A GIS-based Comparative Study of Lexical and Phonological Variation in the Northern Thai - Northeastern Thai - Central Thai Dialect Transition Area: A Preliminary Result

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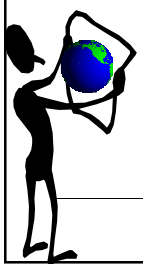
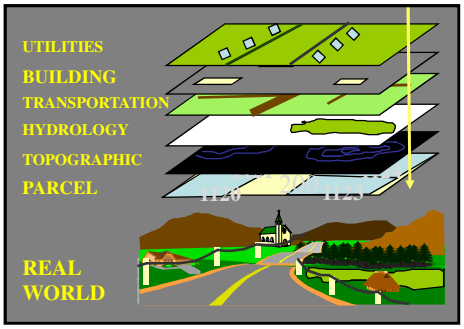
SEALS 2013
28 – 30 May 2013, Bangkok, Thailand

Topics

- Background in GIS & Thai dialectology
- Study Area
- Data source
- Analysis
- Result & Discussion
- Future work



Geographic Information System (GIS)



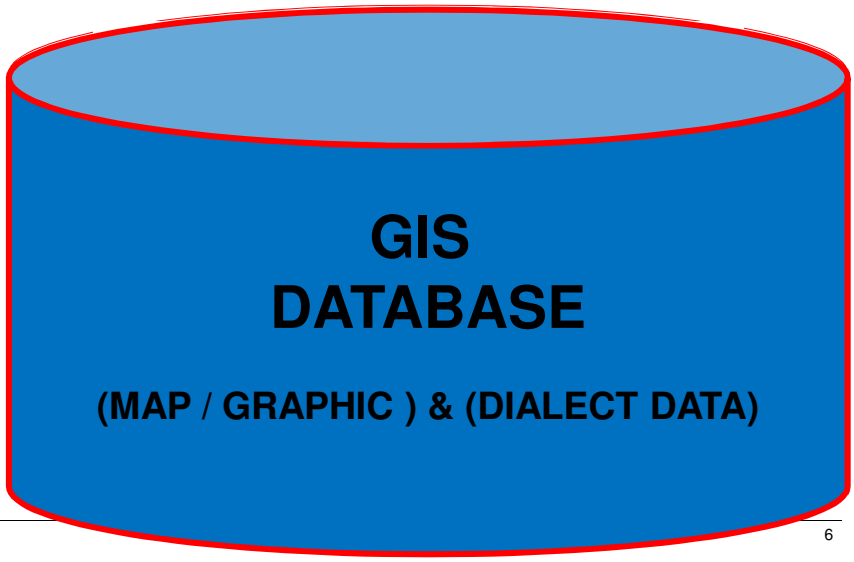
Geographic Information System (GIS)

Some definitions (from the internet)

- A **system** of hardware and software used for storage, retrieval, mapping, and analysis of geographic data

- A **system** that integrates, data, hardware, software and GPS to assist in the analysis and display of geographically referenced information

GIS | Linking administrative map with semantic unit " LIP"



GIS & Thai Dialect Projects

- In 2009, the launch of GIS-based Linguistic Geography of Thailand Project under the sponsorship of Chulalongkorn University
  - The Word Geography Maps of Thailand (2002)
  - The Word Geography Maps of the Northeastern Thai Dialect (1979)
  - **The Lexical and Phonological Maps in the Upper Central Region of Thailand (2010-2011)**

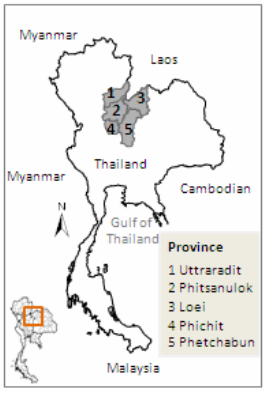
Word Geography of Thailand Project

http://www.arts.chula.ac.th/~ling/geoling/

Type in :GEOLING

GIS & Thai Dialect Projects

The Lexical and Phonological Maps in the Upper Central Region of Thailand (2010-2011)



