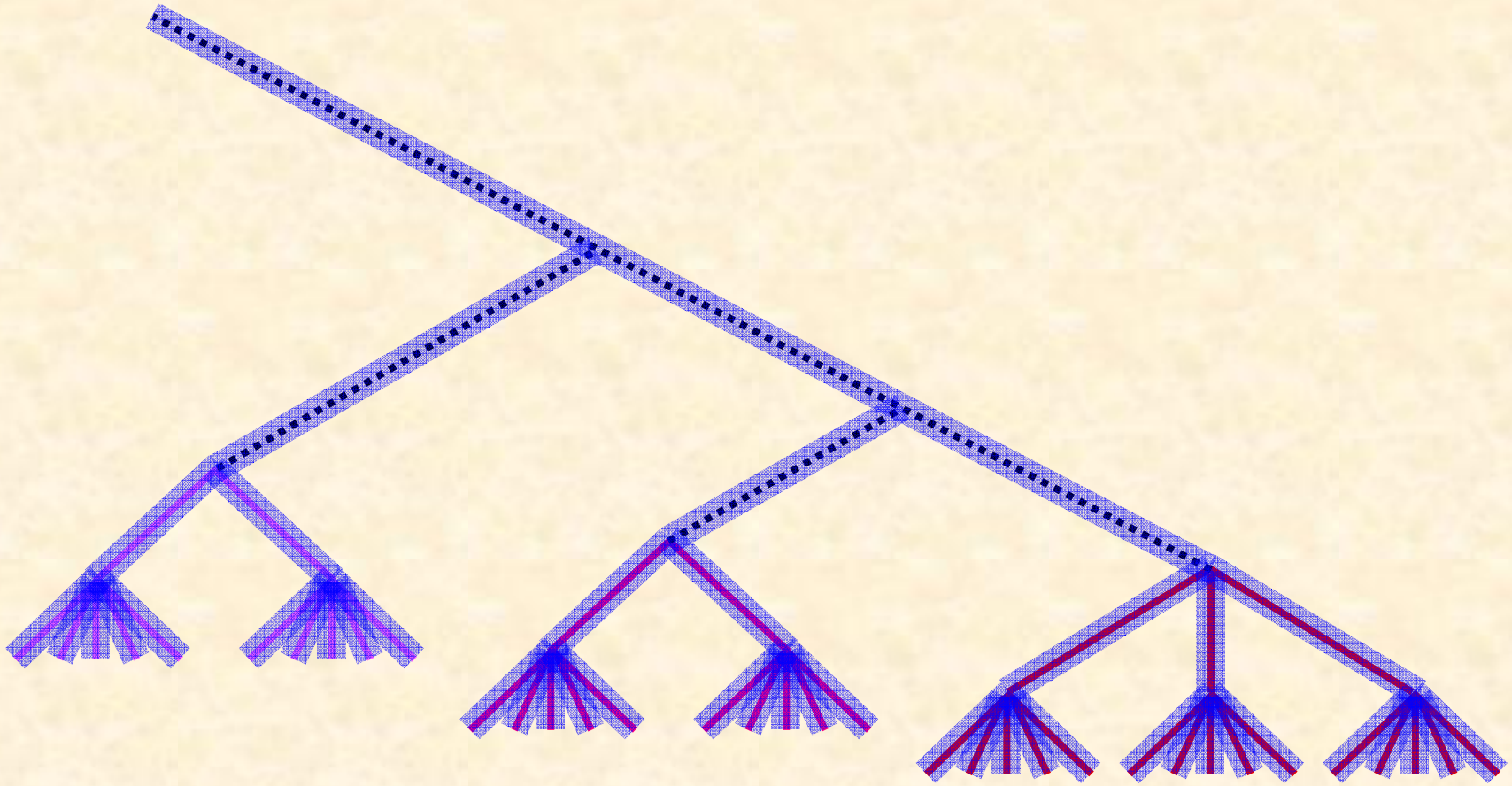
- IMA language ability can be reconstructed for the common ancestor of humans and great apes, some 10 mya (at least)
- However, actual IMA languages occur only in humans
- There is a huge gap between the evolution of IMA language ability and the evolution of actual IMA languages
- Where, when, and in what population(s) did actual IMA languages first appear?

Actual IMA languages
Some evolutionary scenarios



Actual IMA languages
Some evolutionary scenarios

IMA Language ability



Homo Erectus

Neanderthals

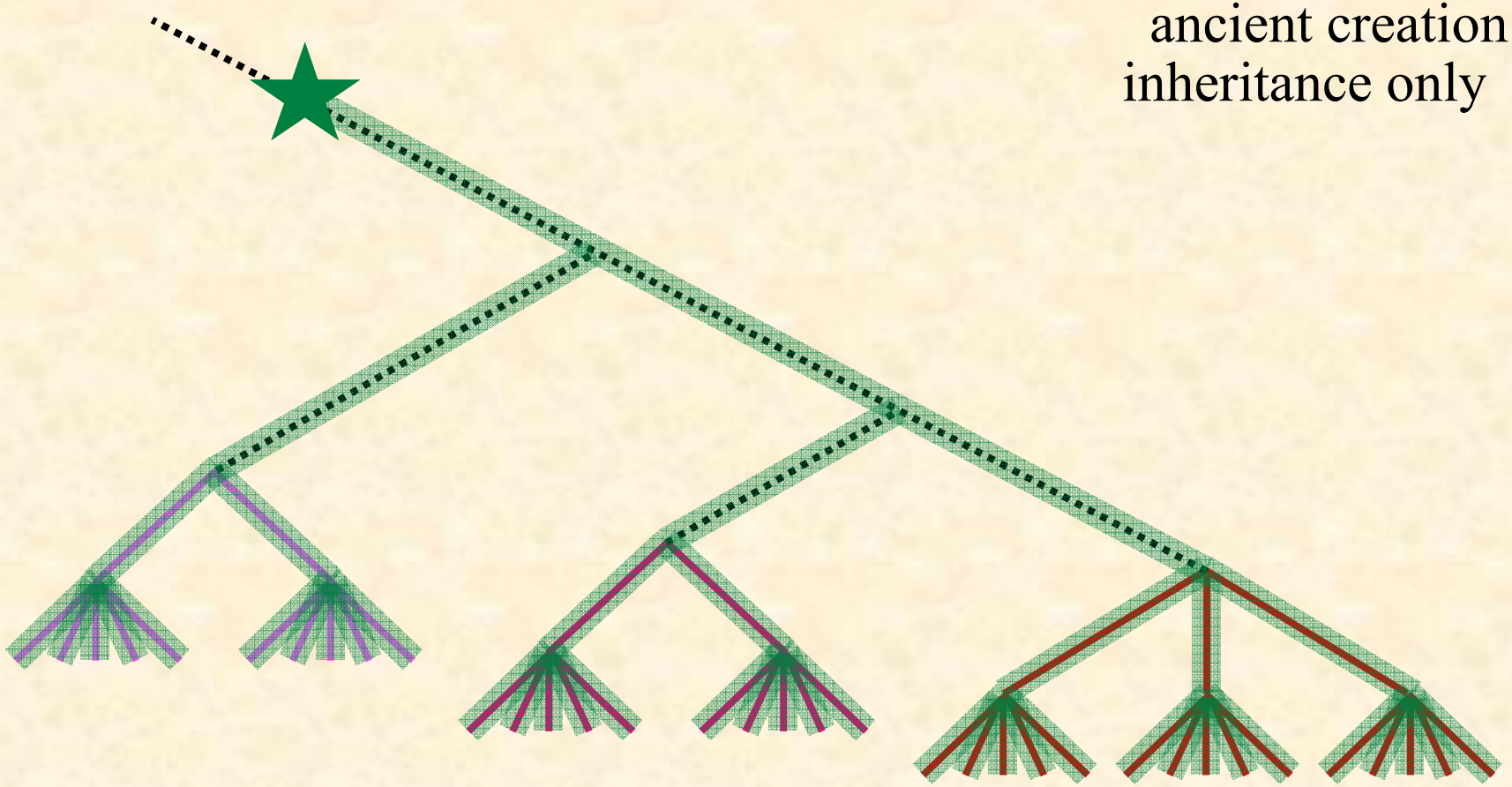
Humans

Actual IMA languages
Some evolutionary scenarios

Actual IMA languages

Scenario 1:

ancient creation
inheritance only



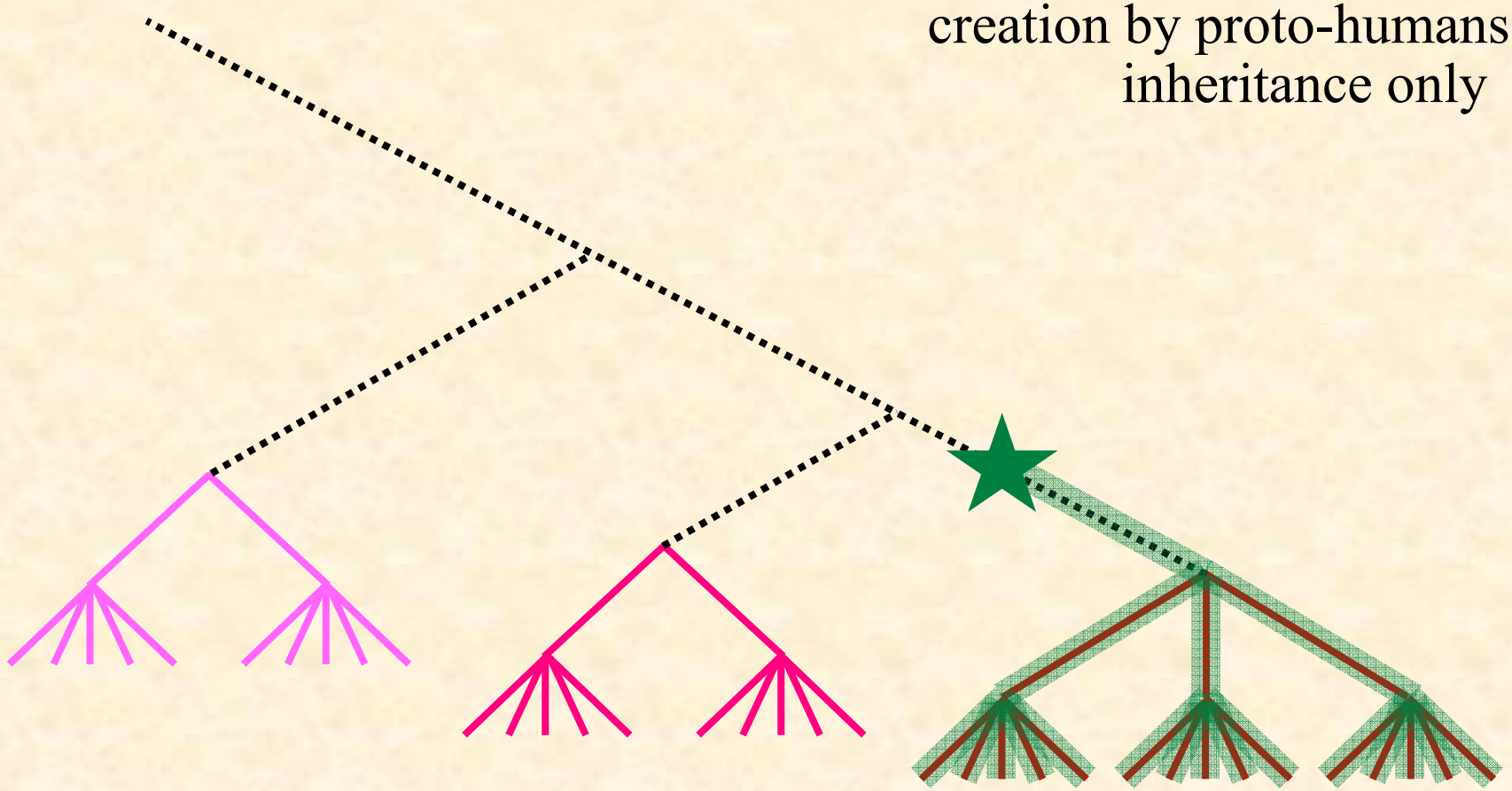
Homo Erectus Neanderthals Humans

Actual IMA languages
Some evolutionary scenarios

Actual IMA languages

Scenario 2:

creation by proto-humans
inheritance only

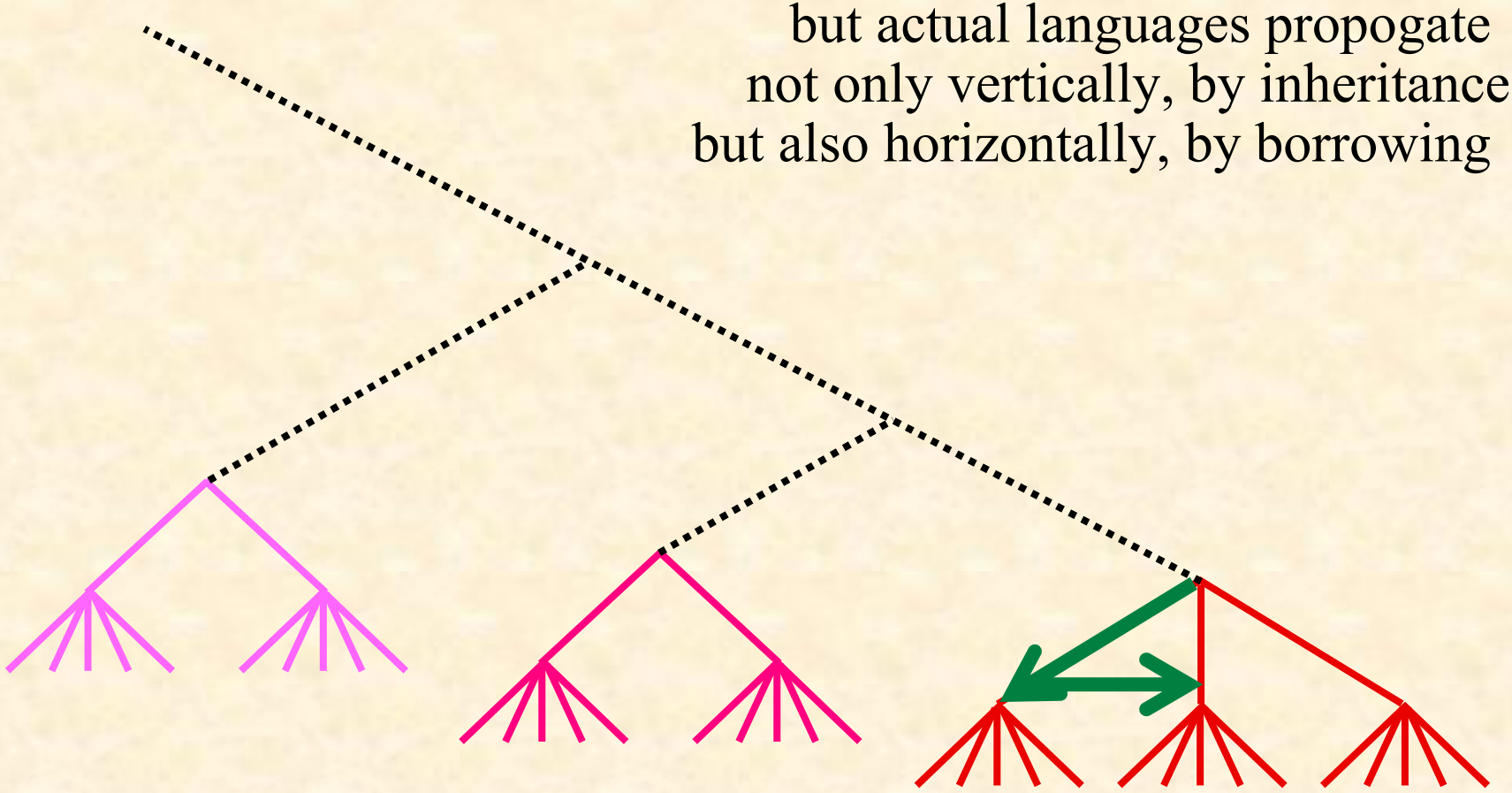


Homo Erectus Neanderthals Humans

Actual IMA languages
Some evolutionary scenarios

Actual IMA languages

but actual languages propogate
not only vertically, by inheritance
but also horizontally, by borrowing



