

# Changes in time in space and space in time

— *the case of Cantonese language  
and Chinese script*

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(Wurm et al.1987)

Cantonese



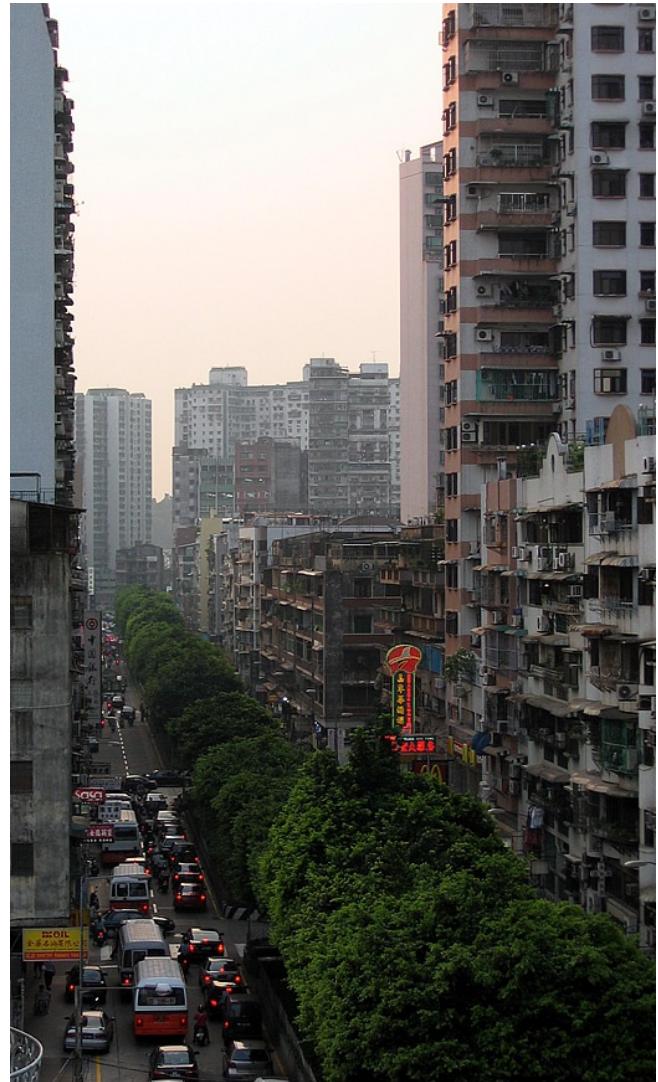
# Cantonese

Experiments in Hong Kong & Macau (July 2008)



# Hong Kong & Macau

- Mostly urban dwellers:



# Hong Kong & Macau

- Some rural dwellers and farmers:



# Hong Kong & Macau

- Some Tanka 蟹家 (“Sea Gypsies”)



# Cardinal directions

東南西北

*dung1 naam4 sai1 bak1*

'east south west north'

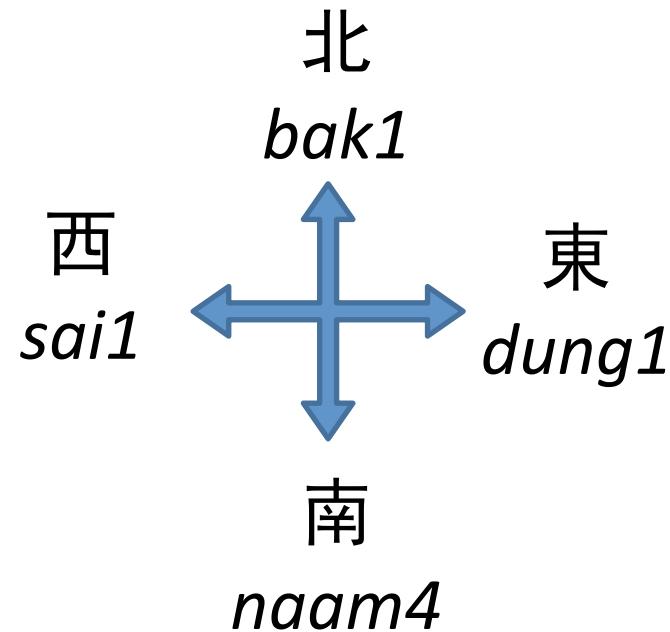
東: 木 + 日

east wood + sun

北→ 北 *bak1* 背 *bui3*

\*pāk(-s)

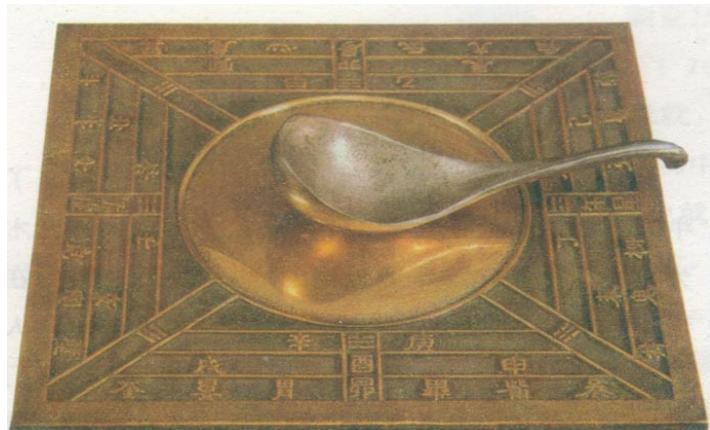
(ŋpākθ) (ŋpāksθ.)