Covering 5 provinces

- **Uttaradit**
- **Phitsanulok,**
- **Loei,**
- **Phichit**
- **Phetchabun**

Project : The Lexical and Phonological Maps in the Upper Central Region of Thailand (2010-2011)

Data Source : Questionnaire Collection & Dialect Classification

- The postal questionnaire containing 15 semantic units and 5 CH-C-S sound correspondence testing words
- Lexical and phonological variation between two age groups - the old and the young – were investigated
- Data collected during 2010-2011 to secondary and high schools in all 5 observed provinces covering 465 subdistricts, so-called tambon in Thai
- The data used came from 1041 schools covering 411 subdistricts or about 88% of the study locations
- The informants were a director or a teacher of a school

Project : The Lexical and Phonological Maps in the Upper Central Region of Thailand (2010-2011)

APPARENT TIME a 30-year period

Data of two different age groups were compared
- the old generation (people aged between 50 and 60)
- the young generation (people aged between 10 and 20)

QUESTIONNAIRE
- 15 semantic units
- 5 CH-C-S sound correspondence testing words

Project : The Lexical and Phonological Maps in the Upper Central Region of Thailand (2010-2011)

Previous works

- "Mapping Spatial Ongoing Change of Thai Dialects: A Case of Transition Area of Central Thai, Northern Thai, and Northeastern Thai" (Teerarojanarat and Tingsabadh, 2012)

  (Lexical method)

- "Mapping Spatial Ongoing Change in the Upper Central Region of Thailand : A Phonological Study" (Teerarojanarat and Tingsabadh, 2012)

  (Phonological method)

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Dialect Classification

How to classify dialects

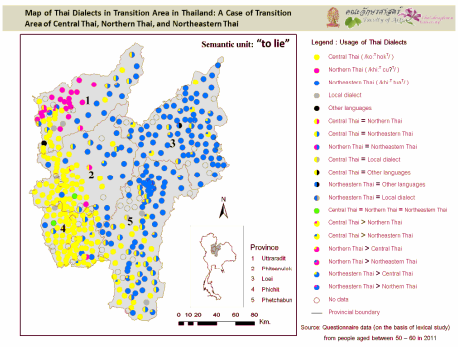
- Dialect vocabularies from the previous research works and dialect dictionaries
- The measurement of the relative degrees of lexical similarity