Homo Erectus

Neanderthals

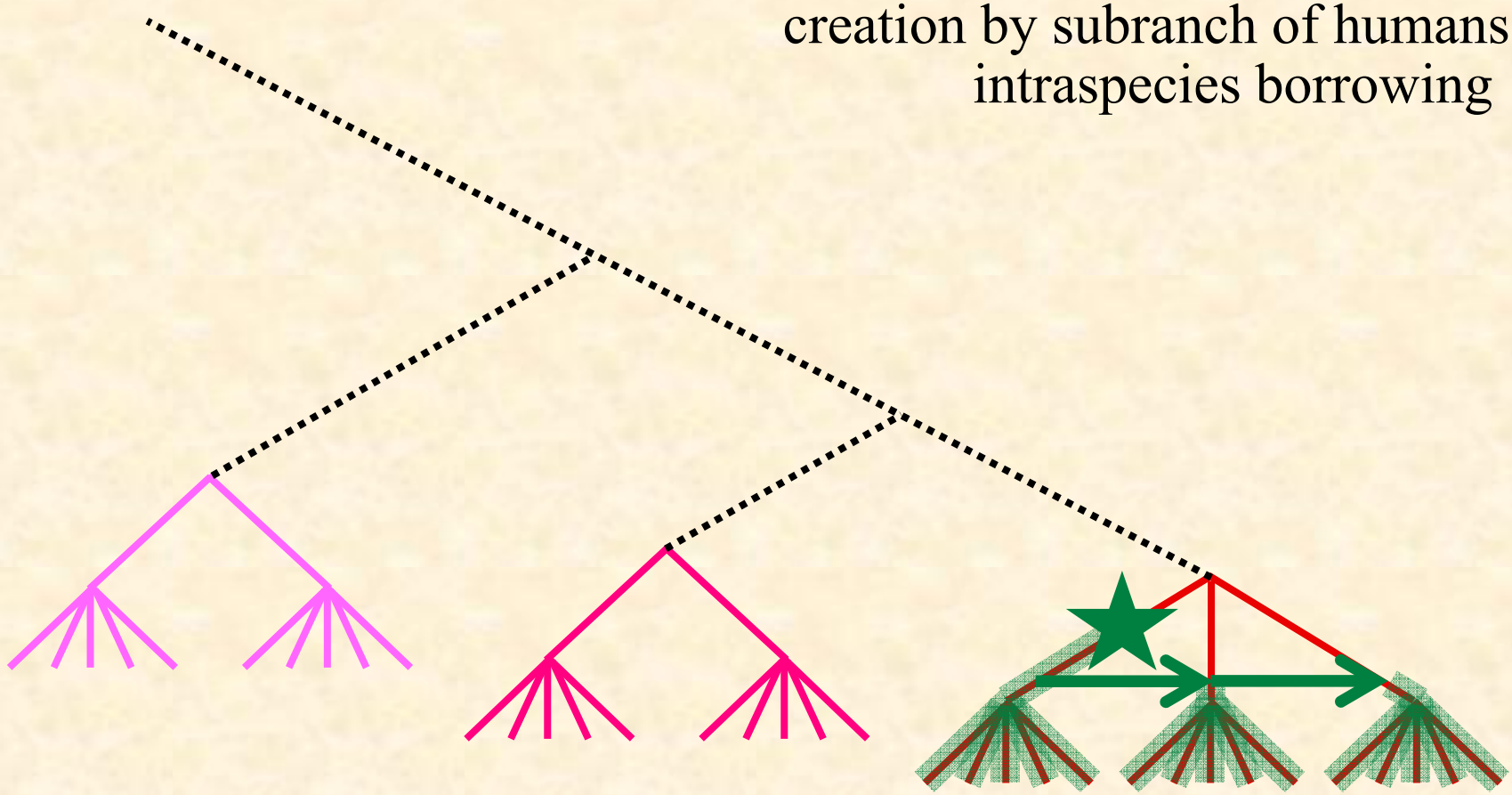
Humans

Actual IMA languages
Some evolutionary scenarios

Actual IMA languages

Scenario 3:

creation by subranch of humans
intraspecies borrowing



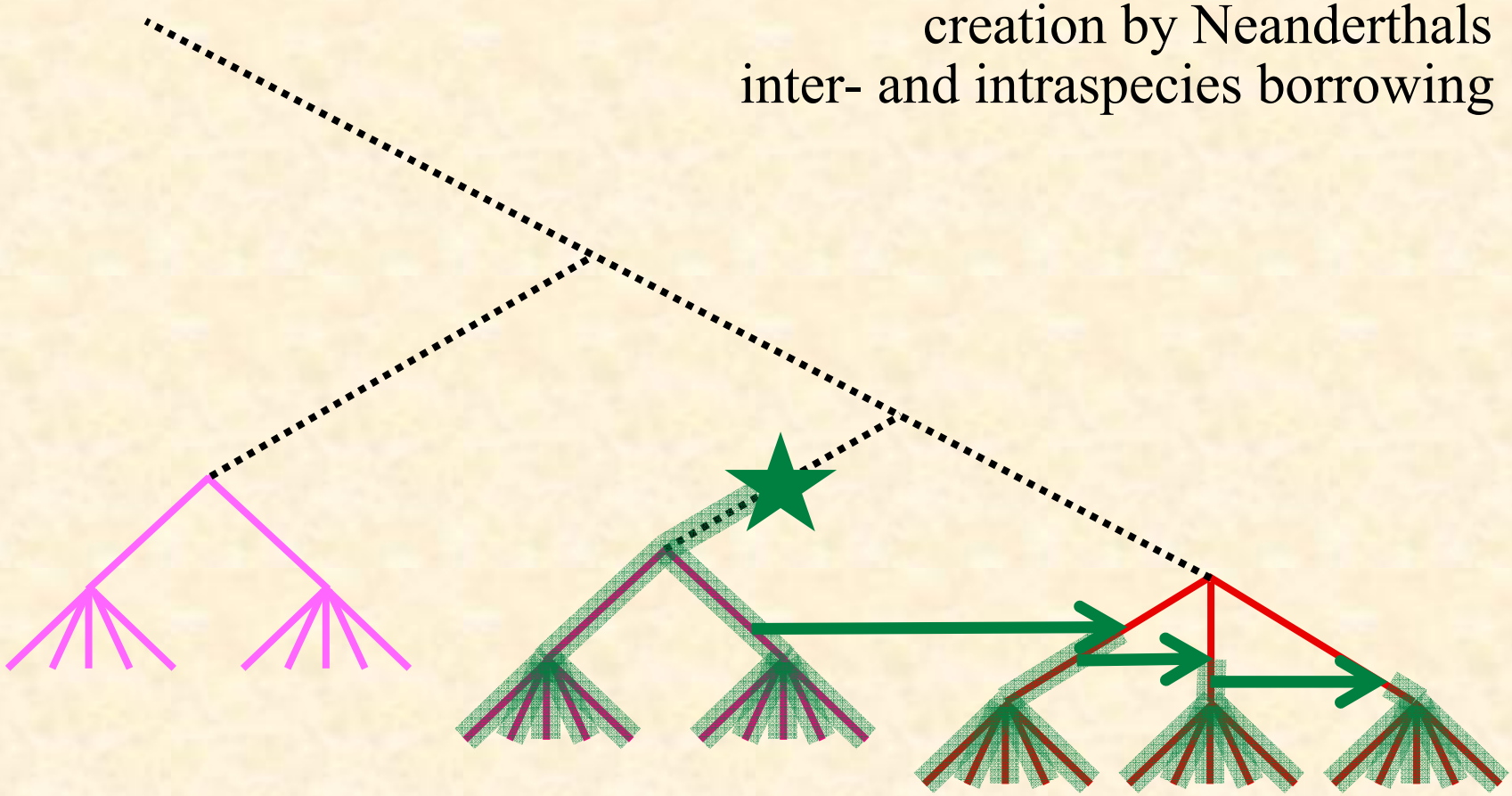
Homo Erectus Neanderthals Humans

Actual IMA languages
Some evolutionary scenarios

Actual IMA languages

Scenario 4:

creation by Neanderthals
inter- and intraspecies borrowing



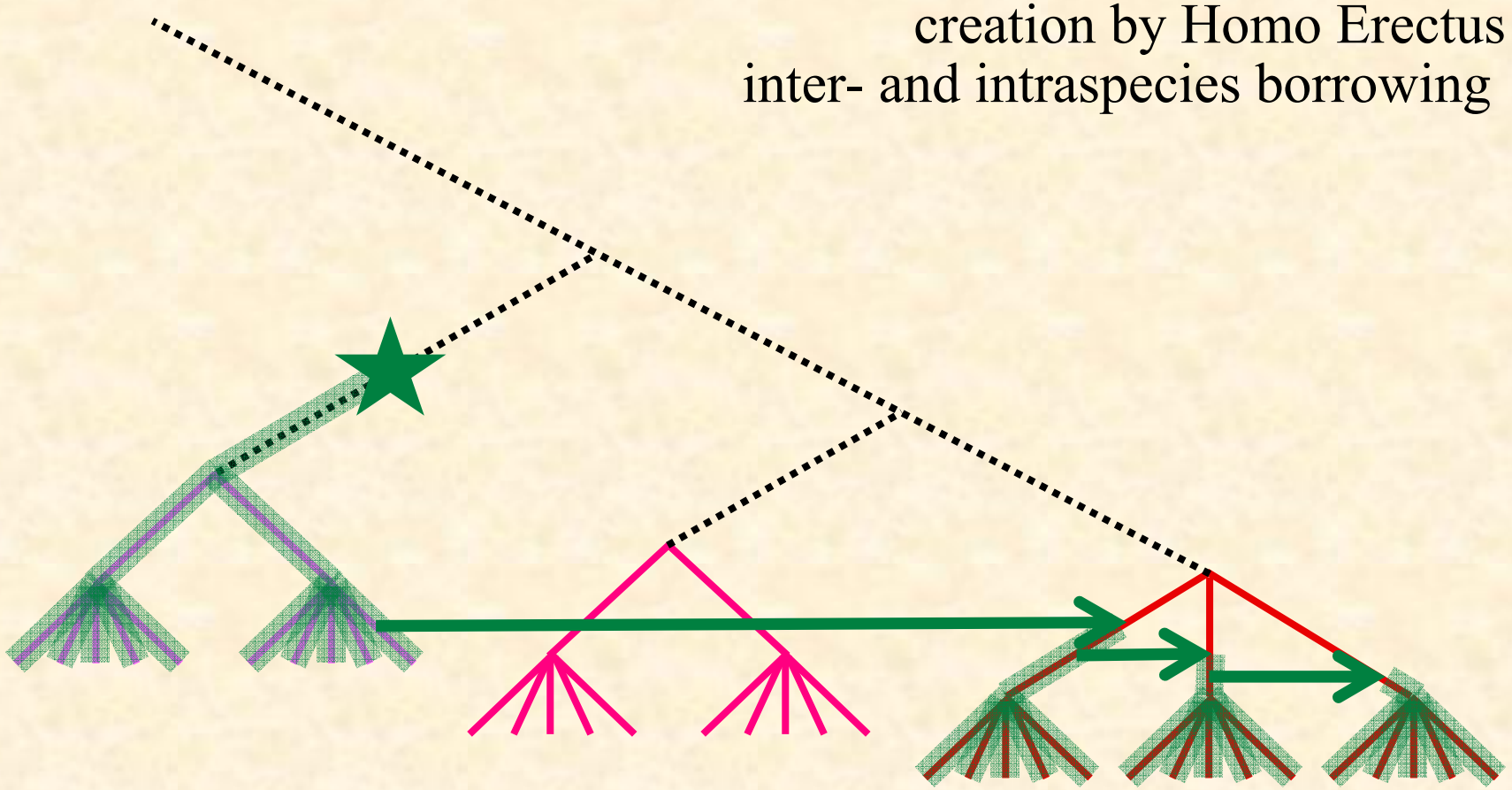
Homo Erectus Neanderthals Humans

Actual IMA languages
Some evolutionary scenarios

Actual IMA languages

Scenario 5:

creation by Homo Erectus
inter- and intraspecies borrowing



Homo Erectus Neanderthals Humans

Conclusions:

- while IMA language ability evolved at least 10 mya, actual IMA languages have been around for much less time
- At present we know very little about where, when and in what population(s) actual IMA languages first arose

Ontogeny: Early Child English as IMA Language:

Hurt	knee
Hurt	truck

[playing with toy pig inside toy truck;
pig is hurt by sharp corner of truck]

Allison 1;8 (Bloom 1973)

Ontogeny: Early Child English as IMA Language:

Isolating

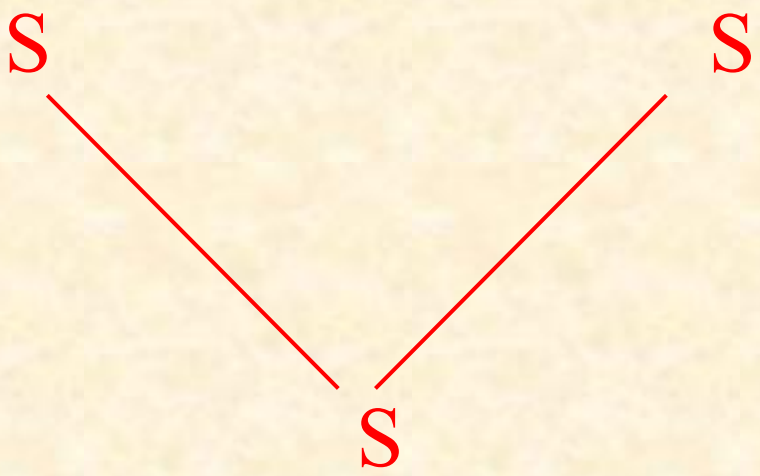
Hurt	knee
Hurt	truck
monomorphemic	monomorphemic

Ontogeny: Early Child English as IMA Language:

Monocategorial

Hurt knee

Hurt truck

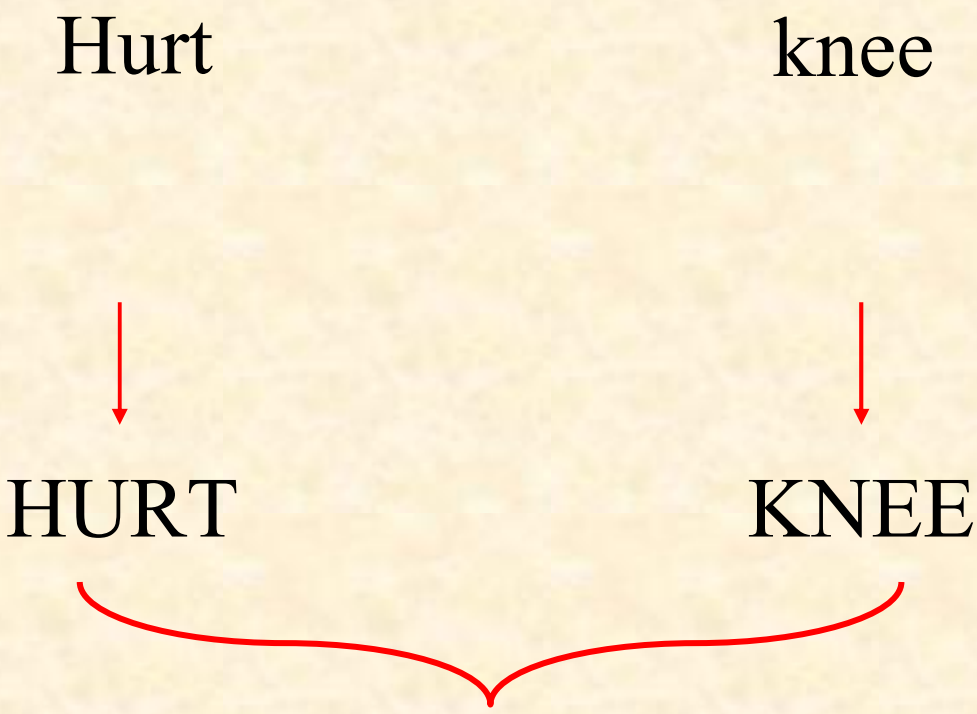


Ontogeny: Early Child English as IMA Language:

Associational

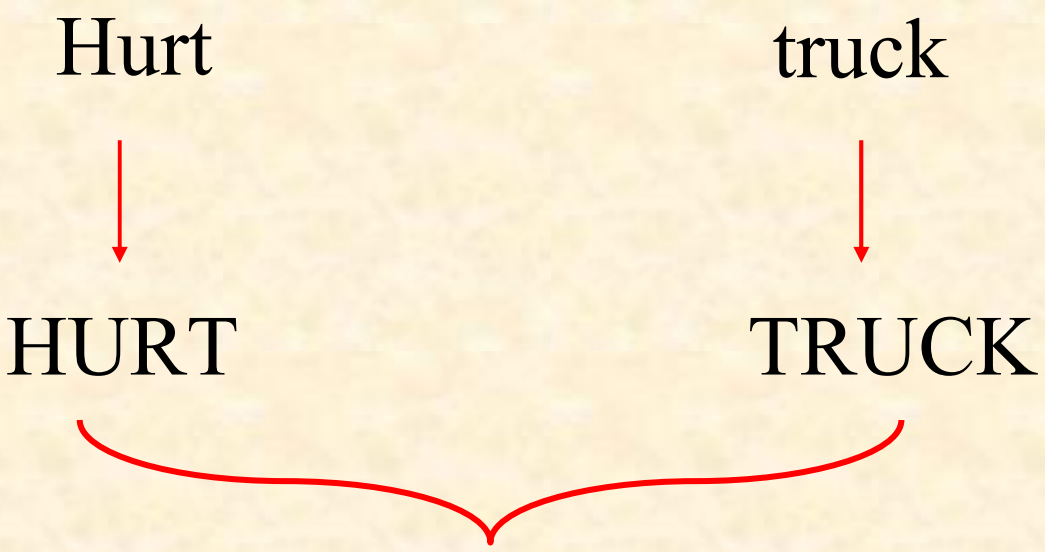
Ontogeny: Early Child English as IMA Language:

Associational



Ontogeny: Early Child English as IMA Language:

Associational



Typology:

Riau Indonesian as a Relatively IMA Language

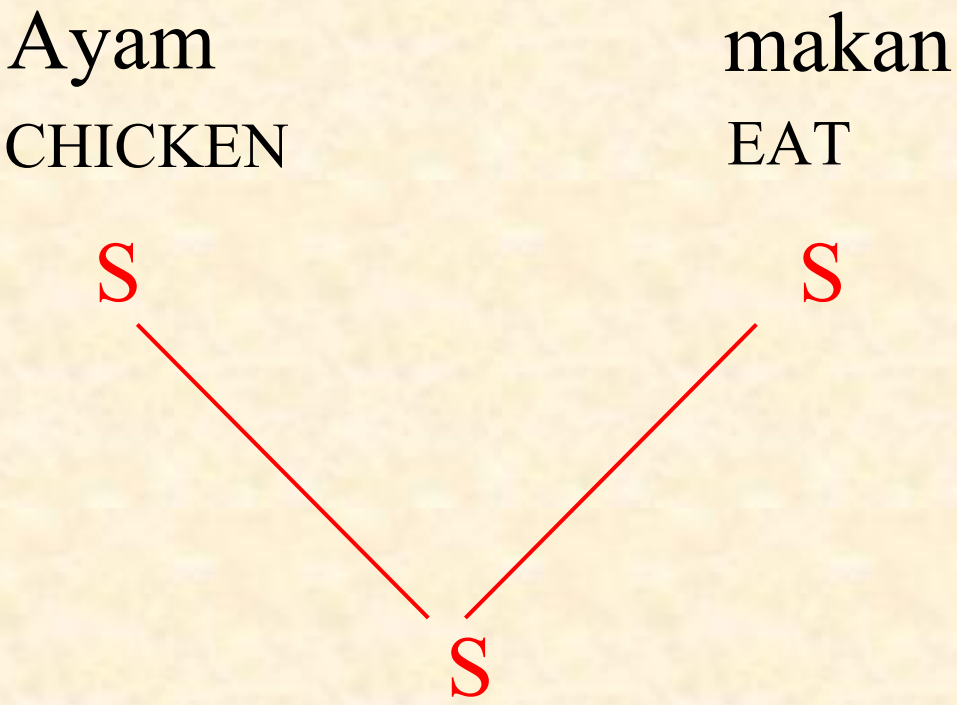
Riau Indonesian as a Relatively IMA Language:

Isolating

Ayam	makan
CHICKEN	EAT
monomorphemic	monomorphemic

Riau Indonesian as a Relatively IMA Language:

Monocategorial



Riau Indonesian as a Relatively IMA Language:

Monocategorial

Identical grammatical behaviour of
words denoting things and activities …

★ occurrence as complete non-elliptical sentence

Ayam
'It's a chicken' / 'There's a chicken' …

Makan
'It's an eating' / 'There's an eating' / 'He's eating' …

Riau Indonesian as a Relatively IMA Language:

Monocategorial

Identical grammatical behaviour of
words denoting things and activities …

★ cooccurrence with *demonstratives*

Ayam ini
'This is a chicken' / 'This chicken' …

Makan ini
'This is an eating' / 'This eating' …

Riau Indonesian as a Relatively IMA Language:

Monocategorial

Identical grammatical behaviour of
words denoting things and activities …

★ cooccurrence with *quantifiers*

Tiap ayam
'Every chicken' …

Tiap makan
'Every eating' / 'Every time he eats' …

Riau Indonesian as a Relatively IMA Language:

Monocategorial

Identical grammatical behaviour of
words denoting things and activities …

★ cooccurrence with *spatial expressions*

Dari ayam
'From the chicken' …

Dari makan
'From eating' …

Riau Indonesian as a Relatively IMA Language:

Monocategorial

Identical grammatical behaviour of
words denoting things and activities …

★ cooccurrence with *topic marker*

Kalau ayam
'As for chicken' …

Kalau makan
'As for eating' / 'If he's eating' …

Riau Indonesian as a Relatively IMA Language:

Monocategorial

Identical grammatical behaviour of
words denoting things and activities …

★ cooccurrence with *existential marker*

Ada ayam
'There's a chicken' …

Ada makan
'There's an eating' / 'Somebody's eating' / 'He *did* eat' …

Riau Indonesian as a Relatively IMA Language:

Monocategorial

Identical grammatical behaviour of
words denoting things and activities …

★ cooccurrence with *"relative" marker*

Yang ayam
'The one that's a chicken' …

Yang makan
'The one that's eating' / 'The one that's being eaten' …

Riau Indonesian as a Relatively IMA Language:

Monocategorial

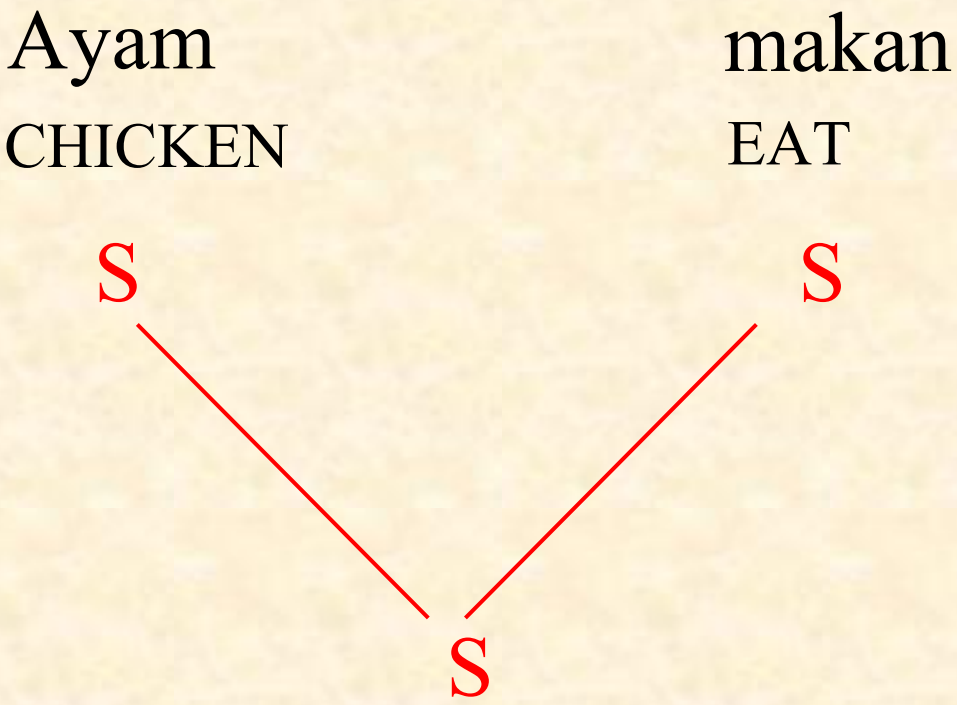
Identical grammatical behaviour of
words denoting things and activities …

★ coordination

Ayam sama makan
'Chicken and eating'

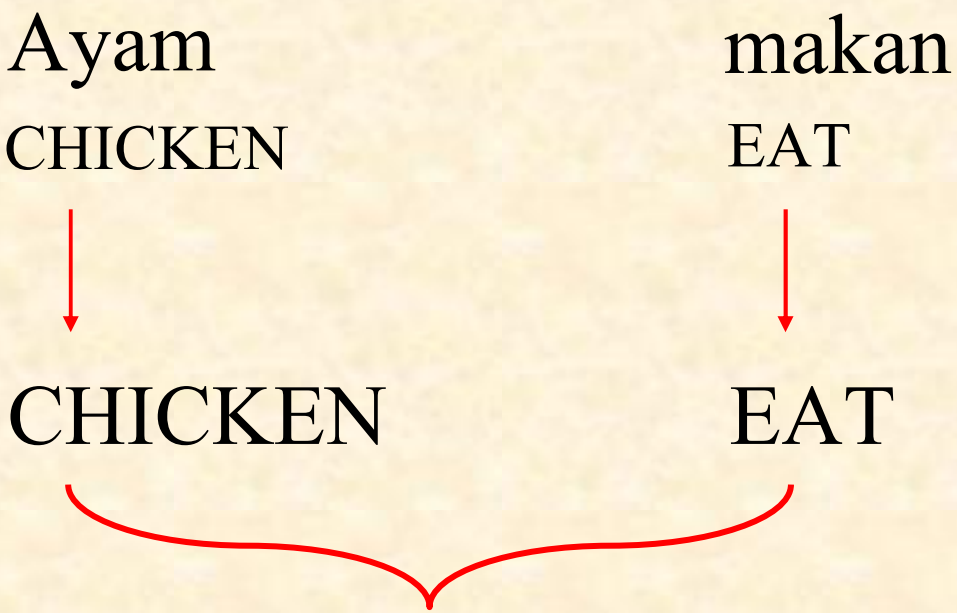
Riau Indonesian as a Relatively IMA Language:

Monocategorial



Riau Indonesian as a Relatively IMA Language:

Associational



Riau Indonesian as a Relatively IMA Language:

Associational

Ayam	makan
CHICKEN	EAT

'The chicken is eating'

'Someone is eating the chicken'
'Someone is eating with the chicken'
'Someone is eating because of the chicken'
⋮

'The chicken that is eating'
'Where the chicken is eating'
'Why the chicken is eating'
⋮

Riau Indonesian as a Relatively IMA Language:

Associational

Ayam	makan
CHICKEN	EAT

But how do speakers disambiguate?

context

they don't

Riau Indonesian as a Relatively IMA Language:

Associational

Predicative/Attributive Indeterminacy:

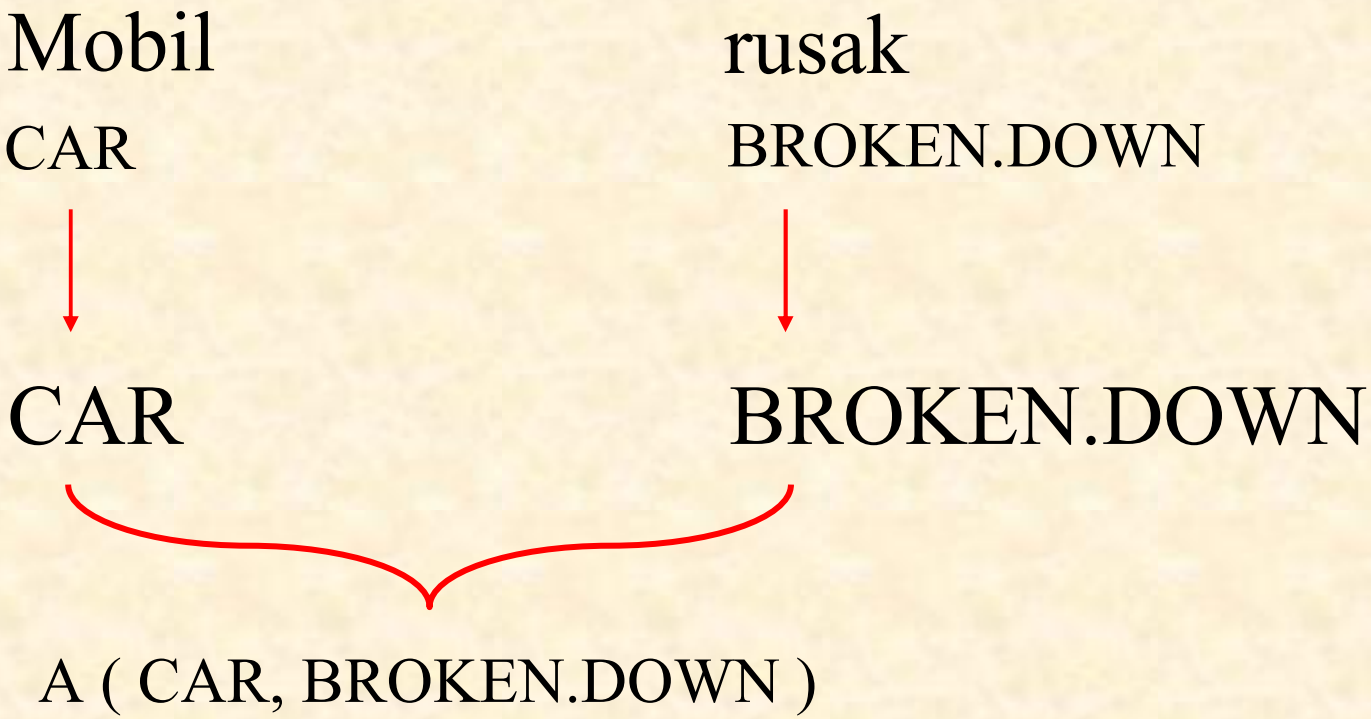
Speaker, standing on balcony, looks down to street
and sees some men pushing a car …

Mobil rusak
car broken.down

Translator's dilemma:	*Linguist's dilemma:*
'That car out there is broken down'	predicative
'There's a broken down car out there'	attributive

Riau Indonesian as a Relatively IMA Language:

Associational



But to what extent are
other languages like Riau Indonesian?

The Association Experiment

Languages studied:

- Riau Indonesian
- other typologically similar languages:
  isolating, apparent SVO word order
- more typologically divergent languages:
  Morphologically complex, other word orders

Semantic domain studied: thematic roles

The Association Experiment

Goal: measuring the availability of
apparently associational interpretations

interpretations that are not obtained by
the application of construction-specific rules,
and which therefore may plausibly be characterized
as resulting from the application of the
association operator

The Association Experiment

Constructions sought:

Apparently associational interpretations
involving thematic roles:

Peripheral-to-Core (Per→Core)

Peripheral participants behaving like Core participants
(For isolating SVO languages: *Bare Peripherals*)

Patient-to-Agent (Pat→Ag)

Patients behaving like Agents
(For isolating SVO languages: *OV order*)

Testing for Per→Core (Per→Pat) stimulus 15

The clown is drinking the book

4 possible responses

test picture

alternative picture

Testing for Per→Core (Per→Pat) stimulus 15

Badut minum buku

?

test picture

alternative picture

Testing for Per→Core (Per→Pat) stimulus 15

Anh hề uống sách

?

test picture

alternative picture

Testing for Per→Core (Per→Pat) stimulus 15

小丑飲書

?

test picture

alternative picture

Testing for Per→Core (Per→Pat) stimulus 15

Kitenga tchì ǂxanù

?

test picture

alternative picture

Testing for Per→Core (Per→Pat) stimulus 15

הליצן שות האת רפסה

?

test picture

alternative picture

Testing for Per→Core (Per→Ag)

stimulus 8

The money is happy

?

alternative picture

test picture

Testing for Per→Core (Per→Ag)

stimulus 8

Duit gembira

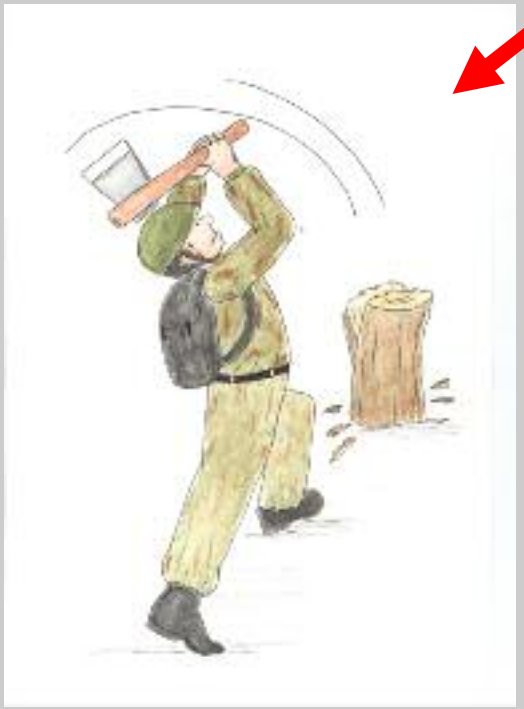
?

alternative picture

test picture

Testing for Per→Core (Obl→Pat) stimulus 14

The soldier is cutting the axe



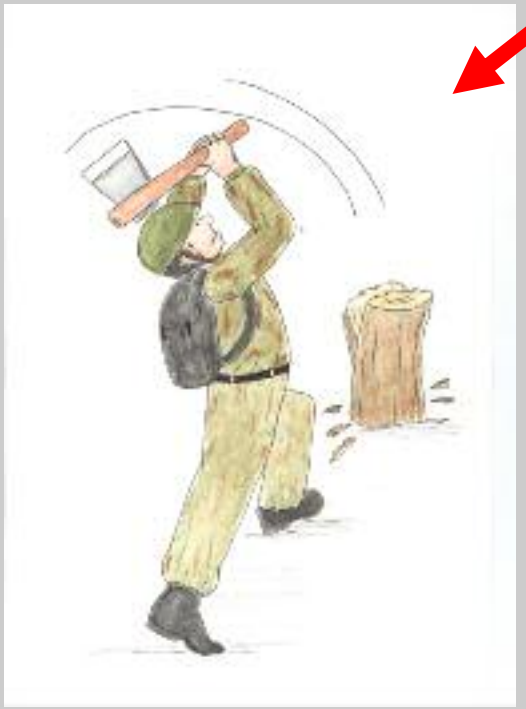
?

alternative picture

test picture

Testing for Per→Core (Obl→Pat) stimulus 14

Tentara potong kampak



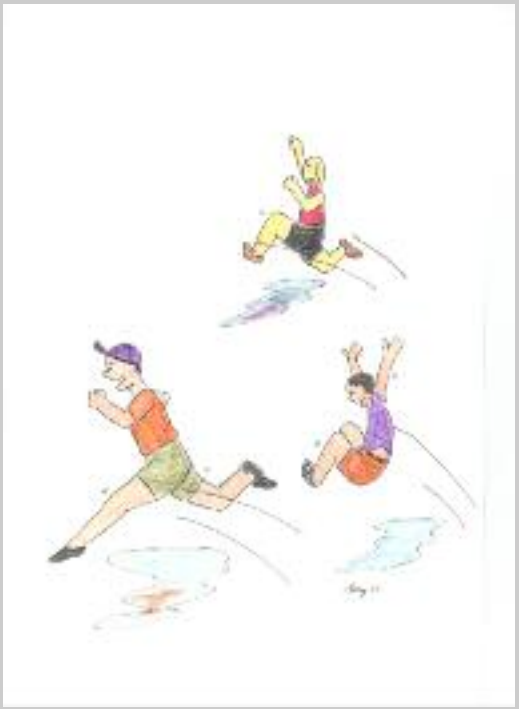
?

alternative picture

test picture

Testing for Per→Core (Obl→Ag) stimulus 6

The chairs are jumping



?

alternative picture

test picture

Testing for Per→Core (Obl→Ag) stimulus 6

Kursi loncat

?

alternative picture

test picture

Testing for Pat→Ag

stimulus 3

?

