On Linguistic Universality: **Spatial Schema of Mandarin Postposition lǐ**

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1. Introduction

-     Levinson and his research group(Levinson, Meira, et al. , 2003) suggested that

-     Quite precise and complex axial geometry seems to be involved in so-called topological concepts ;

-     Notions like IN or ON do not seem to be primitive holistic concepts.

-     Many languages seem to make alternative kinds of distinctions, which are learned just as early.

-     In many languages topological concepts are wholly or partially expressed in contrastive locative verbs.

- • 　　　There're, however, some weak points in the argument of Levinson, and Meira, et al (2003).

- - 　First, in the fieldwork, they only asked the participants to give the choice of different adpositions to various scenes.

- a. They only asked them "where is something", but not "why is that ADP used". In other words, they didn't let the consultants reveal their related psychological states that determined their choice of ADPs.

- b. Are these ADPs the only ones they could make? Are there alternatives?
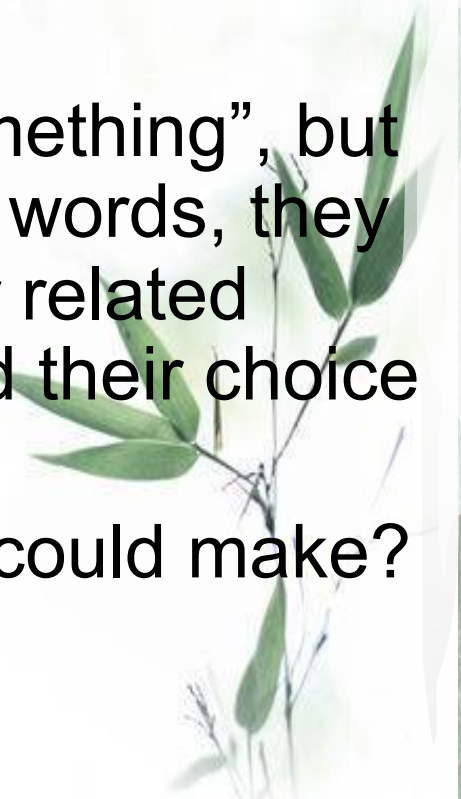
c. What factors governed their selection?

d. Can these factors be instructed to them and then influence their selection?

Most of these questions lack answers in Levinson's research work.

- Second, his arguments were not only established on closed class forms, but established on open class forms.

- However, Talmy(2000a) argues to study closed class forms, which only contain limited members and are comparatively fixed. Reasons:

a. Open classes usually are related directly to the world, but closed classes indirectly to the world.

b. The former provides a sentence with its content, and the latter provides with structure.

- Thirdly, the spatial concepts covered by the work of Levinson(2003; Levinson, S. C., and Wilkins, D. P. 2006) were not systematic：

- Some important elements like relative magnitude, force dynamics, etc. were not included in his spatial system.

- As a result, some other spatial parameters put foreward by Talmy(2000a; 2005; 2010) were not discussed by him.

- All these reasons prevented him from obtaining a true and comprehensive elaboration of the spatial schematic system of languages.
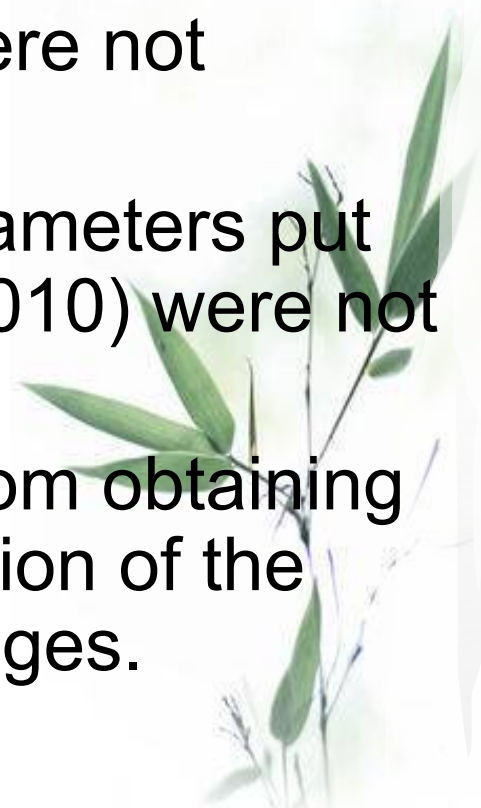
2. Fundamental System of Spatial Schemas