No.	Semantic Unit	Words/lexical items used to represent the main Thai Dialects		
		Central Thai	Northern Thai	Northeastern Thai
1	**ดอกกระถิน** (Leucaena leucocephala (Lamk.) de Wit)	ดอกกระถิน /dɔːk^{7} kraʔ^{7} thin^{7}/	ดอกคำไฮ่ /dɔːk^{7} kham^{7} taːj^{7}/	ดอกส้มปอย /dɔːk^{7} sɔm^{7} pɔːj^{7}/
2	**ดอกนางแย้มจีน** (Gomphrena globosa Linn)	ดอกนางไห฼่จีน /dɔːk^{7} baːn^{7} maj^{7} ruː^{7} roːj^{7}/	ดอกดอยลอม /dɔːk^{7} taʔ^{7} lɔm^{7}/	ดอกสีนปีเที่ยว /dɔːk^{7} sip^{7} piː^{7} hiau^{7}/
3	**ฟักทอง** (pumpkin)	ฟักทอง /fakˀ^{7} thɔːŋ^{7}/	มะฟักแก้ว /maʔ^{7} fakˀ^{7} kɛːu^{7}/	น้ำอึ่ /bakˀ^{7} ʔuŋ^{7}/
4	**มะละกอ** (papaya)	มะละกอ /maʔ^{7} laʔ^{7} kɔː^{7}/	มะก้วยเต๋ /baʔ^{7} kuaiˀ^{7} teˀ^{7}/	น้ำหุ่ง /bakˀ^{7} lunˀ^{7}/
5	**มะระ** (Momordica charantia L.)	มะระ /maʔ^{7} raʔ^{7}/	น้ำพอย /baːˀ^{7} hɔiˀ^{7}/	ผักไส /phakˀ^{7} saiˀ^{7}/
6	**ข้าวเม็ด** (rice)	ข้าวเหนียว /khaːu^{7} niakˀ^{7}/	ข้าวปี้ /khaːu^{7} piːˀ^{7}/	ข้าวใน /khaːu^{7} naiˀ^{7}/
7	**ปลาหมอ** (anabus)	ปลาหมอ /plaːˀ^{7} mɔːˀ^{7}/	ปลาสะเด็ด /paːˀ^{7} saʔ^{7} detˀ^{7}/	ปลาเข็ง /paːˀ^{7} khɛŋˀ^{7}/
8	**จิ้งเหลน** (skink)	จิ้งเหลน /cinˀ^{7} leːnˀ^{7}/	จิ๊กกาเล้อ /cakˀ^{7} kaːˀ^{7} lɤːˀ^{7}/	ขี้โคะ /khiːˀ^{7} koʔ^{7}/
9	**ไม้กวาด** (broom)	ไม้กวาด /maːiˀ^{7} kwaːtˀ^{7}/	ญุ /ɲuˀ^{7}/	พ้อม /fɔːˀ^{7}/
10	**กางเกง** (trousers)	กางเกง /kaːŋˀ^{7} keːŋˀ^{7}/	เตี่ยว /tiauˀ^{7}/	โส่ง /soːŋˀ^{7}/
11	**พระ** (monk)	พระ /phraʔ^{7}/	ค่ /ʔuʔ^{7}/	ลุนา /khuːˀ^{7} baːˀ^{7}/
12	**โกหก** (to lie)	โกหก /koːˀ^{7} hokˀ^{7}/	ขี้จิ /khiːˀ^{7} cuʔ^{7}/	ขี้ตัว /khiːˀ^{7} tuaˀ^{7}/
13	**ฉลาด** (clever)	ฉลาด /chaʔ^{7} laːtˀ^{7}/	หลวก /luakˀ^{7}/	เฮี้ยง /siaŋˀ^{7}/
14	**เบื่อ** (bore)	เบื่อ /bɯaˀ^{7}/	ก๋าย /kaːiˀ^{7}/	เบื่ด /pɤːtˀ^{7}/
15	**ขันตักน้ำ** (water bowl)	ขันตักน้ำ /khanˀ^{7} takˀ^{7} naːmˀ^{7}/	สลุง /salˀ^{7} lunˀ^{7}/	โอ /ʔoːˀ^{7}/

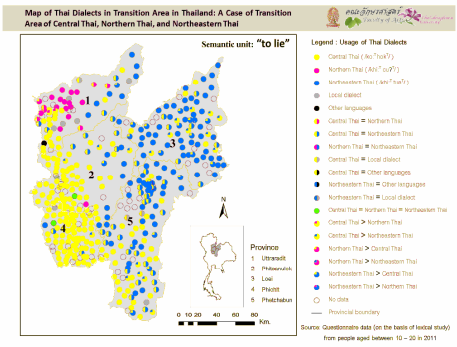
Central Thai Northern Thai Northeastern Thai

Exemplified RESULT produced from the GIS database:

A lexical/word variation map of the semantic unit "to lie"



Spoken by the old generation
(people between the ages of 50 and 60)



Spoken by the young generation
(people between the ages of 10 and 20)

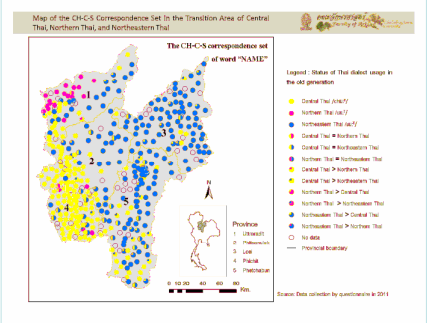
Dialect Classification

•The sound correspondence set **CH-C-S** separates the 3 main Thai dialects under investigation

-"CH" sound for Central Thai,
-"C" sound for Northern Thai,
- and "S" sound for Northeastern Thai.