The dog is drawing

text picture

alternative picture

Testing for Pat→Ag

stimulus 3

?

Anjing lukis

text picture

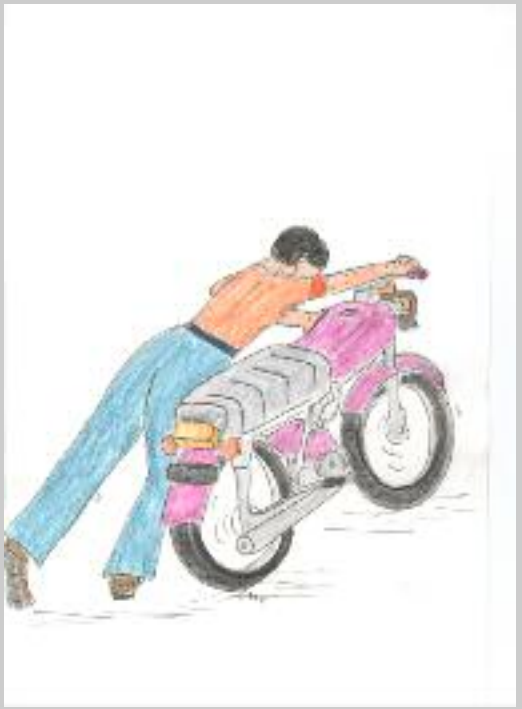
alternative picture

Testing for Pat→Ag & Ag→Pat

stimulus 11

The car is pushing the woman

?



text picture

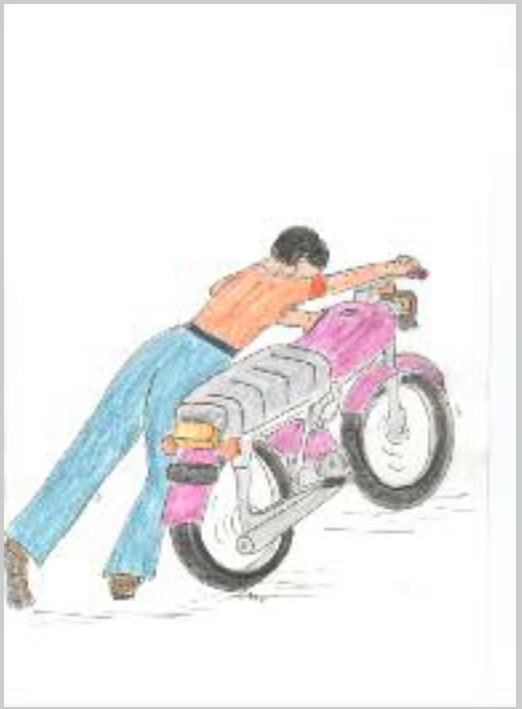
alternative picture

Testing for Pat→Ag & Ag→Pat

stimulus 11

Mobil dorong cewek

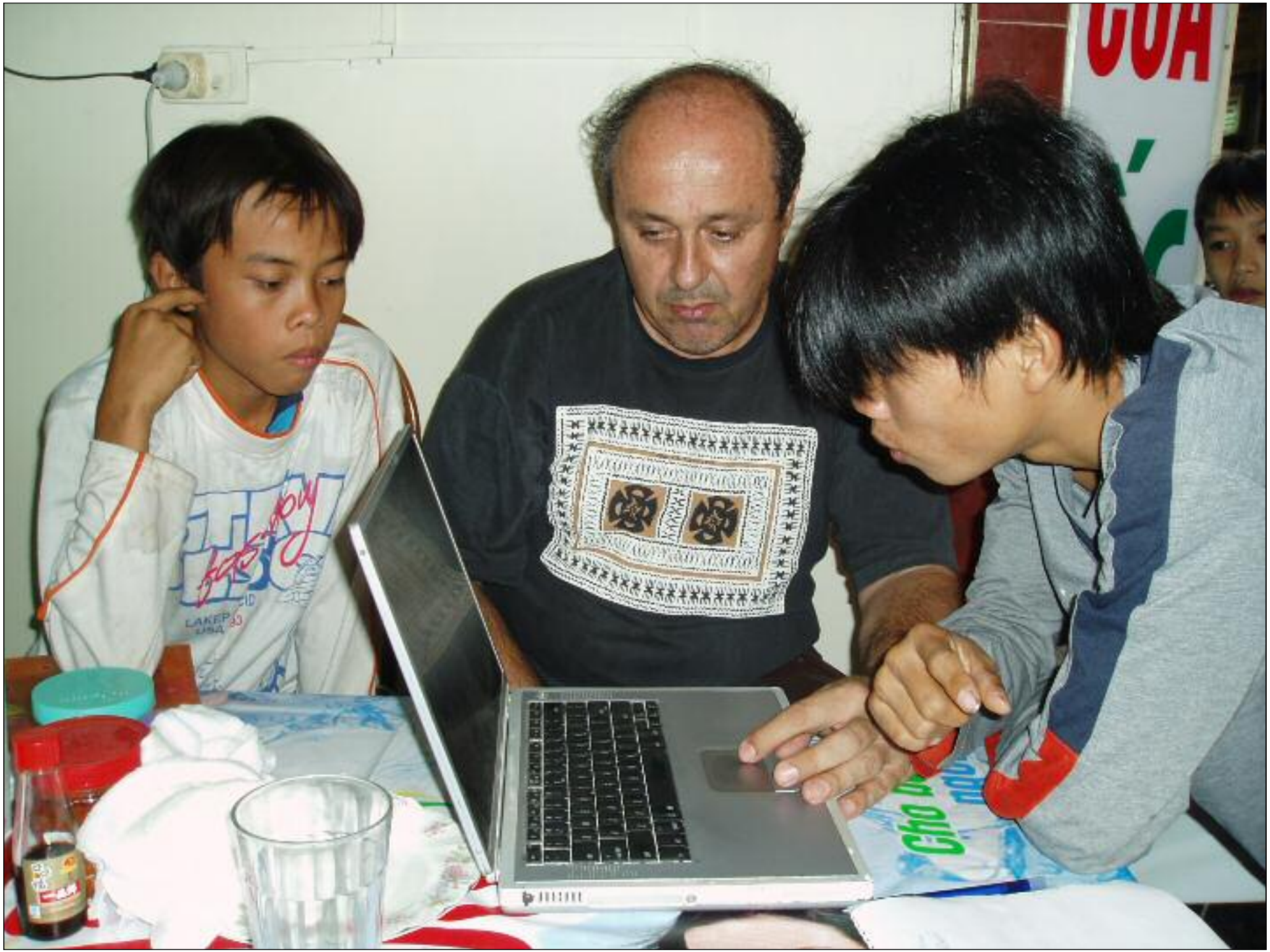
?