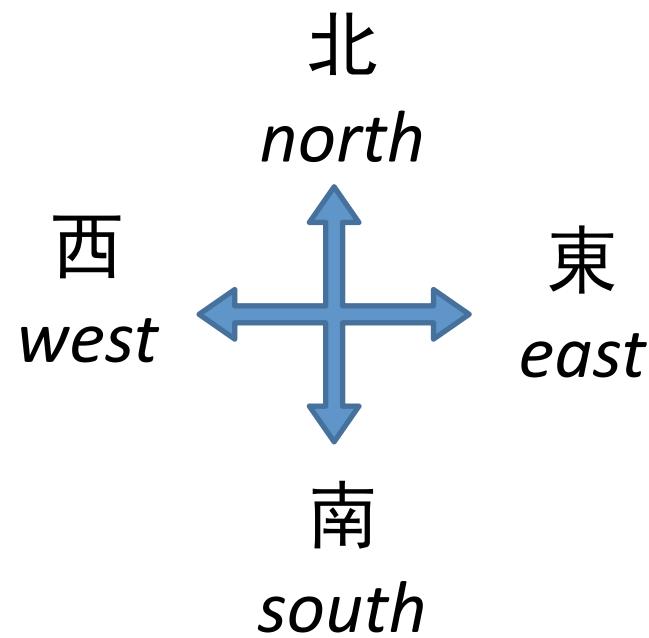
# Primacy of S

指南針 ‘compass’  
point south needle

指南 ‘guidebook’  
point south



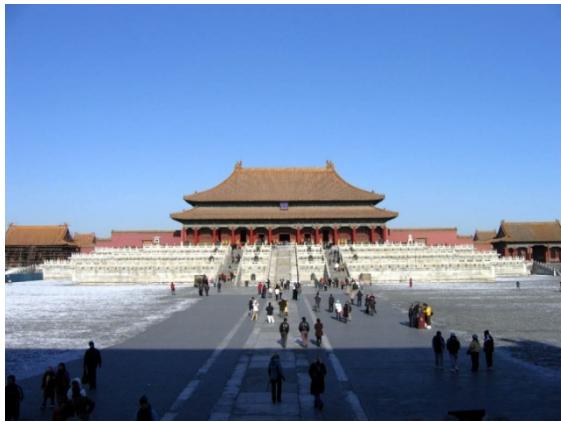
south pointing ladle





south pointing  
chariot





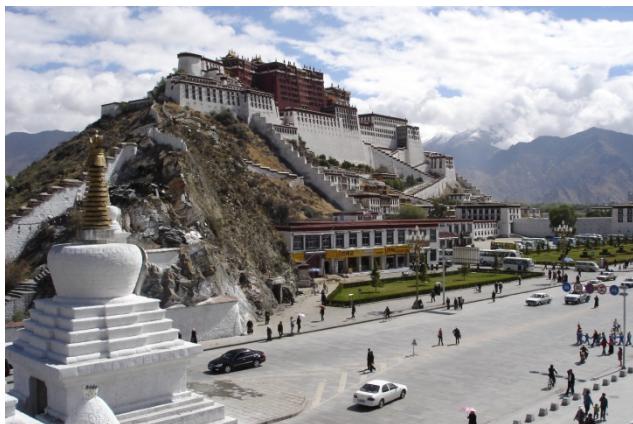
Forbidden City  
紫禁城



Ulaanbaatar: Winter  
Palace



Gyōngbokgung 景福宮



Potala Palace  
པැලා පාල

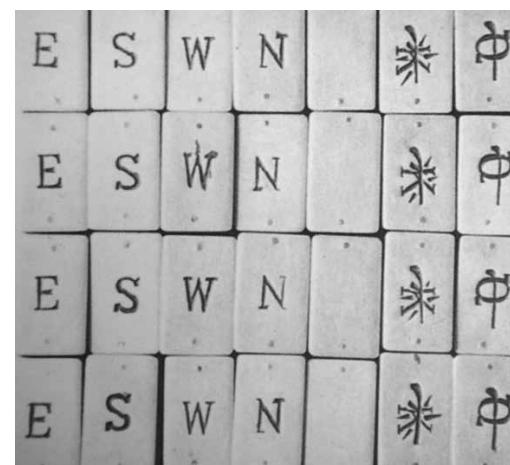
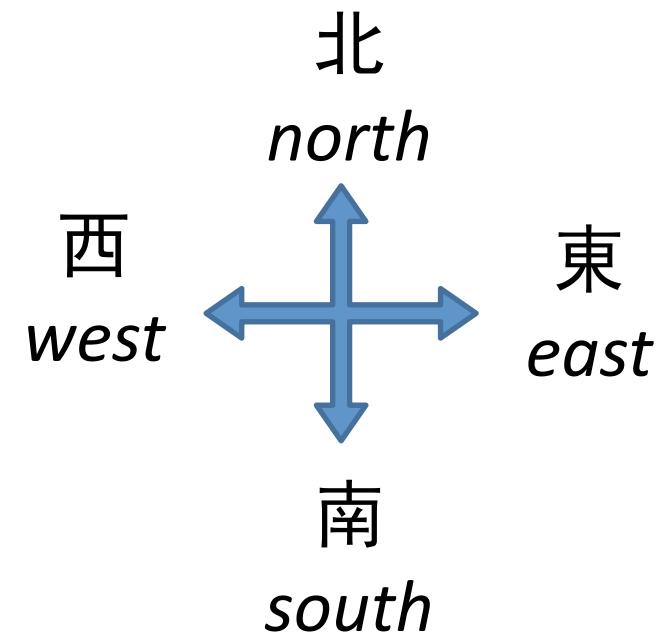


Kyōto Imperial Palace  
京都御苑



Hué Imperial City  
京城化

# Mahjong

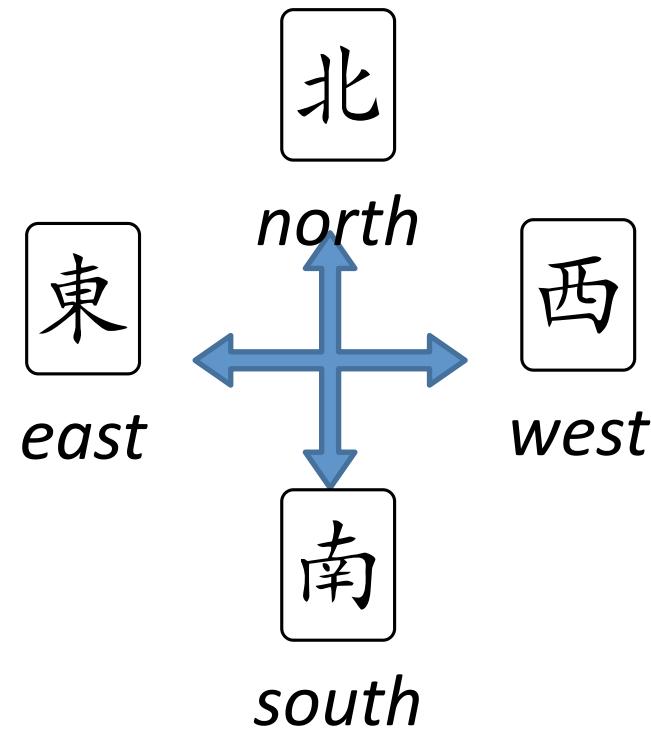
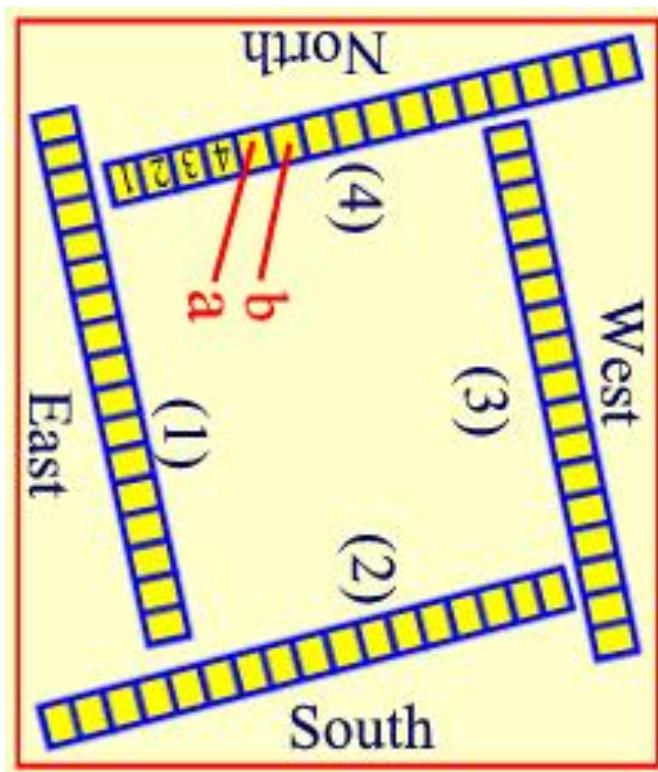
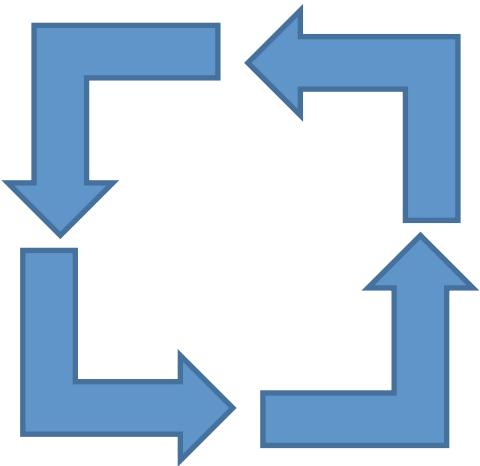