No.	Word	The CH-C-S Correspondence set used in the three main Thai Dialects		
		Central Thai	Northern Thai	Northeastern Thai
1	ช้าง (elephant)	ช้าง /cha:ŋ^{7}/	จ้าง /ca:ŋ^{7}/	ซ้าง /sa:ŋ^{7}/
2	เช้า (morning)	เช้า /cha:u^{7}/	เจ้า /ca:u^{7}/	เซ้า /sa:u^{7}/
3	ชื่อ (name)	ชื่อ /chu:^{7}/	จื่อ /cu:^{7}/	ซื่อ /su:^{7}/
4	เชือก (rope)	เชือก /chuak^{7}/	เจื่อก /cuak^{7}/ เจียก /ciak^{7}/	เซี่ยก /siak^{7}/
5	เชื่อ (to believe)	เชื่อ /chua^{7}/	เจื่อ /cua^{7}/ เจี่ย /cia^{7}/	เซี่ย /sia^{7}/

Exemplified RESULT produced from the GIS database:
A CH-C-S Correspondence set of the word "NAME"



Spoken by the old generation
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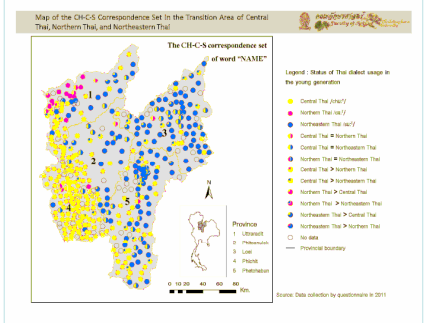

Spoken by the young generation
(people between the age of 10 and 20)

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The previous works

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"Mapping Spatial Ongoing Change in the Upper Central Region of Thailand : A Phonological Study" (Teerarojanarat and Tingsabadh, 2012)

By both methods, the comparison between two age groups shows that the spread of **Central Thai** to **Northeastern Thai** and **Northern Thai** is primarily found

Some previous researches

A lexical change tends to occur at higher speed than a phonological one

This study

For each age group:

Lexical method

Phonological method

Which methods conduct Faster CHANGE ?

Analysis Question?

Does a lexical change occur at higher speed than a phonological one?

Conceptual Analysis

Does a lexical change occur at higher speed than a phonological one?

For each age group :

- Is there any discrepancy between lexical and phonological change ?
- If YES, lexical change is faster or slower than phonological change

For each age group:

Lexical method

Phonological method

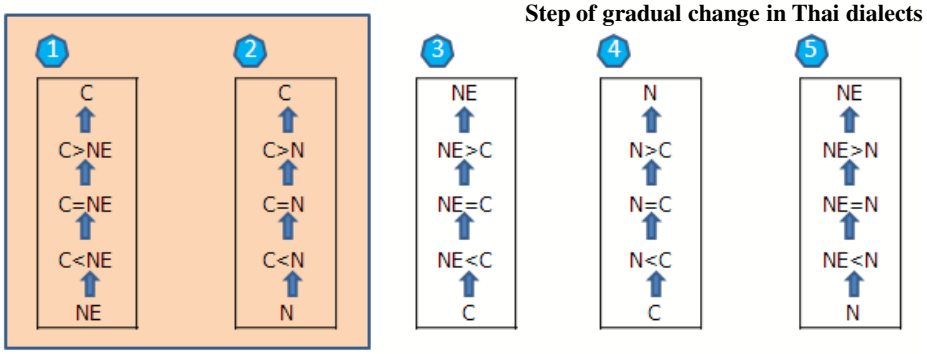
DISCREPANCY ?

- No discrepancy (L = P)
- Discrepancy
  - -(L >> P) **FASTER CHANGE**
  - - (L << P)

Methodology

- **Status of ongoing change in Thai dialects**
- **Setting criteria**
- **Creating a composite map & creating an ongoing change map**

Status for "ongoing change"



Abbreviation of Dialect usage:
C = Central Thai, NE = Northeastern Thai, N = Northern Thai
operator > means 'greater than', = means 'equal', < means 'less than'

Chang type: 1 from NE to C, 2 from N to C, 3 from C to NE, 4 from C to N, and 5 from N to NE

Setting criteria for "ongoing change"