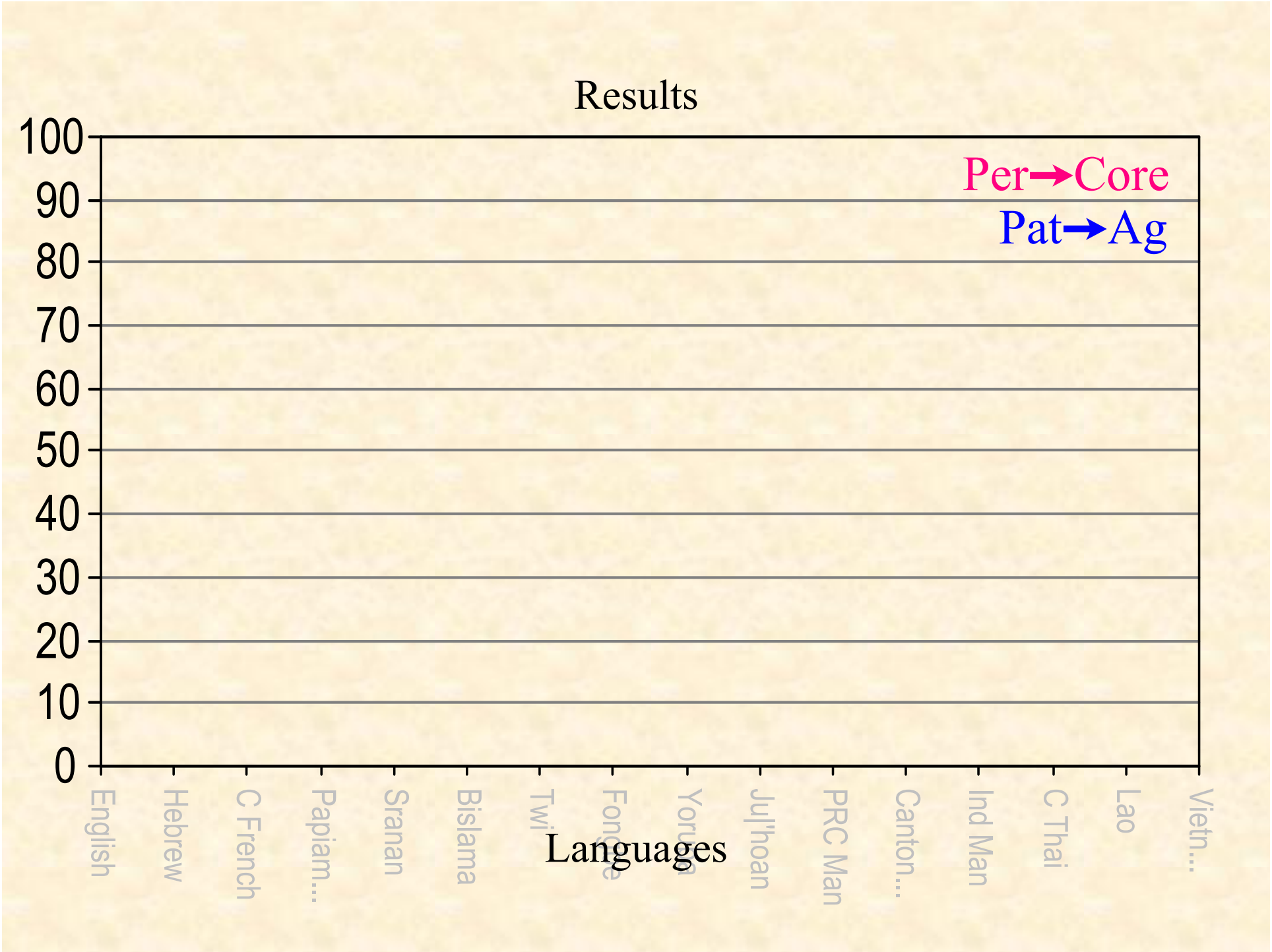


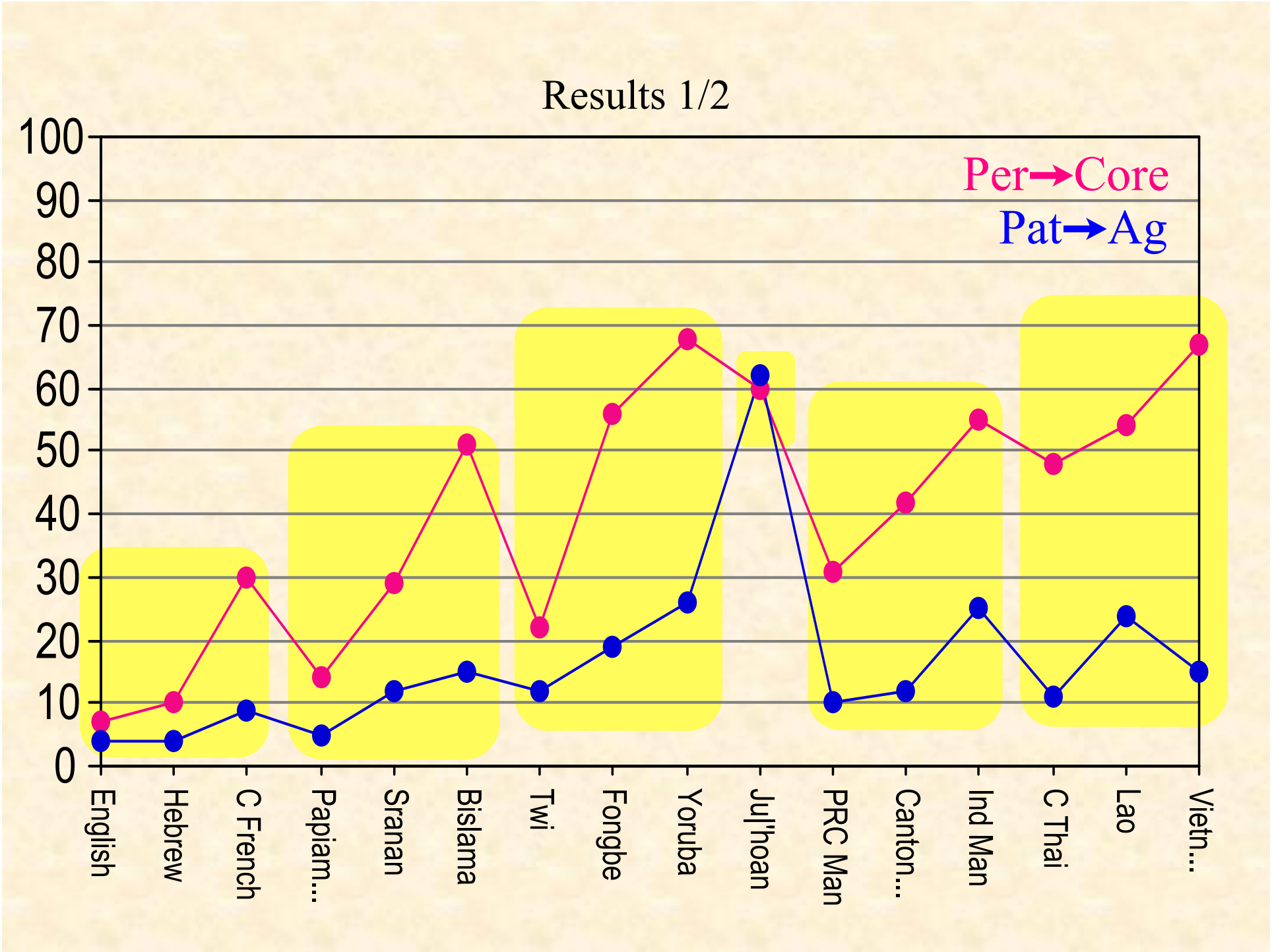
text picture

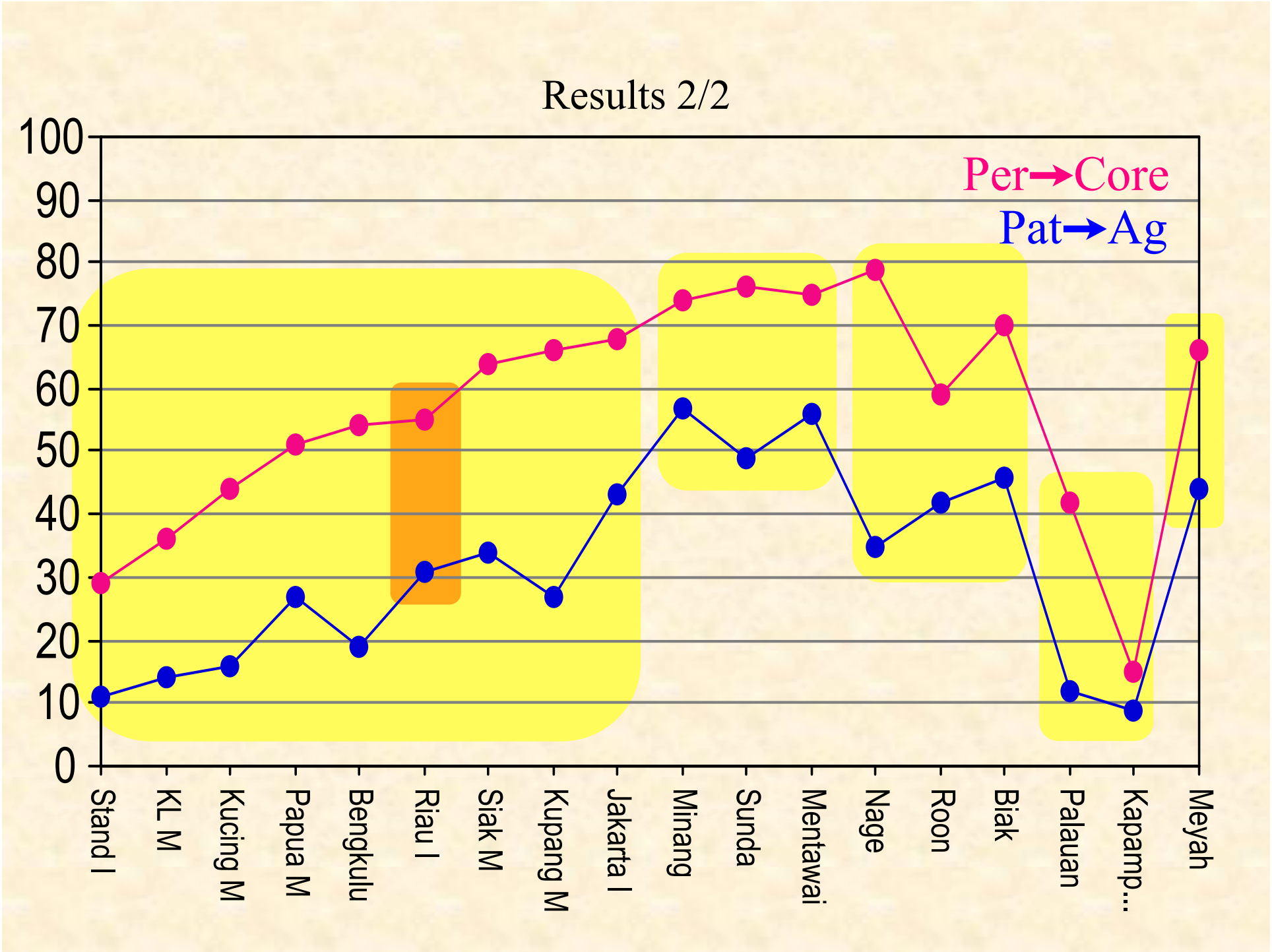
alternative picture


МОСКВА
СХЕМА МОСКОВСКОГО МЕТРОПОЛИТЕНА




Results
100
90
80
70
60
50
40
30
20
10
0
Per→Core
Pat→Ag
English
Hebrew
C French
Papiam...
Sranan
Bislama
Twi
Fongbe
Yoruba
Jul'hoan
PRC Man
Canton...
Ind Man
C Thai
Lao
Vietn...
Languages

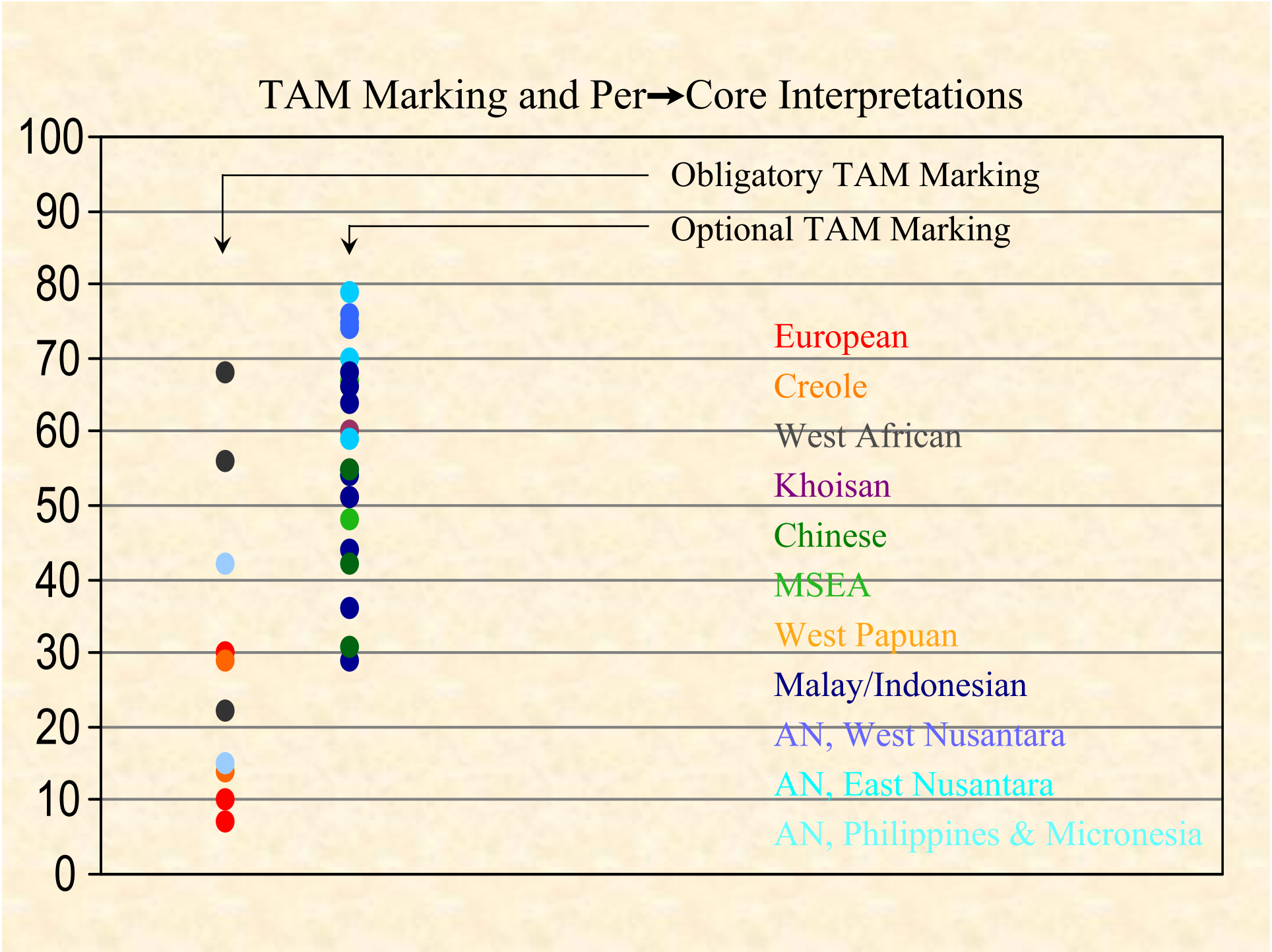

Results 1/2
Per→Core
Pat→Ag
100
90
80
70
60
50
40
30
20
10
0
English
Hebrew
C French
Papiam...
Sranan
Bislama
Twi
Fongbe
Yoruba
Jul'hoan
PRC Man
Canton...
Ind Man
C Thai
Lao
Vietn...


Results 2/2
Per→Core
Pat→Ag
100
90
80
70
60
50
40
30
20
10
0
Stand I
KL M
Kucing M
Papua M
Bengkulu
Riau I
Siak M
Kupang M
Jakarta I
Minang
Sunda
Mentawai
Nage
Roon
Biak
Palauan
Kapamp...
Meyah

Experimental results

Lots of variation. Why?

Low Associationality	*High Associationality*
languages with obligatory TAM marking	languages with optional TAM marking
national languages	regional languages