1F000

## Mahjong Tiles

1F02F

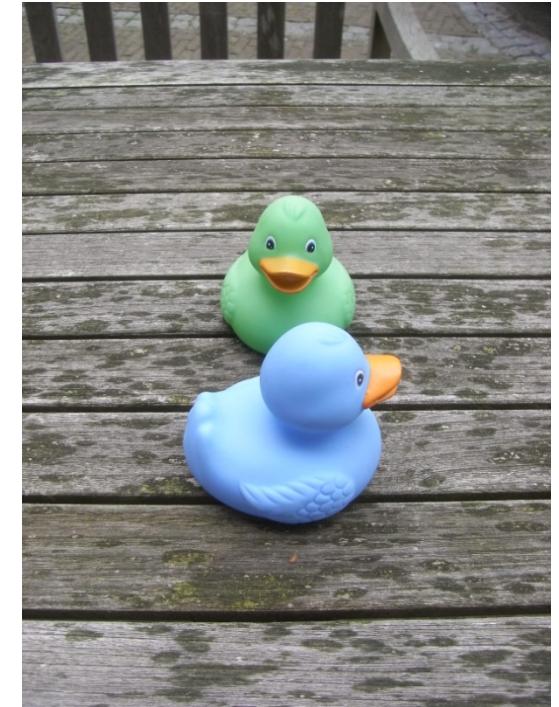
	1F00	1F01	1F02
0	東	南	西
1	南	南	南
2	西	北	南
3	北	北	南
4	中	中	中
•			
D	四	五	六
C	六	六	七
D	七	七	八
E	八	八	九
F	九	九	九



# Relative directions

後 <i>hau6</i> ‘back’	(上 <i>soeng5</i> ‘ascend’)	上 <i>soeng6</i> ‘above’	右 <i>jau6</i> ‘right’	前 <i>cin4</i> ‘front’
左 <i>zo2</i> ‘left’	下 <i>haa6</i> ‘below’	(落 <i>lok6</i> ‘descend’)		

# Intrinsic & Relative frame of reference



70 % Intrinsic FoR

30% Relative FoR

# Intrinsic & Relative frame of reference



Relative FoR

# Cantonese

Experiments in Hong Kong & Macau (July 2008);



- Summary of results:
  - left to right most prominent,
  - right to left also prominent,
  - some vertical orientation,
  - (no absolute frame of reference);

Influence from the directionality of Chinese script?

(Note: horizontal Chinese script typed by me:  $L \rightarrow R$   
e.g. 由左至右 *jau4 zo2 zi3 jau6* ‘from left to right’)

# Chinese characters



- one syllable (in Chinese languages);  
e.g. Mandarin **zì** [tsɿ᷑<sup>51</sup>], Shanghainese **z** [zz᷑<sup>13</sup>],  
Taiwanese **lī/chū** [li<sup>22</sup>/tsu<sup>22</sup>], Cantonese **zi6** [tsi<sup>22</sup>]
- around one morpheme;  
**字** ‘character’/ ‘writting’
- fits in a right angle quadrilateral;
- no physical linkage between  
characters (except in cursive  
handwriting).