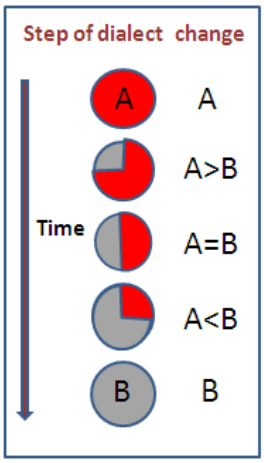
Among all of these semantic units, **ongoing change was found mostly from Northern Thai and Northeastern Thai to Central Thai**

CRITERION

Any other dialects that change to Central Thai is assumed "faster change"

Setting criteria for "ongoing change"

Step of change and degree of change from dialect "A" to dialect "B".



Setting criteria for "ongoing change" : DISCREPANCY TABLE

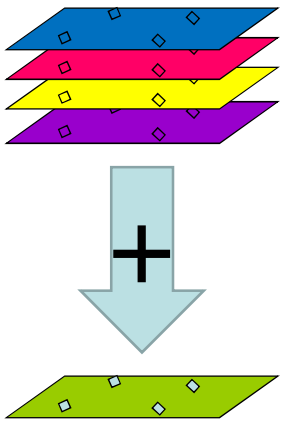
Table: A simple form illustrating how to code the "ongoing change" / discrepancy for each age group

Case no.	Dialect usage (lexical method)	Dialect usage (phonological method)	Description (types of discrepancy)	Discrepancy code
1	C	C	No discrepancy	L = P
2	C>NE	C>NE	No discrepancy	L = P
3	C	NE	Discrepancy: Lexical change (L) is faster than phonological change (P)	L >> P
4	NE	C	Discrepancy: Lexical change (L) is slower than phonological change (P)	L << P

CRITERION

Any other dialects that change to Central Thai is assumed "faster change"

Creating A Composite Map & An Ongoing Change Map



DIALECT MAPs

COMPOSITE MAP

Setting criteria for "ongoing change" : DISCREPANCY TABLE

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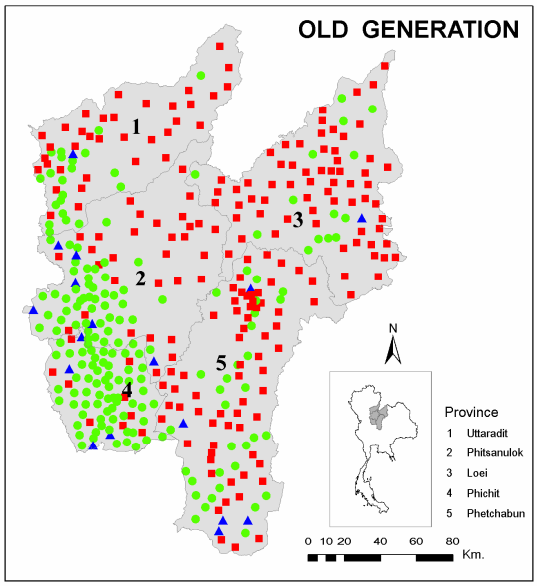
CRITERION

Any other dialects that change to Central Thai is assumed "faster change"

RESULTS & DISCUSSION

Discrepancies between Lexical Change and Phonological Change in the Three Dialects Transition Area



Province
1 Uttaradit
2 Phitsanulok
3 Loei
4 Phichit
5 Phetchabun

Legend : Types of Discrepancies

- L = P (no discrepancy)
- L >> P (discrepancy)
- L << P (discrepancy)