- This paper aims to use the fundamental system of spatial schemas(FSOSS) put foreward by Talmy(1972; 2000a; 2003; 2005; 2008; 2010; 2012a). Reason:

- FSOSS put forward by Talmy can cover nearly all the underlying spatial concepts involving all Chinese postpositions.

- This result is against Levinson's claim that the differences between various spatial elements are significant and supports the claim that there probably exists a universally available inventory of fundamental spatial categories and elements.

- Talmy(2005: 199 - 234) put forward a "fundamental system of spatial schemas (FSOSS)" of language.
- Talmy(2005) discussed eighteen categories.
- Talmy(2010: 82 - 139) added other three categories.
- So there are altogether 21 spatial categories put forward by Talmy, containing altogether 57 elements.
- The 21 categories can be grouped into four classes `pertaining  respectively to`:
- the scene segmentation
- the individual component properties
- the relation of one scene component to another
- categories of nongeometric elements frequently in association with spatial schemas.
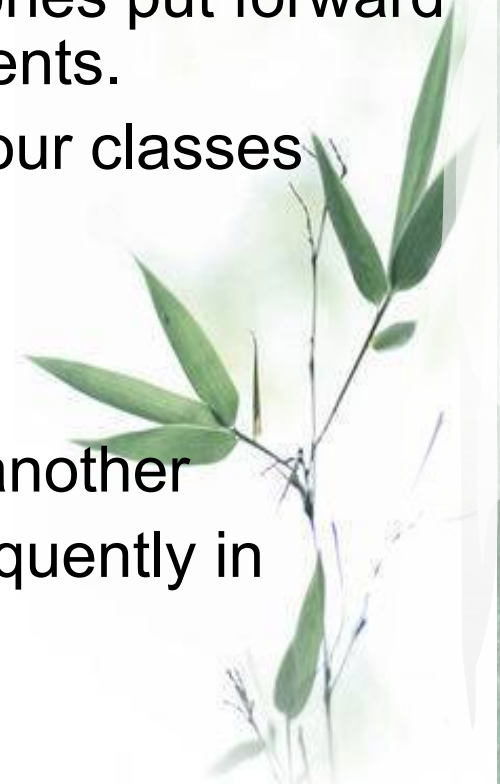
3.The Current Research of Chinese Postpositions

- Shuxiang Lǚ(1942) argued that,

  "*In modern Chinese, locative nouns are generally needed in locative constructions except for proper place names. The most common locative nouns are lǐ, shang, and xia.*"

- Related to the usage of Chinese postpositions, Lǚ(1990) summarized that,

- "*We may say that monosyllabic locative nouns have three functions: (1) to construct locational phrases, (2) to be preceding elements in complex nouns, (3) to form adverbial phrases with prepositions. But disyllabic locative nouns only have two functions: (1) to construct locational phrases, (2) to be used singly(with the exception of 'zhi + POST' and 'yi + POST)' "*