# Vertical orientation

田上糸下  
田上糸下  
田上糸下  
田上糸下

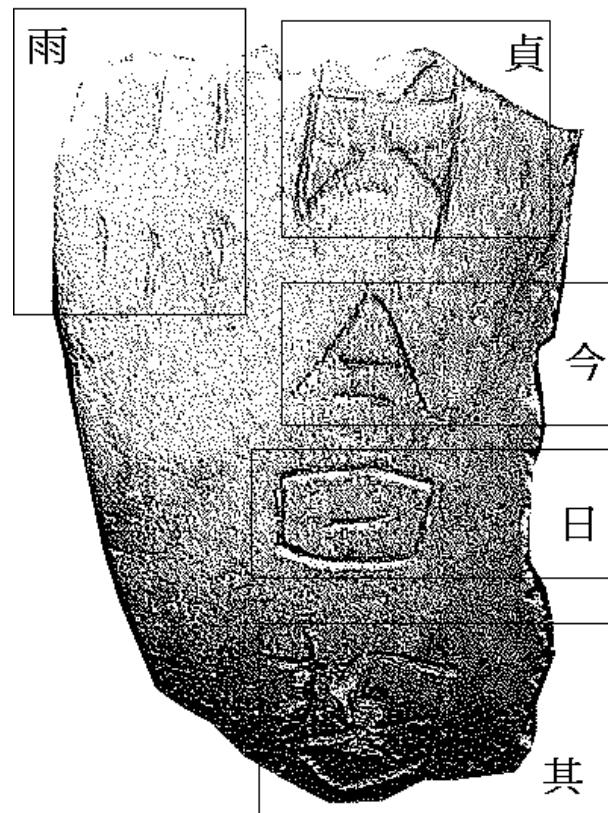
from top to bottom

田右糸左  
田右糸左  
田右糸左  
田右糸左

from top to bottom

from right to left

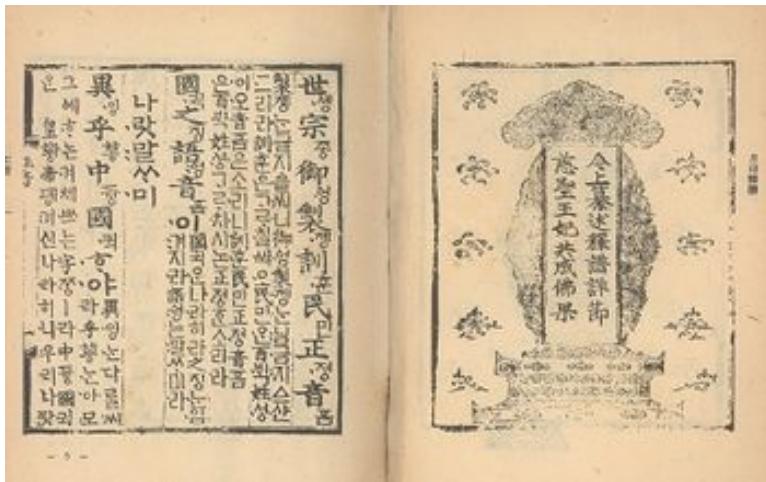
(e.g. Oracle Script, pre 11<sup>th</sup> century BCE)



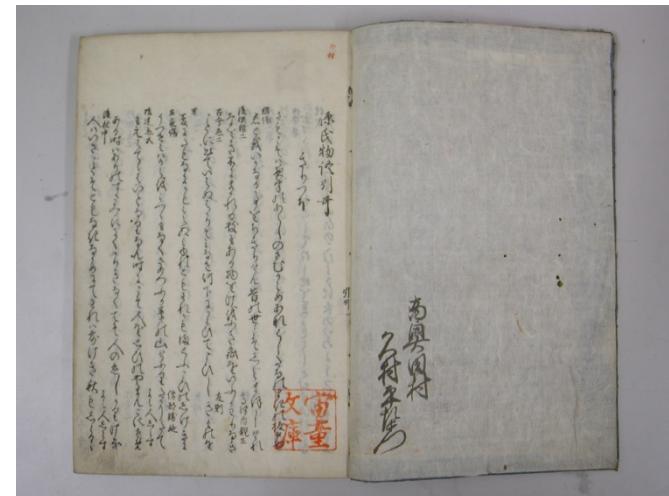
貞: 今日, 其雨 ?

Test: Today, will it rain?

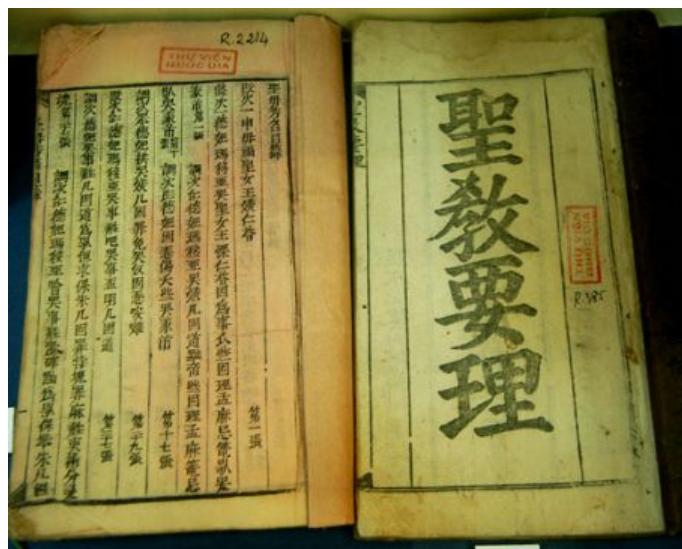
# Some early writing cultures within Sinosphere



←Korean  
朝鮮  
Japanese→  
日本



←  
Vietnamese  
越南



Ryukyuan→  
琉球

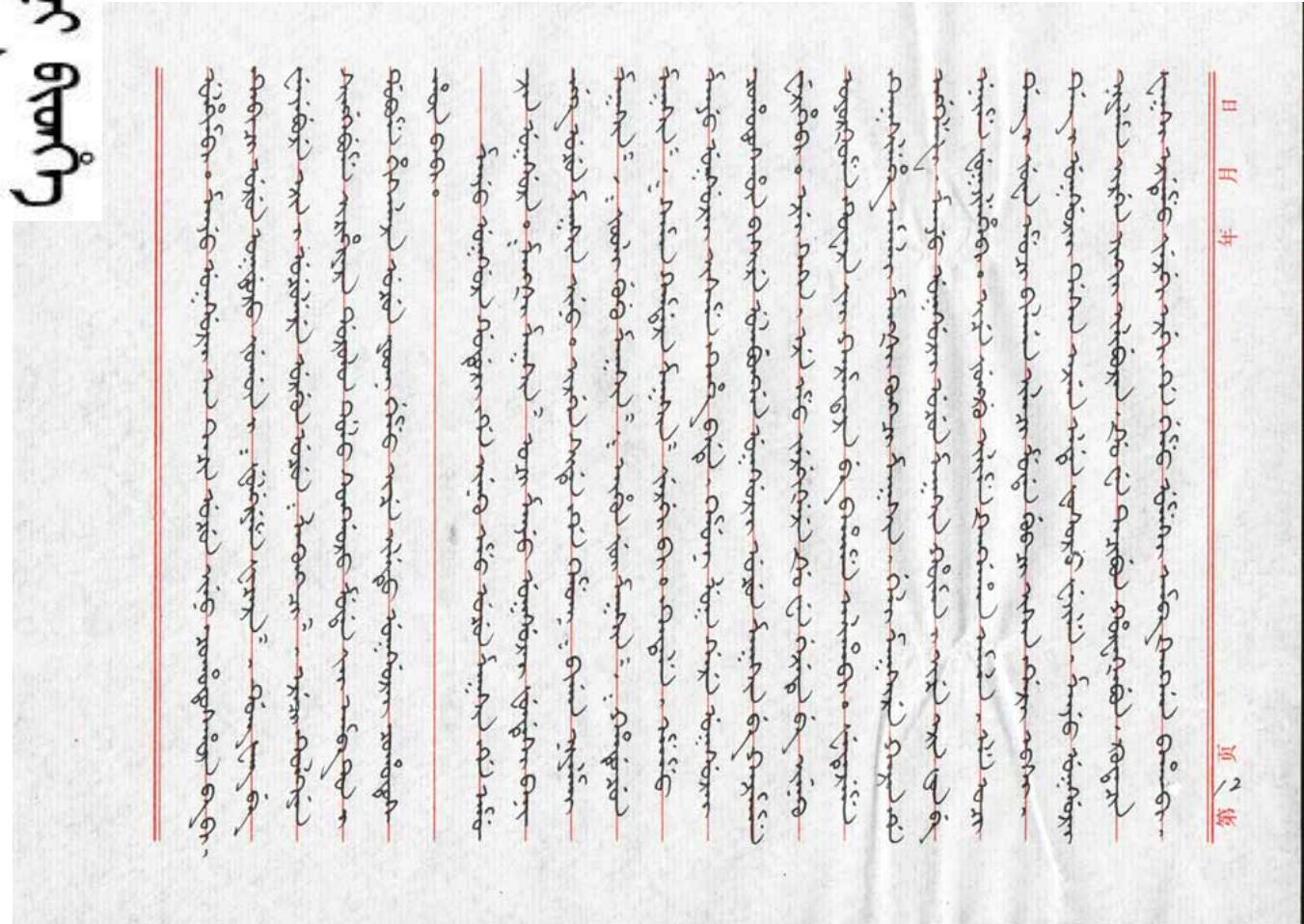




Manchurian  
滿洲

(top to bottom,  
left to right)

جۇڭ دەھىز وەپسى



However...