TAM Marking and Per→Core Interpretations
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Obligatory TAM Marking
Optional TAM Marking
European
Creole
West African
Khoisan
Chinese
MSEA
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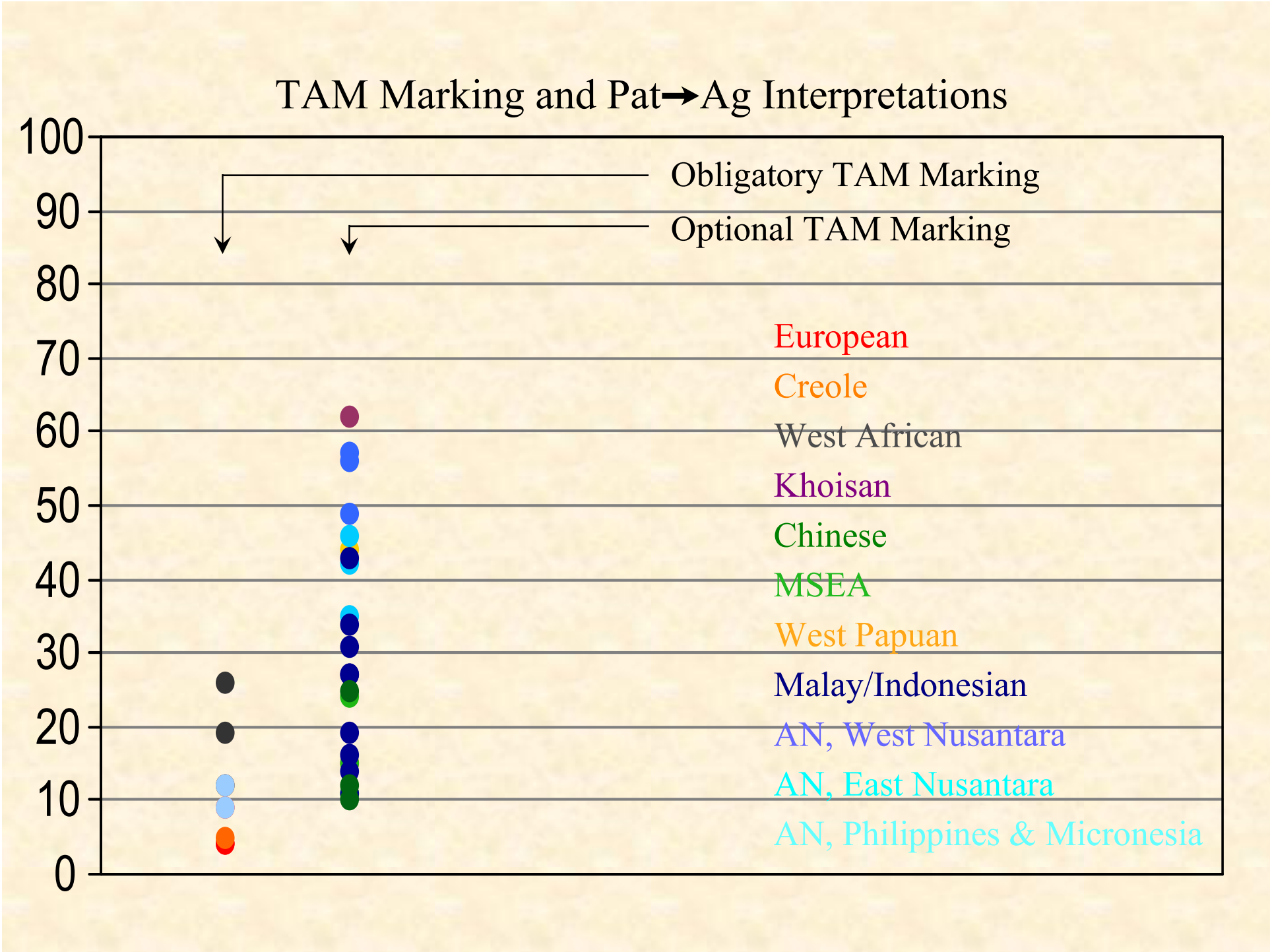
AN, West Nusantara
AN, East Nusantara
AN, Philippines & Micronesia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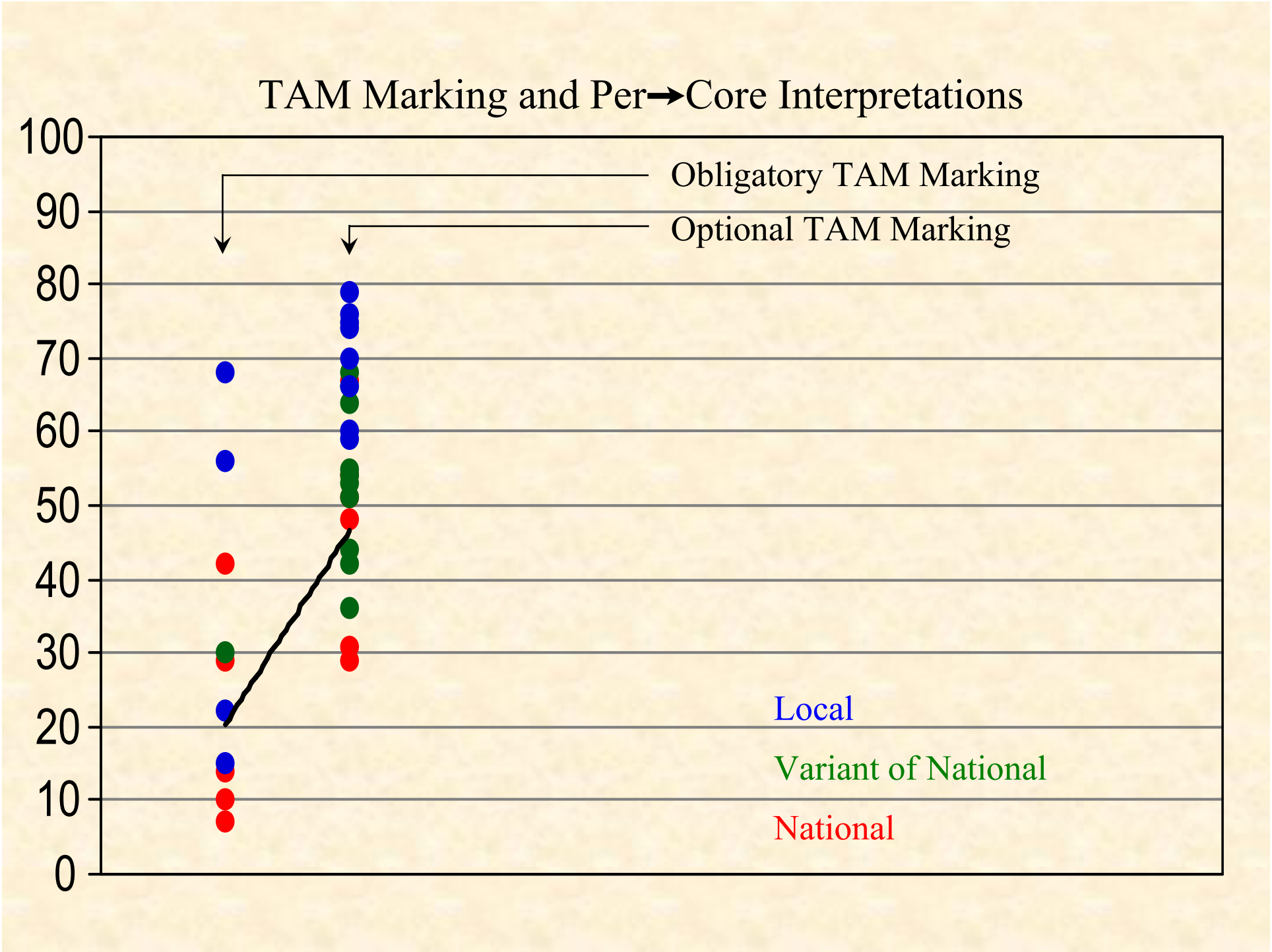
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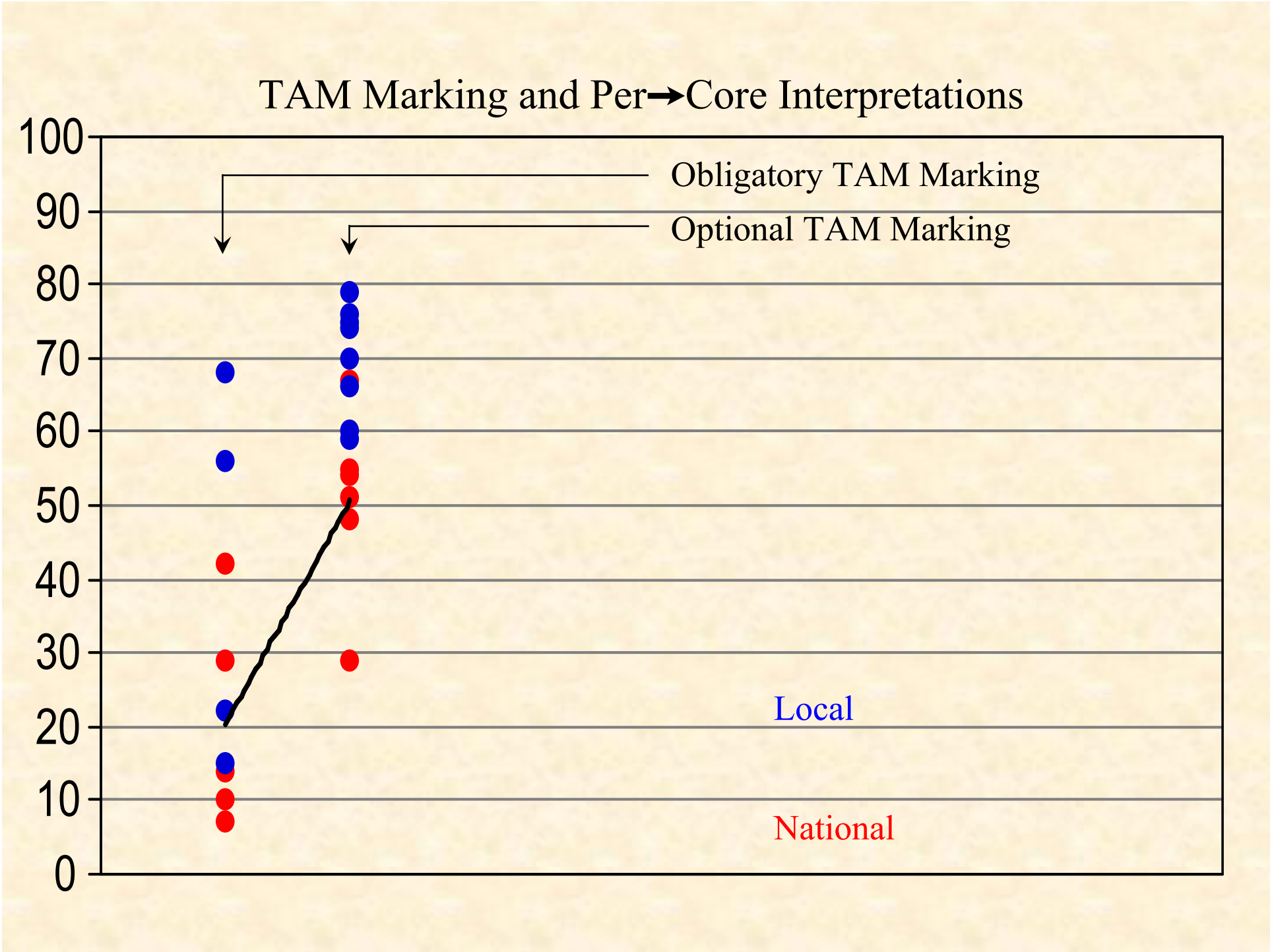
Obligatory TAM Marking
Optional TAM Marking
Local
Variant of National
National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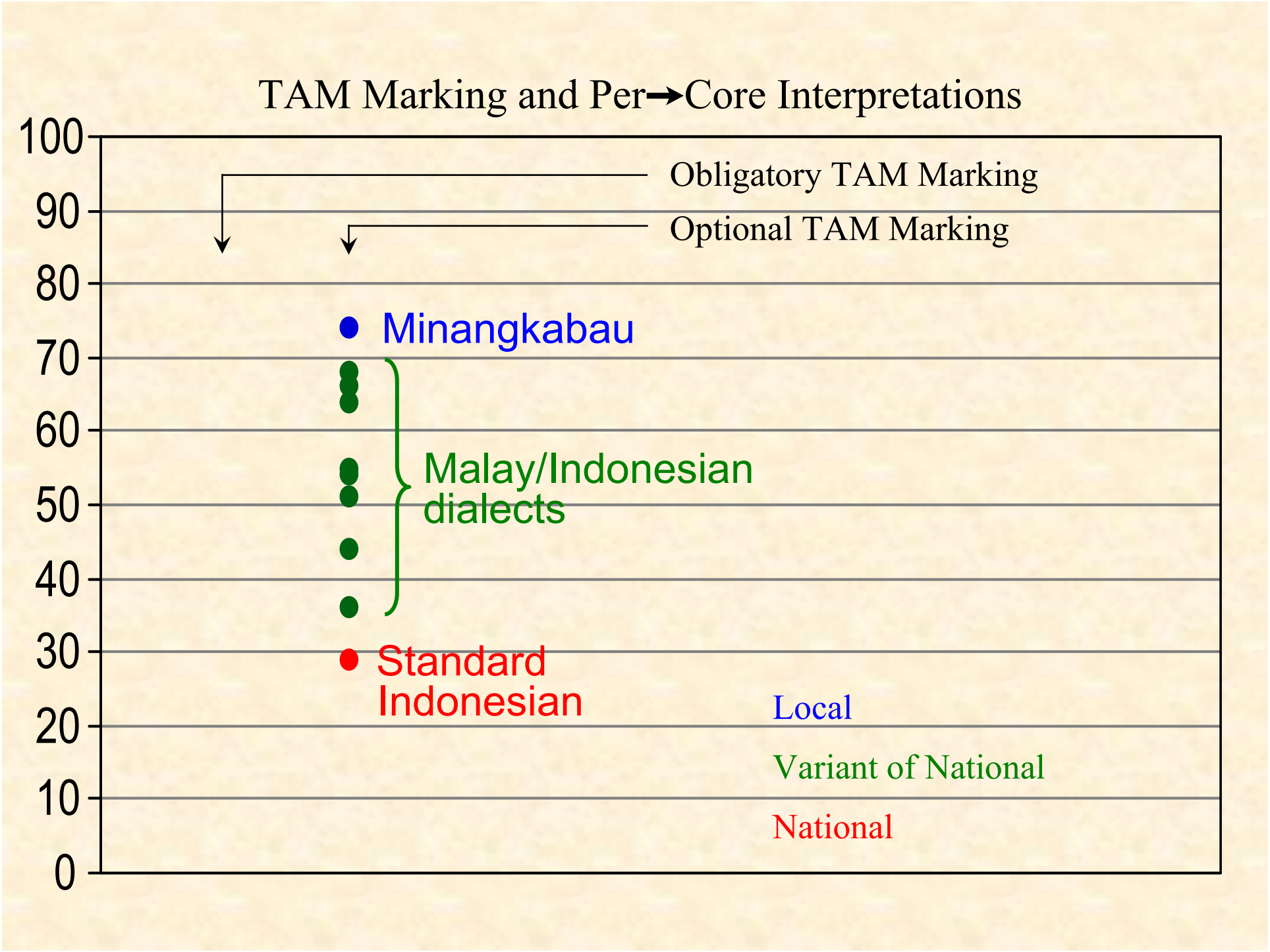
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Obligatory TAM Marking
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Minangkabau
Malay/Indonesian dialects
Standard Indonesian
Local
Variant of National
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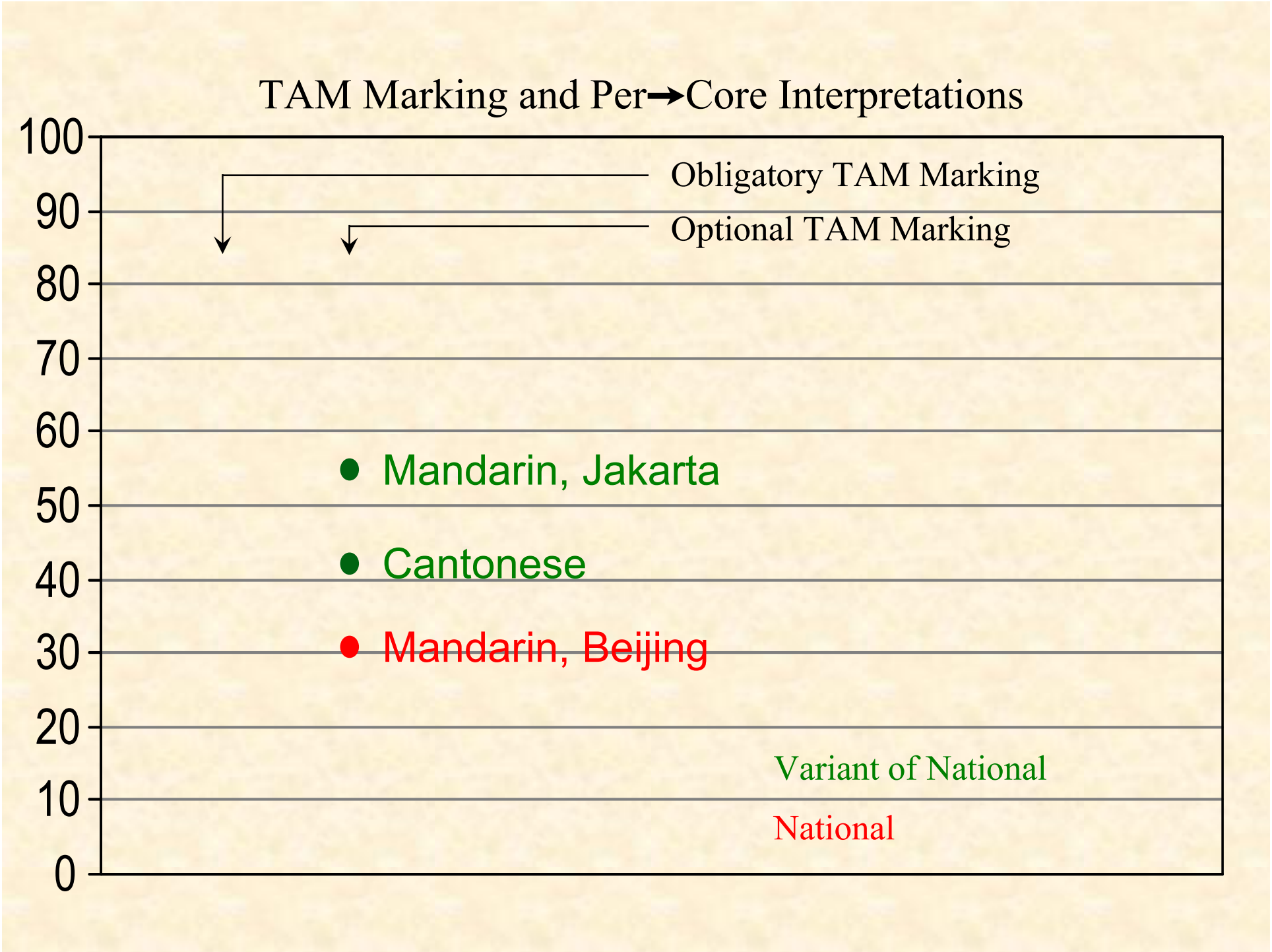
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Optional TAM Marking
Mandarin, Jakarta
Cantonese
Mandarin, Beijing
Variant of National
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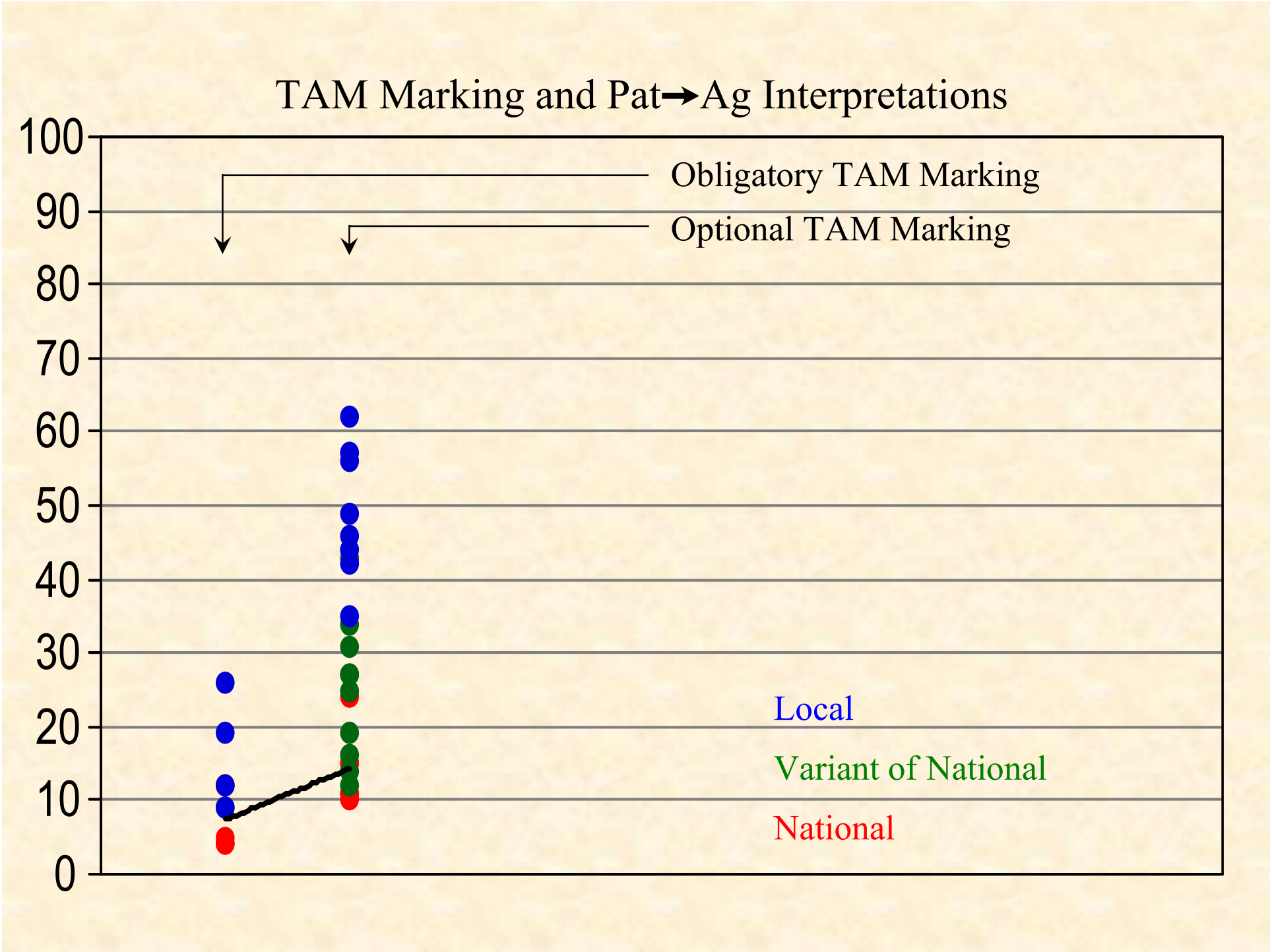
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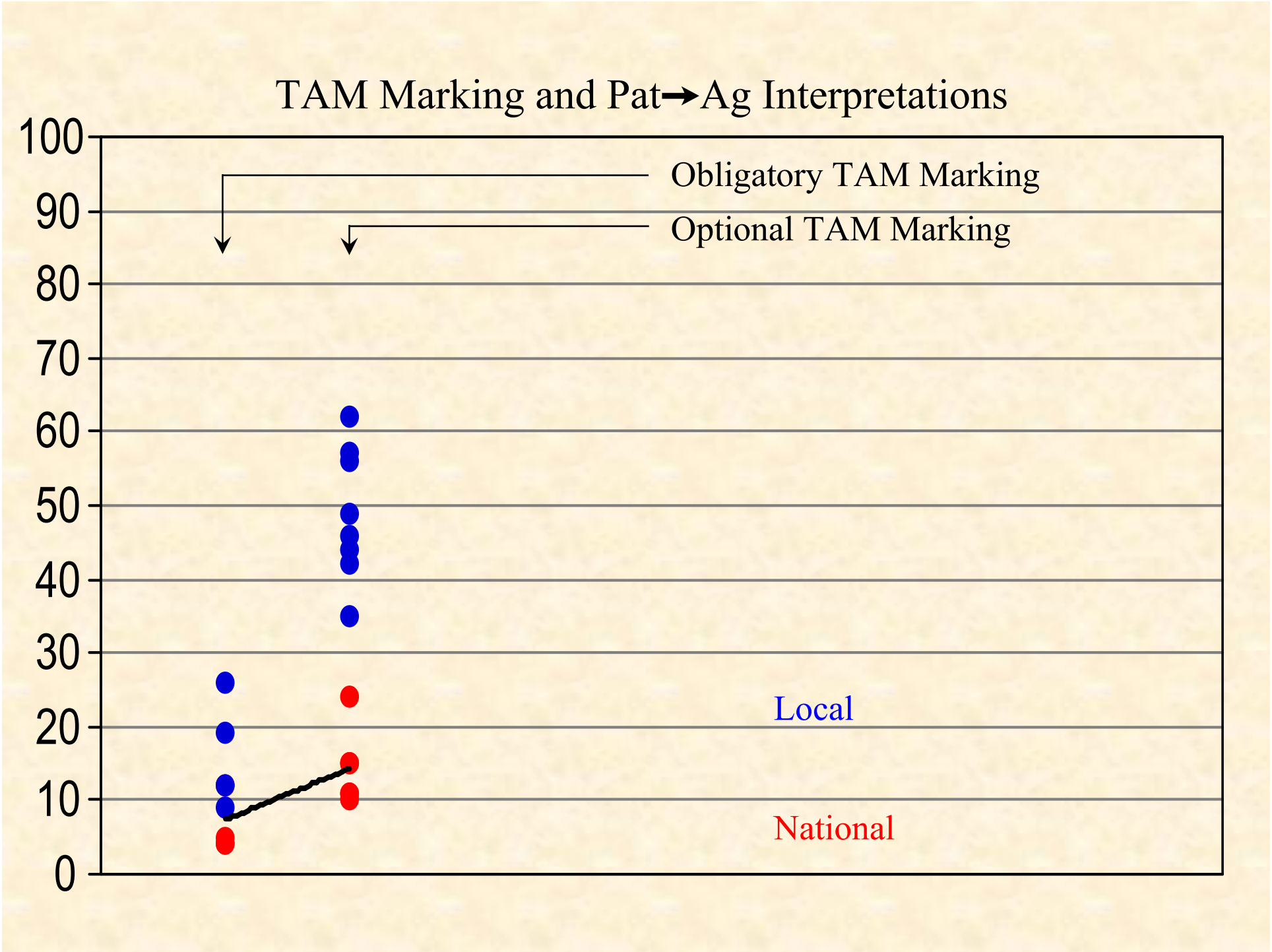
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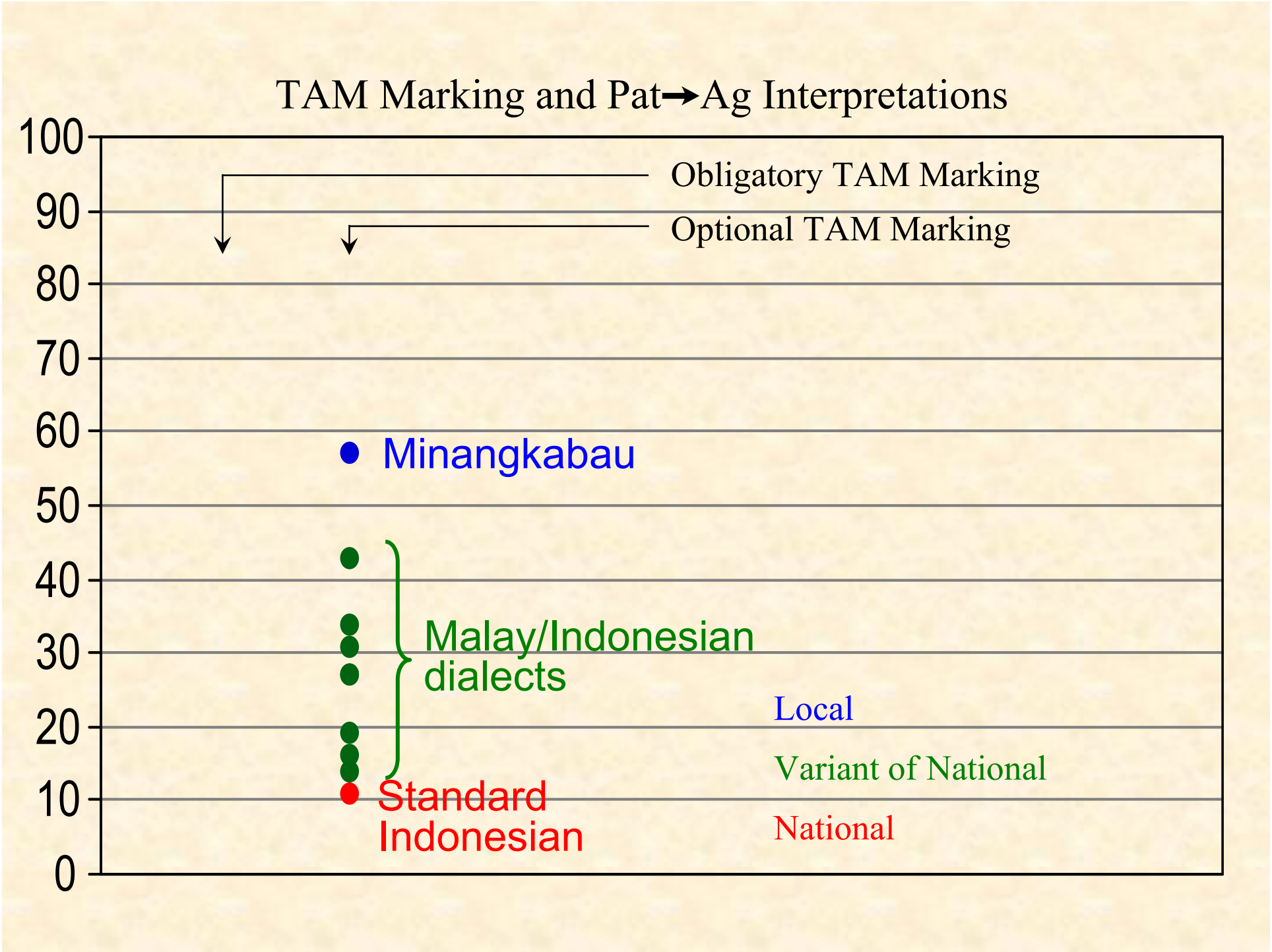
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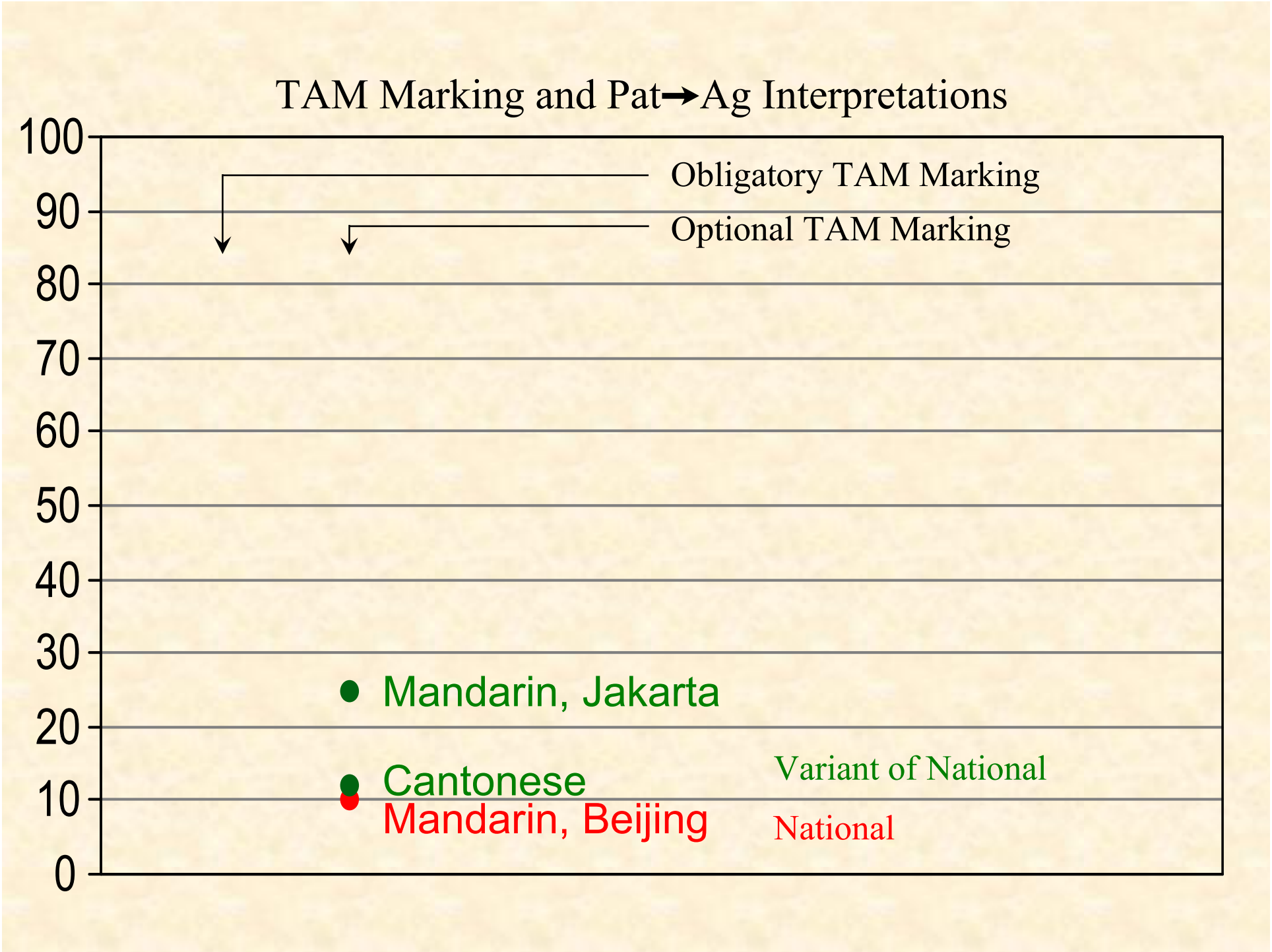
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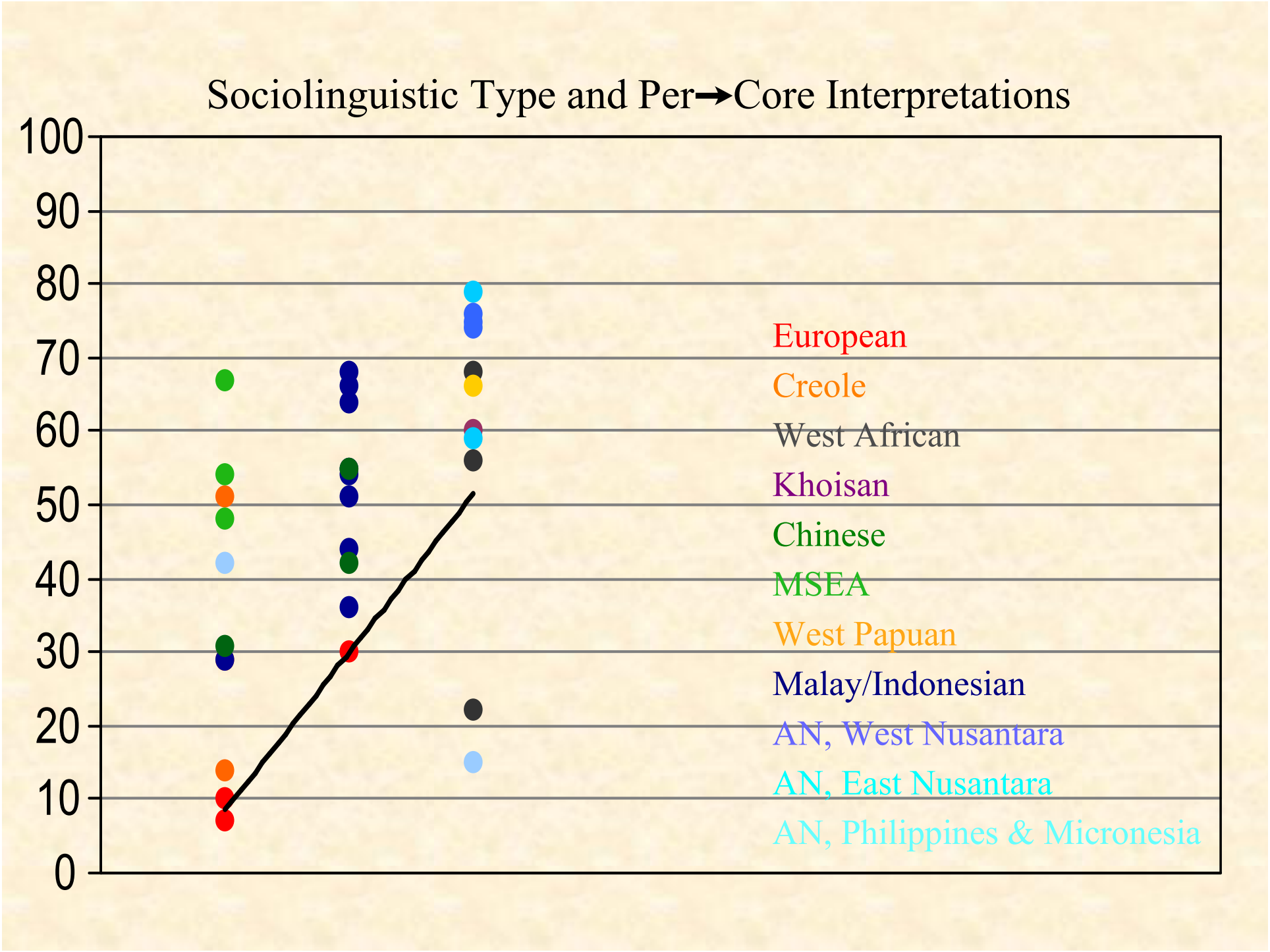
Sociolinguistic Type and Per→Core Interpretations
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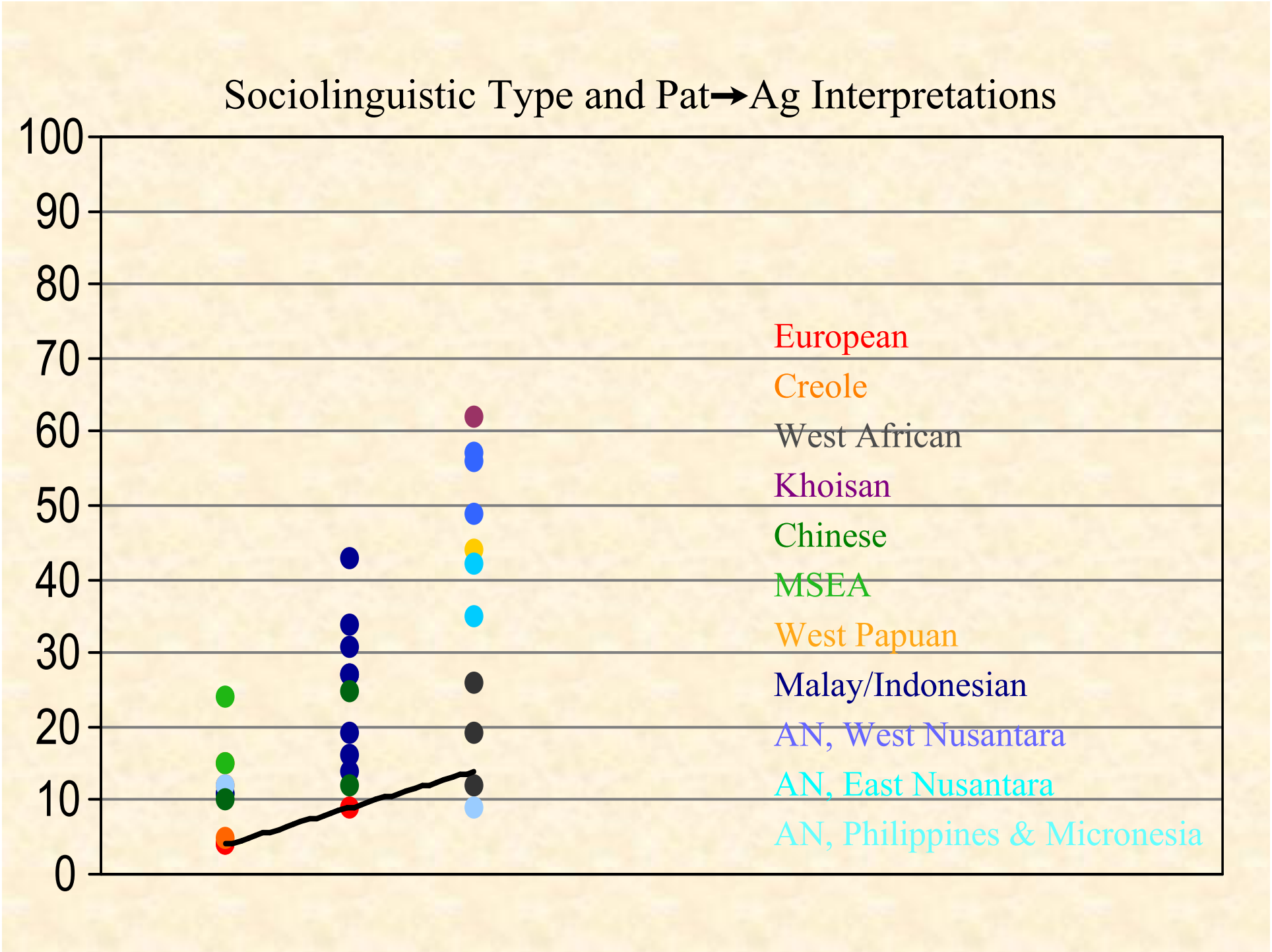
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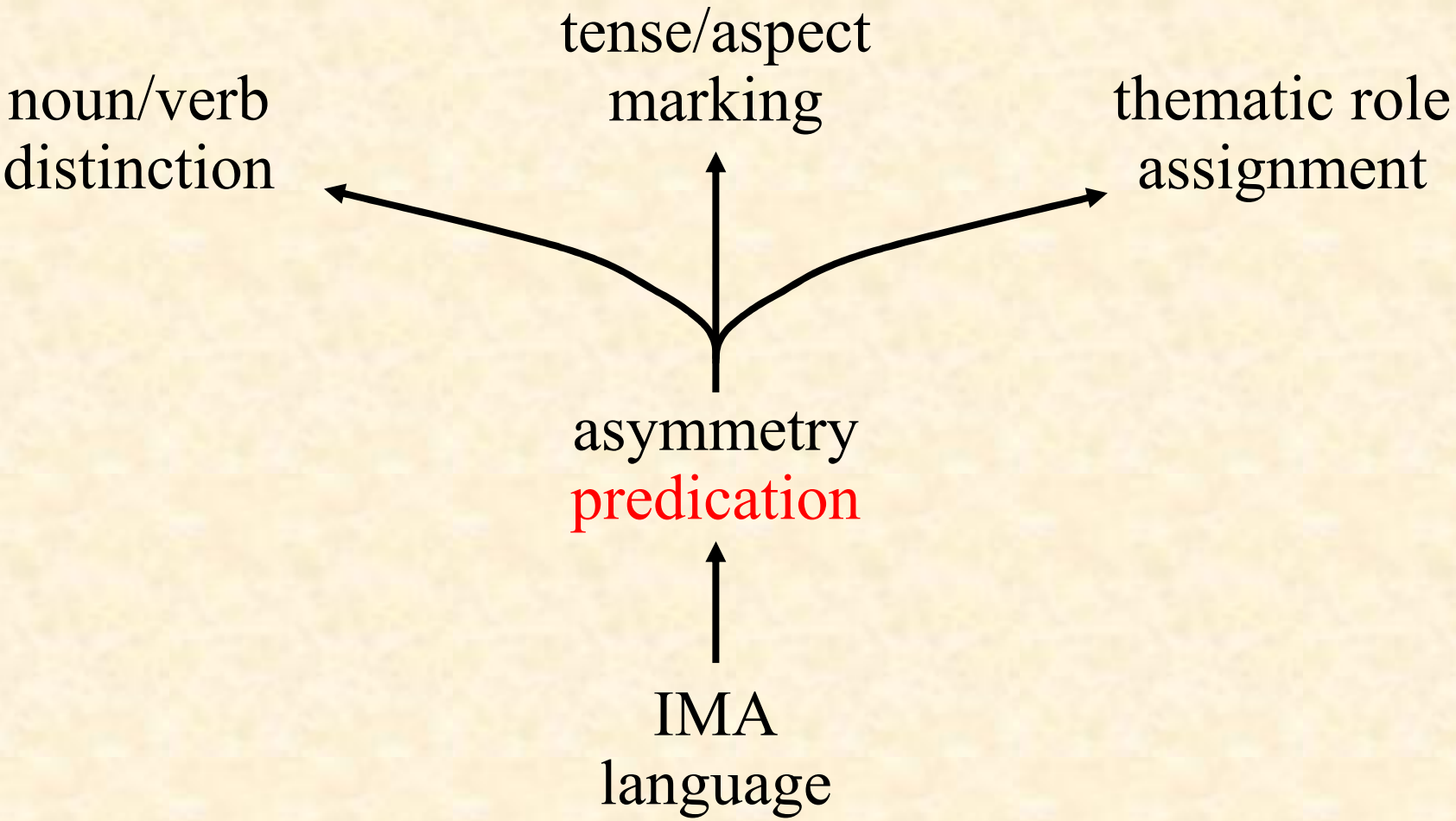
Experimental results