- Lǔ(2002) further summarized that,
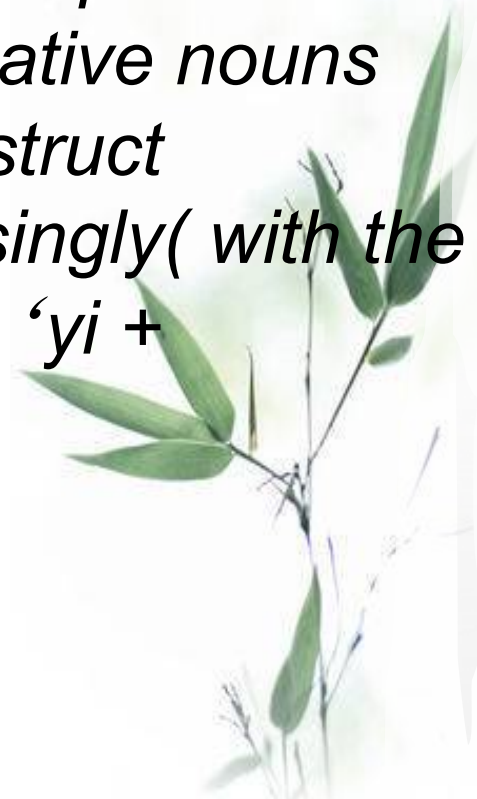
- "There are monosyllabic and disyllabic locative nouns. Disyllabic locative nouns can follow some other words(mainly nouns) or phrases, forming locative phrases, and can also be used singly(with a few exceptions). Monosyllabic locative nouns are mainly used after nouns or other words, and usually not singly … Locative nouns are often in collocation with prepositions like 'zai(AT), cong(FROM), dao(TO), etc.' 'Pre. + N.' phrases in other languages should be expressed in the form of 'pre. + N. + POST in Chinese.' For example, English 'in the room' should be expressed as 'zai wuzi lǐ' (being located at the room in), in Chinese." (Lǚ, 2002:13-19)

- But Lǚ's summarization is based solely on surface linguistic forms. Lǚ put forward that Chinese locative nouns are generally thought as a subclass of nouns.

- In this study, Chinese locative nouns are taken as postpositions since they are usually used after nouns.

4. Methodology of Collecting Data

- In this study, three ways are used to collect data: field work, corpora and baidu.com.

- The first source: fieldwork(Table 1)

Table 1. The Sample	
REGIONS	CONSULTANTS
Beijing	7
Tangquan	7
Zhengzhou	1
Jianxi	1
Chanhe	1
Laocheng	1
Yanshi	2
Sanmenxia	3

- The second source: corpora. Two large corpora were searched for examples:

a. the Chinese Corpus of Peking University(CCL) and

b. the Chinese National Corpus(CNC)

- The third source: baidu.com.

• What is the standard for data selecting?

- According to Talmy(2000b: 27), the characteristic linguistic data should satisfy the three requirements of being colloquial,frequen and pervasive. Reason:

  Spoken data reflects a language user's online psychology.
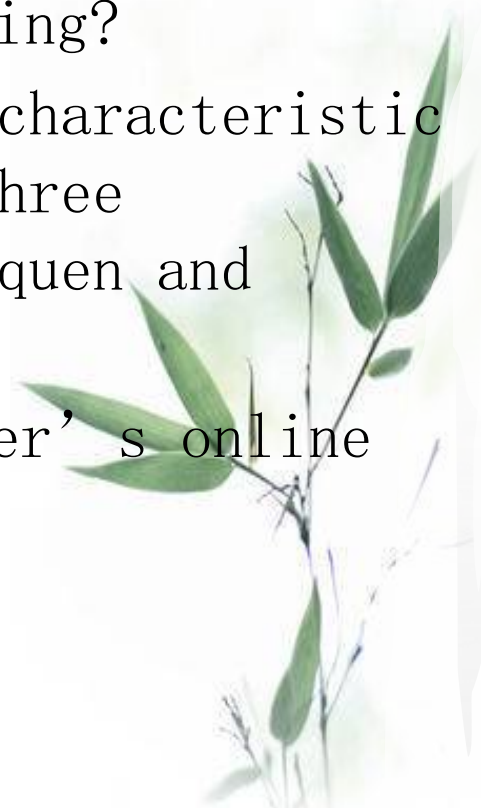
- On the browser of CCL, `we use` key word lǐ. The browsing result is 545389 sentences. On the browser of CNC, the same key word browsing result is 18805 sentences. For a general analysis, however, altogether only 500 examples are downloaded from CCL and 5000 from CNC. A very careful study are made to all the 500 examples from CCL(from no. 1 to no. 500, especially the first 157[It is known that, the first part of CCL is the `file of the` Contemporary Spoken Beijing Dialect Survey made in 1982. 157 data were obtained from this part. These 157 examples are spoken Chinese .) And the whole first group of 1583 from CNC (from no. 1 to no. 1583) `were also studied`. Consequently most examples are from these 2,083 data.