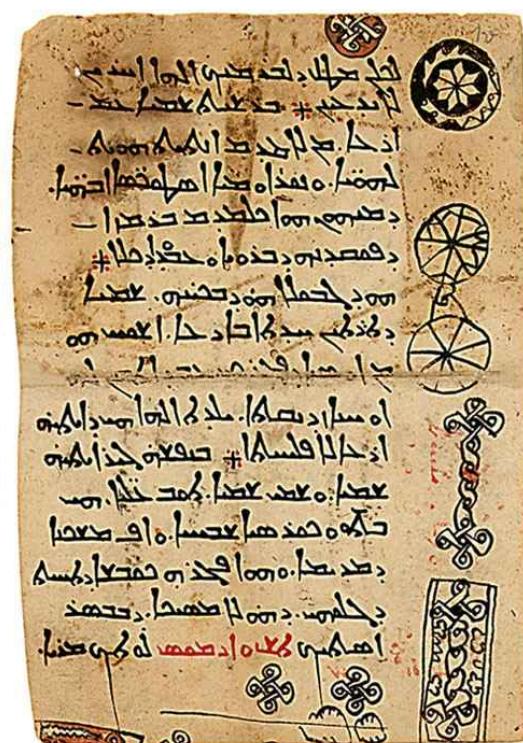
Syriac  
亞述  
ܣܼܻܴܵܶ



ଓଡ଼ିଆ

ବୁଦ୍ଧ ପାଦ ଓ ପାତାର ମନ୍ଦିର ଲାଗୁ  
କାହାର ମନ୍ଦିର ଲାଗୁ କାହାର ମନ୍ଦିର  
କାହାର ମନ୍ଦିର ଲାଗୁ କାହାର ମନ୍ଦିର

(Old) Soğdian  
粟特 Суғд Σούδ σ



MS 577  
Syriac Sertâ book script. Mt. Sinai, Egypt, ca. 11th c.

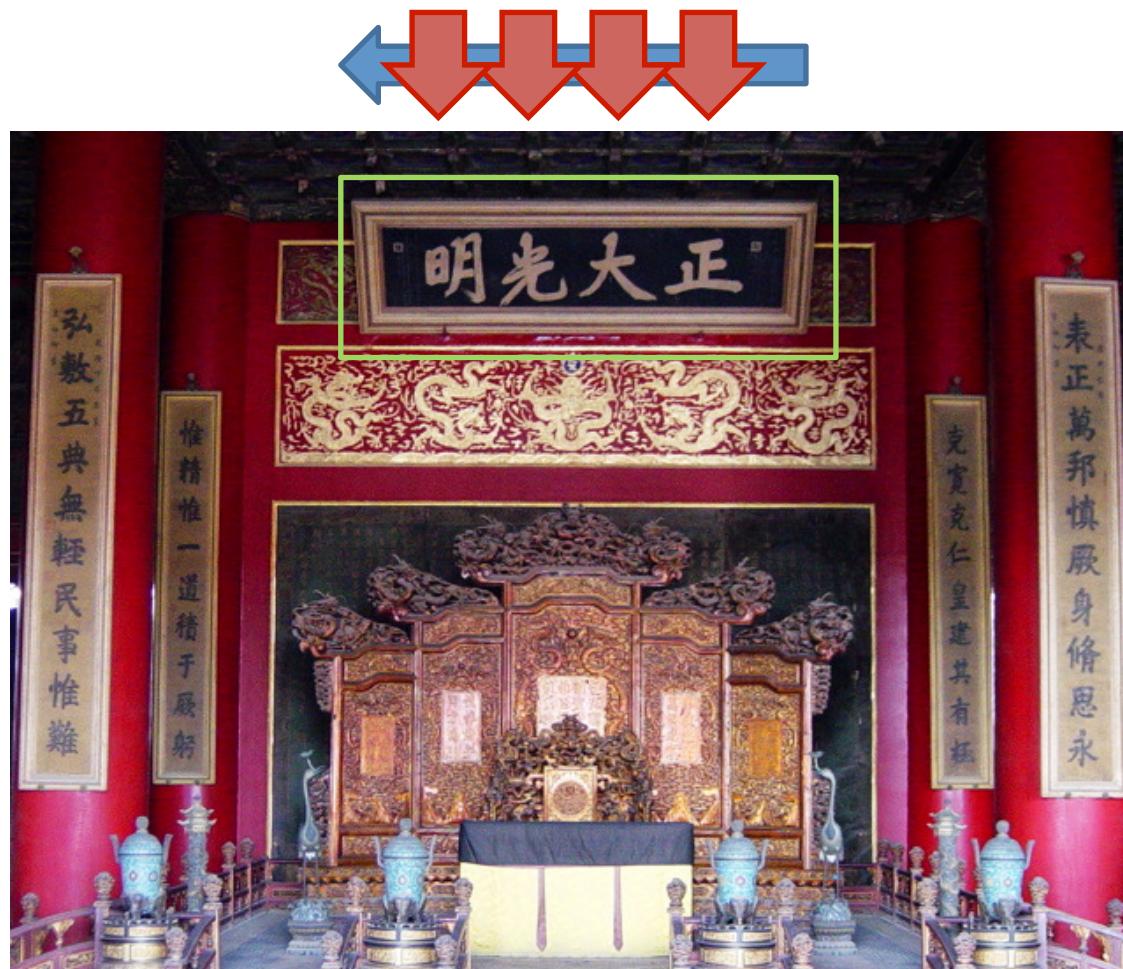
# Horizontal orientation

Mostly decorative, pre 20<sup>th</sup> century:

正大光明

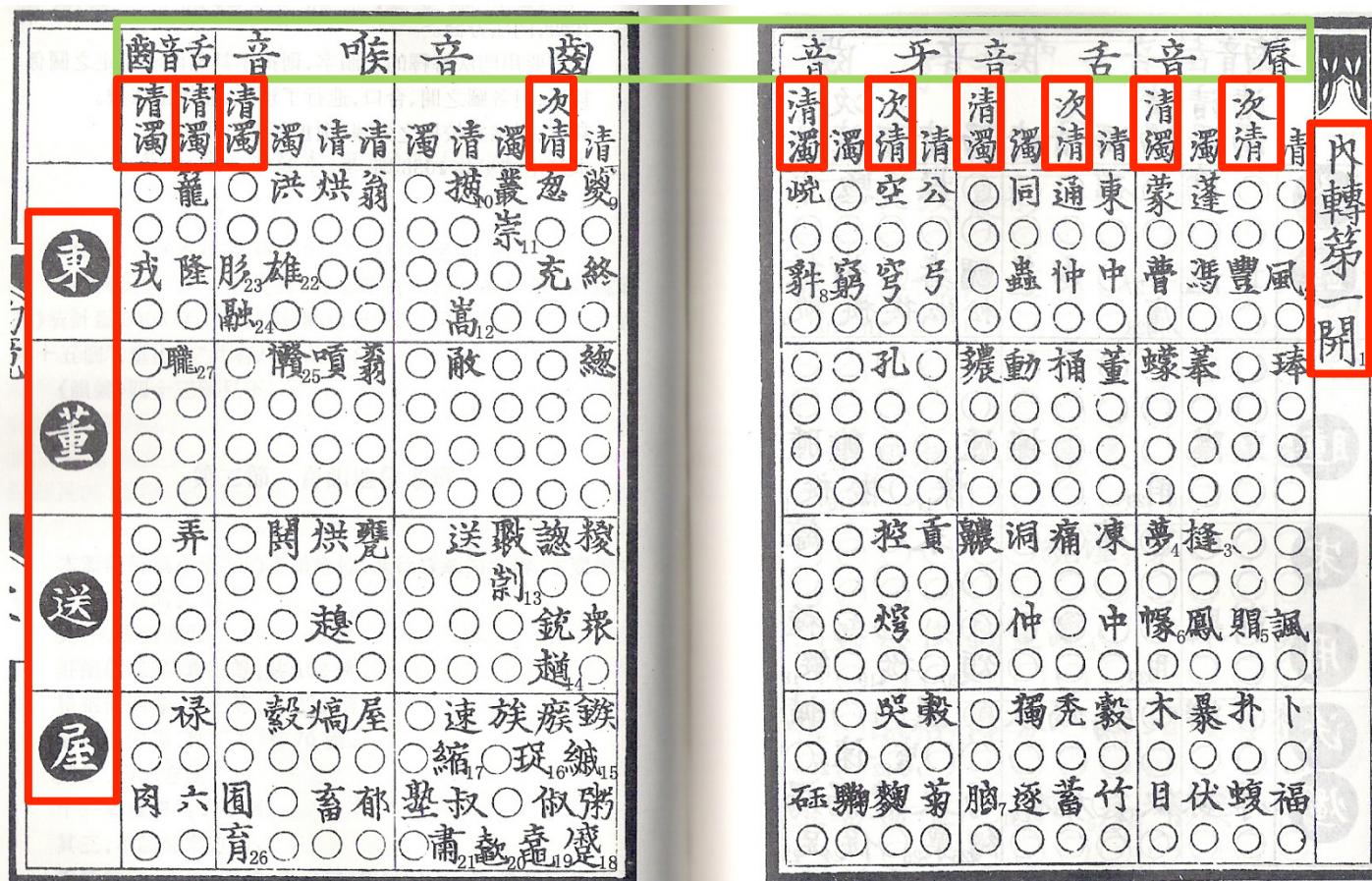
*zhèngdà gwāngmíng*

'Justice and Honour'



# Horizontal orientation

or occasionally in headings :

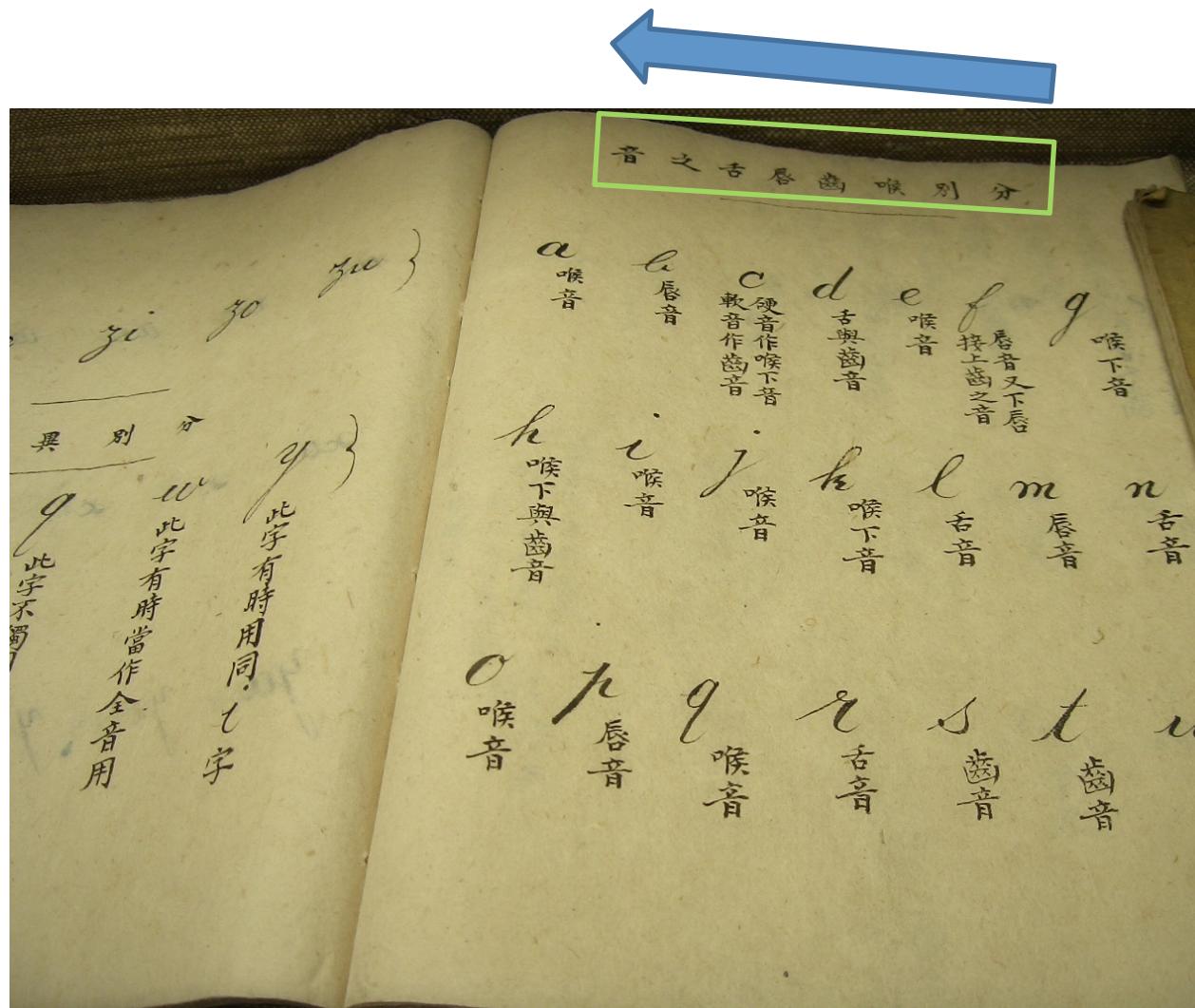


# Horizontal orientation

分別喉齒唇舌之音

*fēnbiě hóu chǐ chún shé  
zhī yīn*

'distinguishing the  
throat, tooth, lip  
& tongue sounds'  
(used by Aisingioro Puyi,  
1910s? 1920s?)