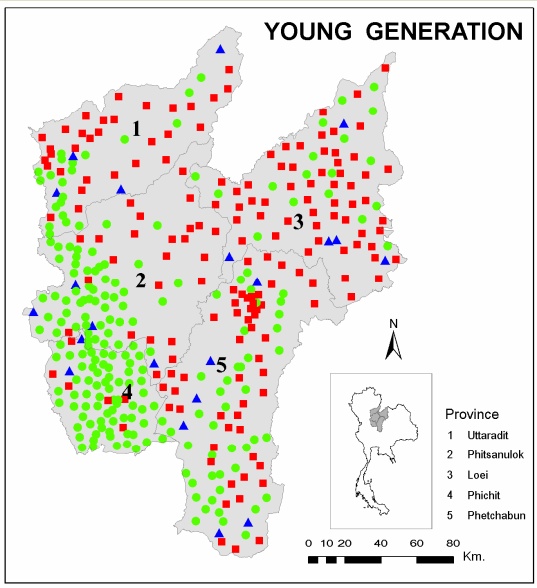
Remarks:
L means 'lexical change'
P means 'phonological change'
= means 'equal'
>> means 'faster than'
<< means 'slower than'

— Provincial boundary

	OLD generation
L = P	44.89
L >> P	50.87
L << P	4.24
Total (%)	100.00

Source: Questionnaire data from people aged between 50 – 60 in 2011

Discrepancies between Lexical Change and Phonological Change in the Three Dialects Transition Area



Province
1 Uttaradit
2 Phitsanulok
3 Loei
4 Phichit
5 Phetchabun

Legend : Types of Discrepancies

- L = P (no discrepancy)
- L >> P (discrepancy)
- L << P (discrepancy)

Remarks:
L means 'lexical change'
P means 'phonological change'
= means 'equal'
>> means 'faster than'
<< means 'slower than'

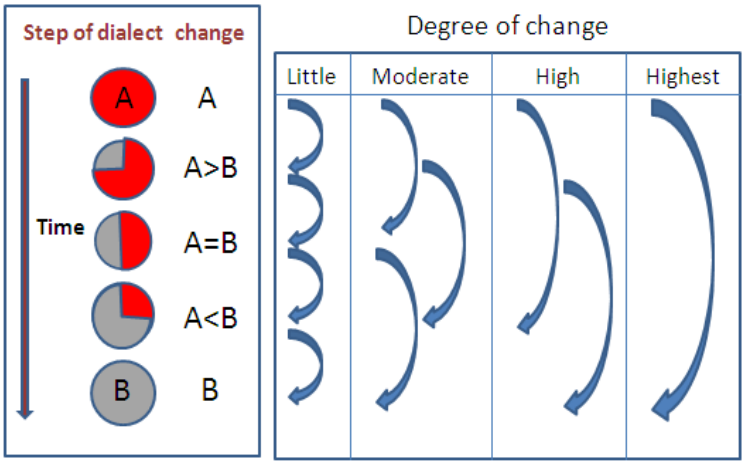
— Provincial boundary

	YOUNG generation
L = P	52.15
L >> P	42.53
L << P	5.32
Total (%)	100.00

Source: Questionnaire data from people aged between 10 – 20 in 2011

Definition of Ongoing Change

Step of change and degree of change from dialect "A" to dialect "B".



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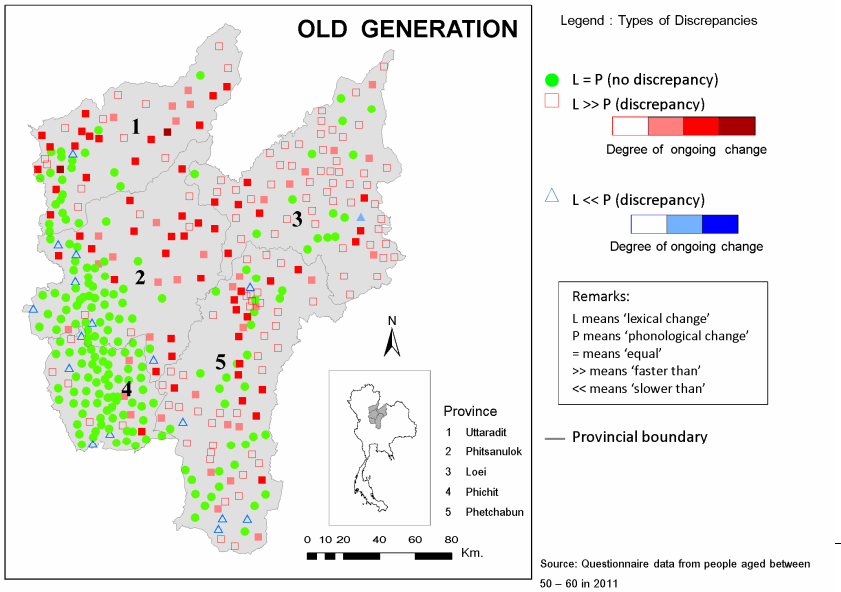