Additionally, some collocations of lǐ, like panzi lǐ, "in the dish", che lǐ, "in the car", jia-lǐ, "at home" were downloaded by browsing these collocations respectively from CCL or CNC[Some of those examples probably are beyond the above 5,500 data since these collocations were browsed independently.] or baidu.com.

- In this thesis, lǐ, lǐ-tou, lǐ-mian, lǐ-bian, are not distinguished, i.e., they are taken as synonyms.

5. A Quantitative Field Based Spatial Semantic Analysis of lǐ Schema

Table 2 Frequency of lǐ and shàng

Question number	Frequency of lǐ	Frequency of shàng
Q1	1.00(23)	0(0)
Q2	.24(6)	.76(19)
Q3	.04(1)	.96(22)
Q4	1.00(23)	0(0)
Q5	.53(18)	.47(16)
Q6	0(0)	1.00(7)
Q7	1.00(2	0(0)
Q8	.81(21)	.19(5)
Q9	.96(22)	.04(1)
Q10	.29(8)	.71(20)

- From the table, for Q1, Q4, Q7, Q15, percentage of the number of consultants who choose lǐ is 100%.

- As for Q6, all the consultants choose postposition shàng.

- For other Qs, there're different frequencies between the selection of li3 and shang4.

- For Q2, $\chi^2(1) = 6.760$, p <.10, the critical value is 2.706, 6.760 > 2.706, as means that the consultants tend to use shàng for scene 2.

- Q3, $\chi^2(1) = 19.174$, p <.01, the critical value is 6.64, 19.174 > 6.64, as means the consultants tend to use shàng for scene 3.Q5, $\chi^2(1)= 0.118$, p <.10, the critical value is 2.706, 0.118< 2.706, as means the consultants tend to use lǐ and shàng equally for scene 5. Q8, $\chi^2(1)= 9.846$, p <.01, the critical value is 6.64, 9.846 > 6.64, as means the consultants tend to use lǐ for scene 8. Q9, $\chi^2(1) = 19.174$, p <.01, the critical value is 6.64, 19.174 > 6.64, as means the consultants tend to use lǐ for scene 9.

- Q10, $\chi^2(1)$= 5.143, p <.10, the critical value is 2.706, 5.143 > 2.706, as means that the consultants tend to use shàng for scene 10. Q11, $\chi^2(1)$= 8.167, p <.01, the critical value is 6.64, 8.167 > 6.64, as means the consultants tend to use lǐ for scene 11. Q12, $\chi^2(1)$= 2.613, p <.10, the critical value is 2.706, 2.613 <2.706, as means the consultants tend to use lǐ and shàng equally for scene 12. Q13, $\chi^2(1)$= 1.286, p <.10, the critical value is 2.706, 1.286 < 2.706, as means the consultants tend to use lǐ and shàng equally for scene 13. Q14, $\chi^2(1)$= 0.133, p <.01, the critical value is 6.64, 0.133 < 6.64, as means the consultants tend to use lǐ and shàng equally for scene 14.

6. A corpus analysis of lǐ schema

6.1 Categories pertaining to scene segmentation of lǐ schema

(1)a.仓库里头那个保管员, 五十七了。（CCL）

Cangku li-tou na-ge baoguanyuan, wushi-qi-le.

Warehouse in-SUF that-CL keeper, fifty-seven-PFV

That man in the warehouse is 57.

b.大厅里有电话。

Da-ting li you dianhua.

Big-hall in there is telephone.

There's a telephone in the hall.