# Horizontal orientation



1920s/30s



1930s



1930s



1940s

# (Giant) pandas in 1940s



*Ailuropoda melanoleucus*

熊貓



# right to left (1950s HK ads)



left to right (1950s HK ads)

西德  
AEG-TELEFUNKEN

**德律風根** 冷氣機

香港政府最近宣佈將推行一項清潔空氣的宏大計劃，西德名廠 AEG 當明應該  
項計劃，特將其清潔系統及清新空氣功  
能特性之冷氣機優先選擇。德律風根冷  
氣機之清潔、外型美觀，且有多款種  
型可供選擇，馬力由一匹至三匹，適用  
任何環境。

各大電器公司電器行均有代售

總代理：連泰實業有限公司 電話：二二九六二三一·二四〇八七九

AEG 德律風根

雜牌刀片 質劣易鈍  
請買最佳的 藍吉列刀片



藍吉列刀片是世界上最鋒利之刀  
片，在吉列剃鬚刀內使用最換便利。  
吉列剃鬚刀售價每盒一元二毫。

**藍吉列刀片**  
Blue Gillette Blades

總代理：洛士利洋行有限公司

刃陀螺式太子型表  
**固若銀庫**



TUDOR

售價雖稍昂貴，實物有所值

此陀螺式太子型表之表頭乃由整塊金屬鑄成  
而無故裂缺口，光滑而穩固，並無機件保持高度  
準確耐用。

刃陀螺式太子型表由英國製造及經銷全世界  
勞力士公司總經理大廈地下 電話：H247031

# Macau Pataca banknotes



Banco Nacional Ultramarino  
大西洋國海外滙理銀行  
Cem Patacas 壹百圓 (1952)



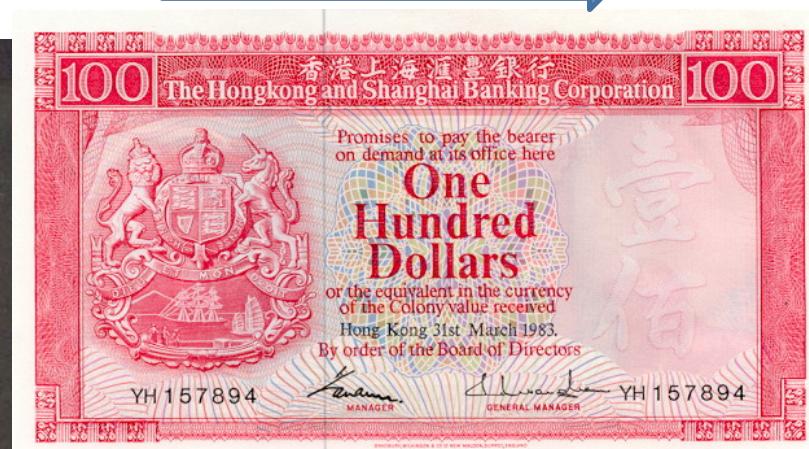
Banco Nacional Ultramarino  
葡國海外銀行  
Cem Patacas 壹百圓 (1973)



Banco Nacional Ultramarino  
大西洋銀行  
Cem Patacas 壹百圓 (1981)

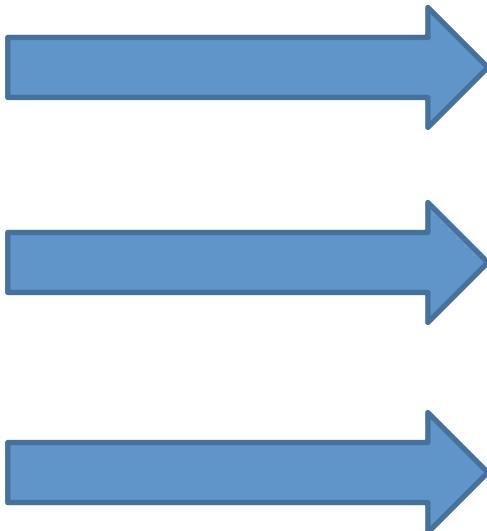
# Hong Kong Dollar banknotes

March 1983



January 1985

# Nowadays...



中原地產  
*zung1jyun4*  
*dei6caan2*  
'Centraline  
Real Estate'



免費專車  
*min5fai3*  
*zyun1ce1*  
'Free  
Shuttle Bus'



扬州外事旅游汽车公司

YANG ZHOU FOREZGN AFF AZRS & TRAVEL BUS COMPANY

司公车汽游旅事外州扬

YNAPMOC SUB LEVART & SRZA FFA NGZEROF UOHZ GNAY

*diabetes main cause pancreas health*

**糖尿病主因胰臟健康  
胰臟衰退 糖尿不侵**

*pancreas deteriorate diabetes not invade*

粉麵飯甜品汽水是醣類食品 容易引致血糖飆升  
國際護胰專家建議：  
保護胰臟健康是遠離糖尿最佳方法。

**專業鐵證 國際認同**

美國製造 一級品牌 國際專家 一致推崇  
西歐草本專業配方 臨床驗證功效肯定

美國FDA(美國藥物及食物管理局)証實：「有機鉻Organic GTF Chromium」與胰島素有絕對性的關係，而且對於胰臟健康更有莫大幫助。  
根據美國糖尿病協會的資料顯示，糖尿病患者身體所含「有機鉻Organic GTF Chromium」份量比正常健康人士少40%以上，更會因年齡增長而不斷缺少引致糖尿病嚴重惡化。

✓ 快速增強代謝  
✓ 促進新陳代謝  
✓ 补氣、荷爾蒙  
✓ 藥物化療  
切肢、中風  
併發症  
治療降血  
不能增強胰臟健  
更傷肝腎  
強效護胰  
✓ 快速平衡血  
✓ 改善高血糖  
✓ 瘢痕情況  
✓ 保持正常血  
✓ 有效加強胰  
不苦藥物化

# Hypothesis

- Chinese people's spatial representation of time is influenced by the direction of script:

In Hong Kong/ Macau:

- People born in or before 1940s would predominantly demonstrated R → L-ness;
- People born in or after 1980s would predominantly demonstrate L → R-ness.