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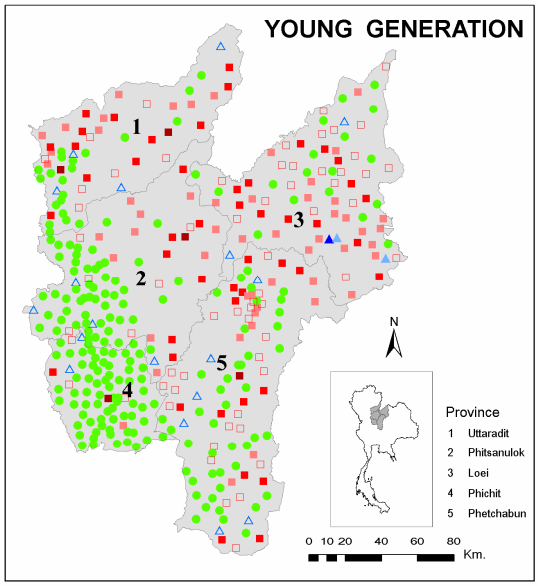
Discrepancies between Lexical Change and Phonological Change in the Three Dialects Transition Area



Legend : Types of Discrepancies

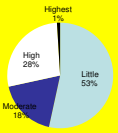
- L = P (no discrepancy)
- L >> P (discrepancy)
  - Degree of ongoing change
- L << P (discrepancy)
  - Degree of ongoing change

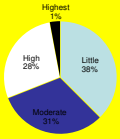
Remarks:
L means 'lexical change'
P means 'phonological change'
= means 'equal'
>> means 'faster than'
<< means 'slower than'

— Provincial boundary

Source: Questionnaire data from people aged between 10 – 20 in 2011

	OLD generation (%)	YOUNG generation (%)
L = P	44.89	52.15
L >> P	50.87	42.53
•little		
•moderate		
•high		
•highest		
L << P	4.24	5.32
•little		
•moderate		
high		
Total	100.00	100.00





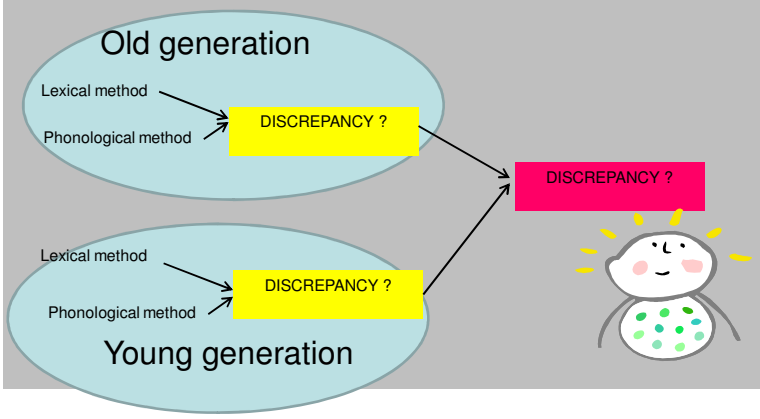
S. Teerarojanarat

The Findings

1. Most changes are from Northeastern Thai to Central Thai in the central and eastern part of the study area
2. The changes to Central Thai will occur faster in the young generation
3. Map confirm and help investigate the pattern of change

Further work

Comparison discrepancy between age groups (ongoing work)



Thank you for your attention

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The finding of the two previous works

By both methods, the comparison between two age groups shows that the spread of **Central Thai** to **Northeastern Thai** and **Northern Thai** is primarily found

Analysis Question?

Does a lexical change occur at higher speed than a phonological one?

For each age group :

- Is there any discrepancy/difference between lexical and phonological change ?
- If YES, lexical change is faster or slower than phonological change