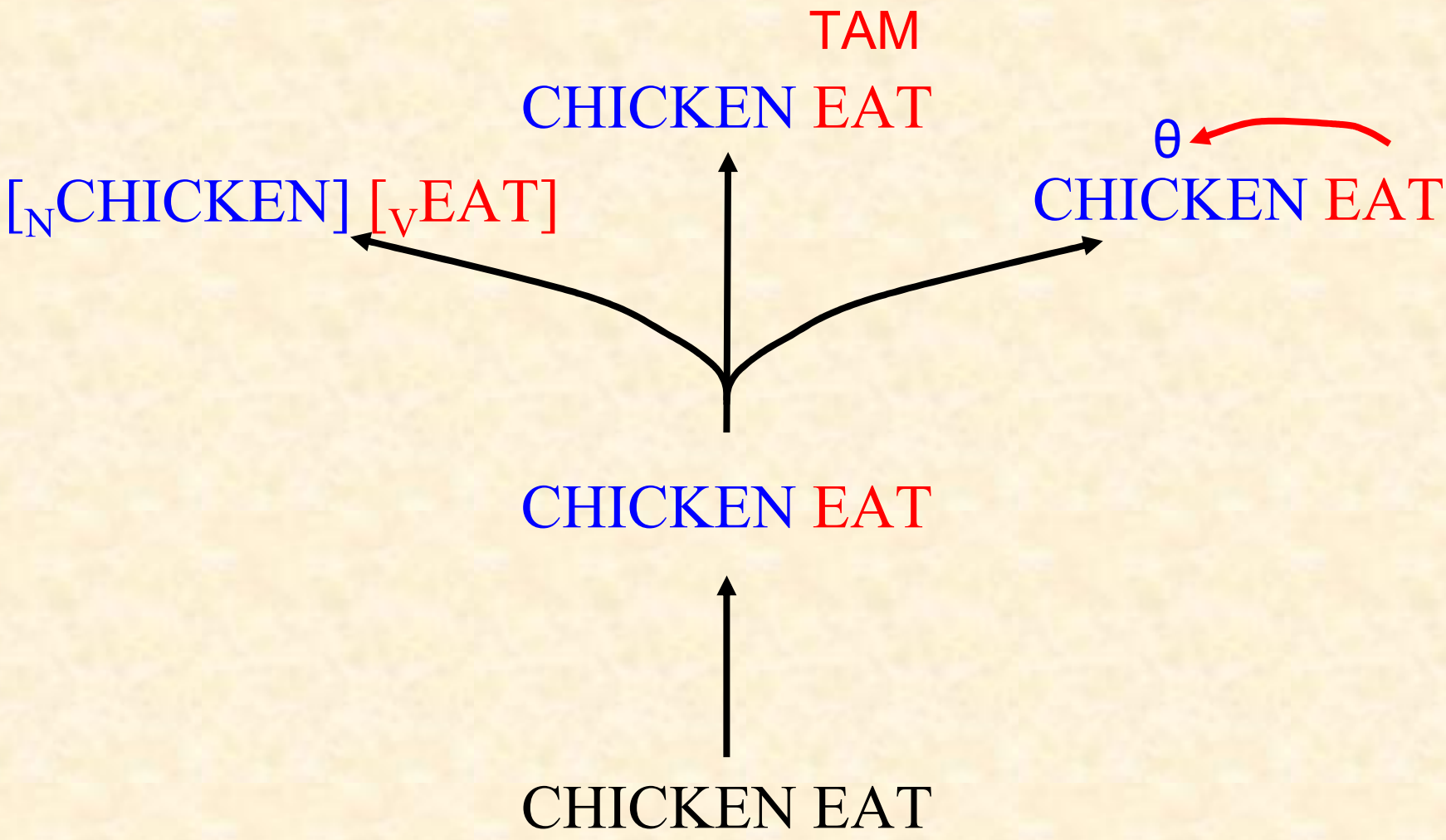
Low Associationality	*High Associationality*
languages with obligatory tense-aspect marking	languages with optional tense-aspect marking
national languages	regional languages