(However: sample skewed

age ≈ 70 70 | 55 35 | 30 30 30 30 25 20

3D-pointing tasks couldn't be done with everyone)

# Environment in which the experiments were conducted

- 9 at the participants' home; 1 at the work place (all indoor in high-rise buildings);
- *the participants were sat/stood diagonal to the walls and patterns on the floor or table;*
- round tables were preferred (1 on the round edge of rec. table, 1 on edge of rec. table);
- *(due to time/cultural constraints), second sitting of the experiments conducted after a 30 min interval;*
- participants turned 180° for the second sitting; except two which were turned 90° (no signs of absolute frame of reference).

# Card arranging task



- right to left: ④ ③ ② ①

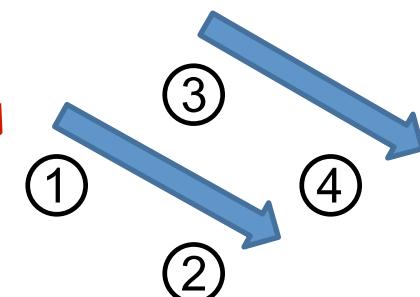
age ≈ 70 70 | 35 | 30

(→ for duck; ↔ for pregnancy)



- left to right: ① ② ③ ④

age ≈ 55 | 30 30 30 25 20



← ← → ← → ← → → →

age ≈ 70 70 55 35 30 30 30 25 20

# Summary of Card arranging task

(based on the skewed data:)

- **older speakers**

predominantly show a **right to left** orientation for spatial representation of time;



- **younger speakers**

predominantly show a **left to right** orientation for spatial representation of time.



# Spatial morphemes in temporal expressions

earlier portion/ preceding/ past:

*soeng6* 上 ‘above’      *cin4* 前 ‘front’

*heoi3* 去 ‘go’

later portion/ following/ future:

*haa6* 下 ‘below’    *hau6* 後 ‘back’

*loi4* 來 ‘come’

# Spatial terms in temporal expressions

daytime before-/afternoon:

*soeng6* *zau3* 上晝    *haa6* *zau3* 下晝

2 days before/after:

*cin4 jat6* 前日    *hau6 jat6* 後日

last last/ last / next/ next next years (from now):

*cin4 nin2*    *soeng6 nin2*    *haa6 nin2*    *hau6 nin2*  
前年              上年              下年              後年

(These are the only two instances where front/back signify '2'.)

# Spatial terms in temporal expressions

*cin4 nin2* 前年 ‘2 years ago’

*zi1 cin4 go1 nin4* 之前嘅年 ‘the preceding year’  
(‘s front that year)

‘Last/ next life’ 來世  
*loi4 sai3*

*cin4 sai3= soeng6 sai3 haa6 sai3=hau6 sai3*  
前世 上世 下世 後世

# Spatial terms in temporal expressions

last X/ next X:

*soeng6* 上 ‘above’/ *haa6* 下 ‘below’

*soeng6 go3 jyut6* 上個月

(up CL month)

‘last month’

*haa6 go3 jyut6* 下個月

(down CL month)

‘next month’

# Spatial terms in temporal expressions

past/ future:

-*cin4* -前 (-front)/ -*hau6* -後 (-back)

*zi1 cin4 go1 go3 jyut6* 之前 嘅個月

('s front that CL month) ‘the preceding month’

*zi1 hau6 go1 go3 jyut6* 之後 嘅個月

('s back that CL month) ‘the following month’

# Spatial terms in temporal expressions

past/ future:

-*cin4* -前 (-front)/ -*hau6* -後 (-back)

佢之後 話：「我以前好天真」。

*keoi5 zi1hau6 waa6: 'ngo5 ji5cin4 hou2 tin1zan1'*

3sg after.that said 1sg before very naïve

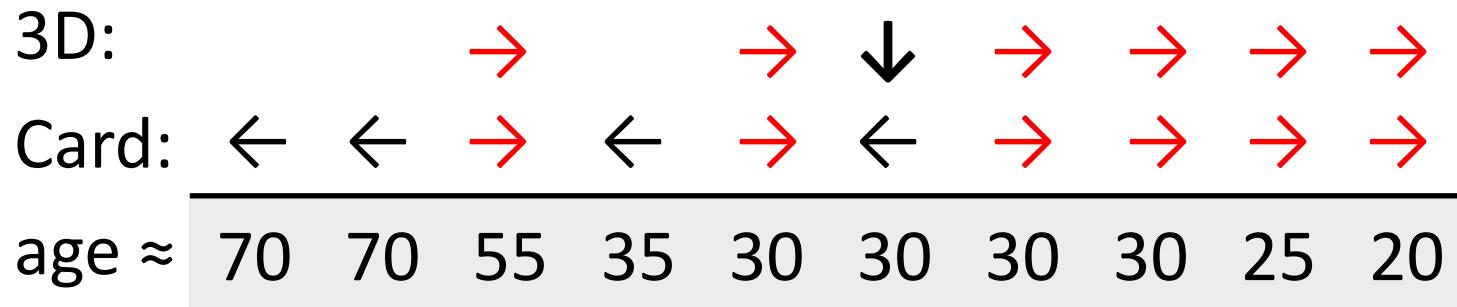
‘S/he said afterwards; “I used to be very naïve”.’

# Summary of 3D pointing task

- The two 3D pointing sessions were conducted immediately after the two card arranging sessions;
- In many cases the triad ‘2 days ago, today, 2 days ahead’ were added ;
- Unfortunately the 3D pointing task could not be conducted with everyone...

# Summary of 3D pointing task

- All participants who demonstrated a L to R orientation → in the Card arranging task also demonstrated a L to R orientation → in the 3D pointing task;
- As for the others: one demonstrated a ↓ orientation



# Summary of 3D pointing task

Consultant #2:

predominantly right to left ←, e.g.:

*hau6jat6* 後日

day after tomorrow

下個星期

*cin4jat6* 前日

day before yesterday

上個星期

*haa6 go3 sing1kei4*

*sing1kei4* next week

*soeng6 go3*

last week

3D:

← → → ↓ → → → →

Card:

← ← → ← → ← → → →

age ≈

70	70	55	35	30	30	30	25	20
----	----	----	----	----	----	----	----	----

# Summary of 3D pointing task

Consultant #2:

back to front:

*gwo3 heoi3* 過去 past

*zoeng1 loi4* 將來 future

bottom to top:

*haa6 zuu3* 下晝 afternoon

*soeng6 zuu3* 上晝 morning

3D:

← → → ↓ → → → →

Card:

← ← → ← → ← → → →

age ≈

70	70	55	35	30	30	30	25	20
----	----	----	----	----	----	----	----	----