why?

Towards an Explanation



Towards an Explanation



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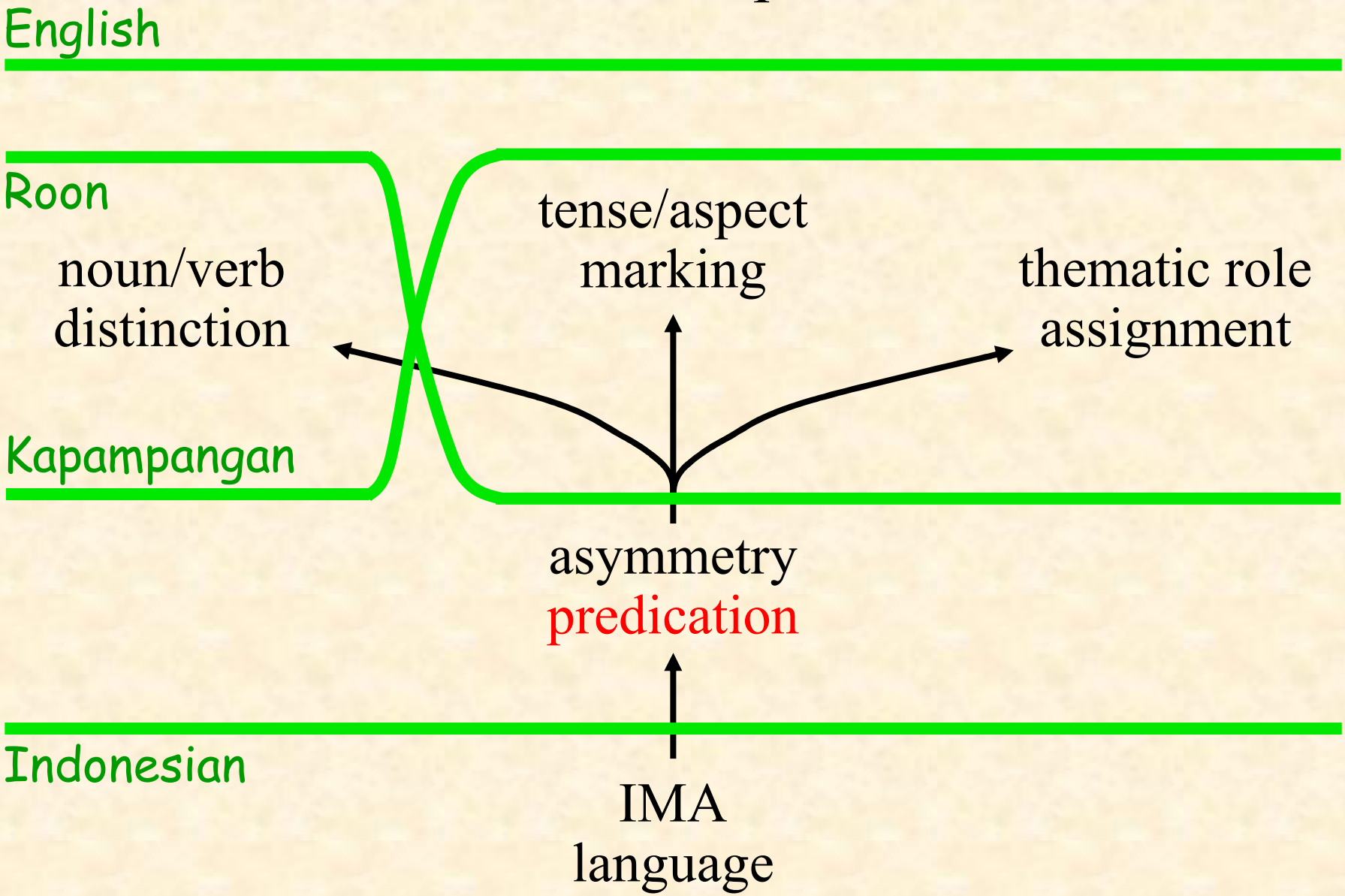


From Typology back to Phylogeny

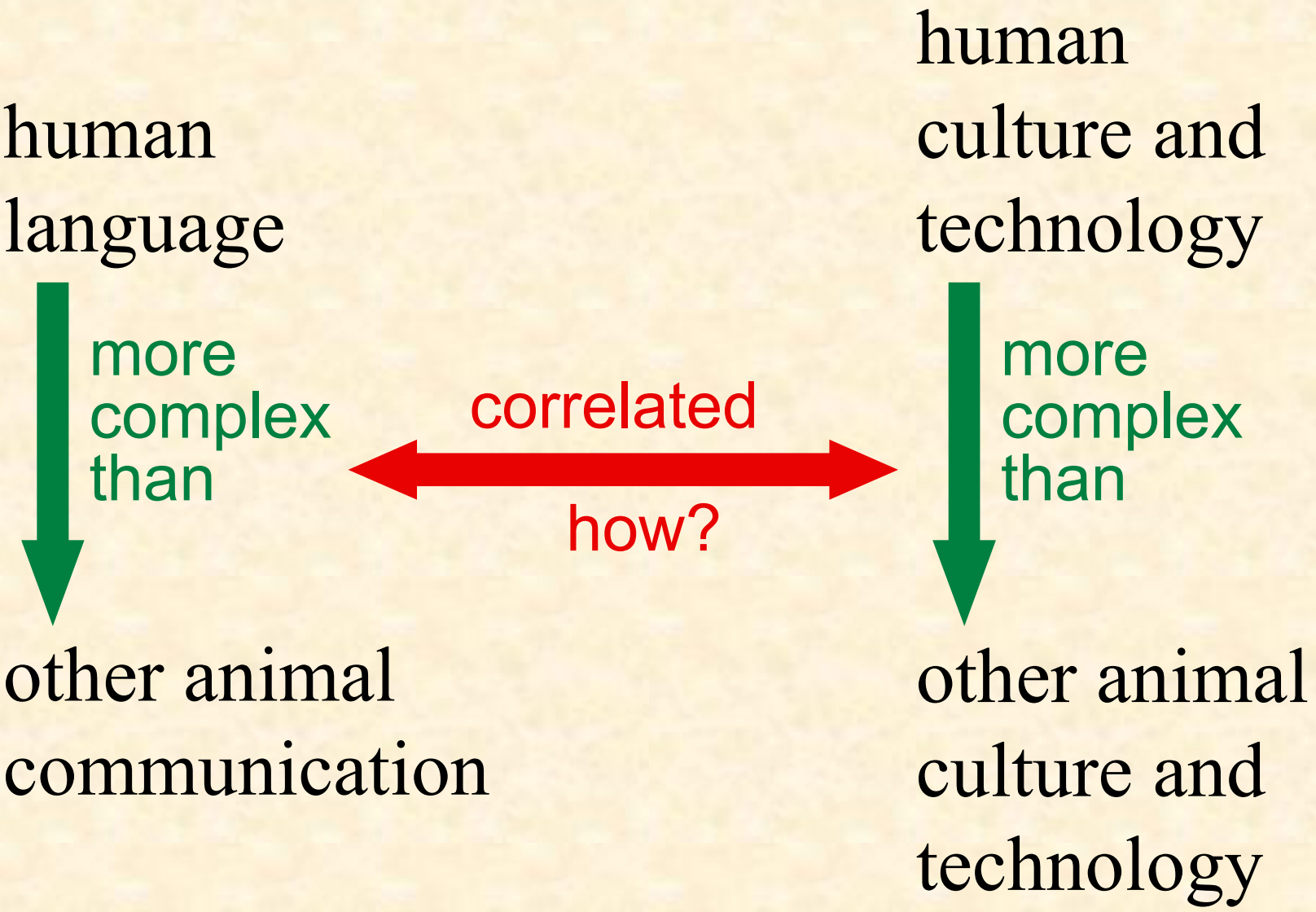
Riau Indonesian is a Relatively IMA Language

IMA structure in contemporary languages is an Evolutionary Fossil

Relatively IMA languages are a window into the past: they can tell us what language and civilization was like in prehistoric times

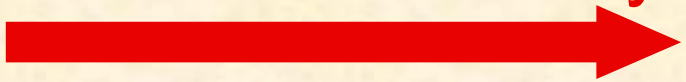
They can answer the question …
How much grammar does it take to sail a boat?

How Much Grammar Does It Take to Sail a Boat?



How Much Grammar Does It Take to Sail a Boat?

The functional story



How Much Grammar Does It Take to Sail a Boat?

human language

human culture and technology

the archaeological angle

How Much Grammar Does It Take to Sail a Boat?

- Recent findings suggest that Homo Erectus survived until very recently on the Indonesian island of Flores
- Flores has been separated from Eurasia for aeons
- Homo Erectus must have reached Flores by boat
- Homo Erectus must have had the social and technological skills to build and sail boats
- Homo Erectus must have had the grammar necessary to support such social and technological skills

the archaeological angle

complex language → complex artifact

How Much Grammar Does It Take to Sail a Boat?

- Recent findings suggest that Homo Erectus survived until very recently on the Indonesian island of Flores
- Flores has been separated from Eurasia for aeons
- Homo Erectus must have reached Flores by boat
- Homo Erectus must have had the social and technological skills to build and sail boats
- Homo Erectus must have had the grammar necessary to support such social and technological skills
- But exactly how much grammar is that?

Things that are needed:

- reference to future time
- reference to unseen location
- encoding of environmental knowledge
- encoding of technological skills
- maintenance of collective activities

but these are all semantic/pragmatic

Things (grammatical) that are not needed:

- morphology (eg. government, agreement, etc.)
- syntactic categories (eg. nouns, verbs, etc.)
- grammatical relations (eg. subjects, objects, etc.)
- arguments and predication
- movement, empty positions, binding

Fragments of Pure IMA Language from Colloquial Malay/Indonesian Corpora

conversation (Jakarta Indonesian)

Orang	mabok	tadi	suruh	David	minum	apa,	dia
person	drunk	PST:PROX	order	David	drink	what	3

'What did that drunk person just before ask you to drink?'

Fragments of Pure IMA Language from Colloquial Malay/Indonesian Corpora

folk tale (Riau Malay)

Jadi	pas	balek	tu,		telinge	tak	ade	kan,
become	exact	return	DEM:DIST		ear	NEG	exist	Q

telinge	due	belah	tak	ade
ear	two	CLF	NEG	exist

'So when she came back, her ears were gone, right,
both of her ears were gone'

Fragments of Pure IMA Language from Colloquial Malay/Indonesian Corpora

folk poetry (Siak Malay)

Korsi	kami	korsi	kayu	/	Korsi	miko	korsi	buloh
chair	1	chair	wood		chair	2	chair	bamboo

Orang	kami	orang	Dayak	/	Orang	miko	orang	Batak
person	1	person	wood		person	2	person	Batak

'Our chairs are wood chairs / Your chairs are bamboo chairs
'Our people are Dayak people / Your people are Batak people'

Fragments of Pure IMA Language from Colloquial Malay/Indonesian Corpora

Pure IMA language is enough to
run a country of 250 million people
(with a lot of boats)

Pure IMA language is all that
Homo Floresiensis would have needed
to sail to Flores

Conclusions

- Phylogeny
  Early human language was IMA language
- Ontogeny
  Early child language is IMA language
- Typology
  Some languages come closer than others to IMA language

Why do most contemporary adult human languages have so much additional non-IMA structure?

Isolating-Monocategorial-Associational Language: Phylogeny, Ontogeny, Typology

David Gil

☺ thank you ☺