6.2 Categories pertaining to the characteristics of an individual spatial scene component of lǐ schema

6.2.1 Dimension

(2) 以这种管理方法生产出来的产品，就不需要到仓库里去挑废品。（CNC）

Yi zhe zhong guanli fangfa shengchan chu-lai de chanpin, jiu bu xuyao dao cangku li-qu tiao feipin.

　By this type managing method produce out-come de product, then not need go to warehouse in-go single out waste products

　For the products produced using this management method, you needn't go into the warehouse to single out the waste products.

　(3) 现在住美术馆头里头，对着那个美术馆。(CCL)

Xianzai zhu meishuguan-tou-li-tou, dui-zhe nage meishuguan.

Now live Art Museum-end-in-end, face-ing that Art Museum

He now lives in (at) the end of the Art Museum of China, facing the Art Museum

6.2.2 Number

(4)a. 青草漫地的上边，有人用石块堆做两条直线，据说线里便是汽车路。（CNC）

Qing cao man di de shang-bian, you ren yong shikuai dui zuo liang-tiao zhi-xian, jushuo xian li bian-shi qiche lu.

Green grass cover earth de on-side, there are people use rock pile up as two-CL straight-line, it's said that line in probably is motor road

On the green grass, people piled stones up as two lines. It's said that the motor road is between the two lines

 b. 人们在这些空气新鲜的森林里休息、跑步或玩耍。

Renmen zai zhexie kongqi xinxian de senlin li xiuxi、paobu huo wanshua.

People (being) located at these air fresh de woods in rest, jog or play games

People rest, jog or play games in these woods where the air is fresh.

6.2.3 Motive state

(5)a. (他们）坐在车里，似乎迎面而来的原野、山峦都罩上一层神秘的色彩。(CCPU)

(Tamen) zuo zai che li, sihu ying-mian-er-lai de yuanye、shanluan dou zhao-shang yi-ceng shenmi-de secai.

(They) sit (being) located at car in, seem toward-face-PAR-come PAR field mountains all cover-on a-CL myster(y)-ious color
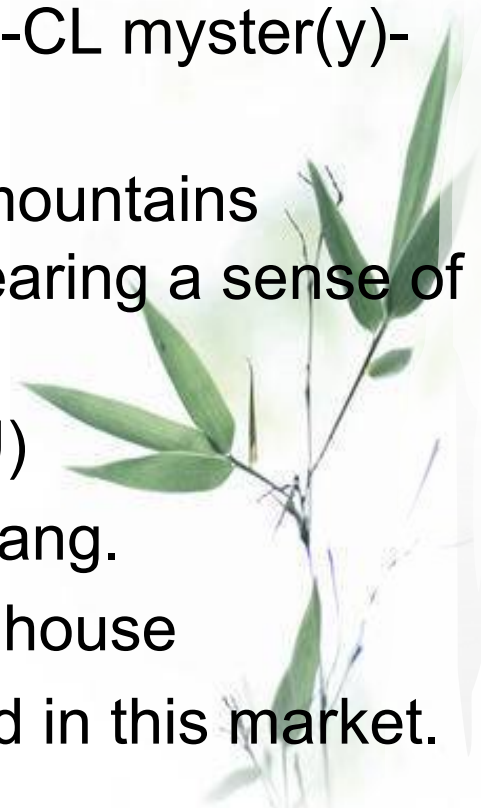
They sat in the car, and the fields and the mountains coming toward them all seemed to be wearing a sense of mystery.

b. 那会儿这个市场里不准盖房。(CCPU)

Nahui-er zhege shichang li bu zhun gai fang.

Then-SUF this market in not permit build house

Then , building a house was not permitted in this market.

6.2.5 Type of Geometry

(6) a.到医院看病的人，为了近便，常从营房里穿过。
（CNC）

Dao yiyuan kanbing de ren, weile jinbian, chang cong
yingfang li chuan-guo.

To hospital see the doctor PAR people, for convenience,
often from quarters in penetrate-through

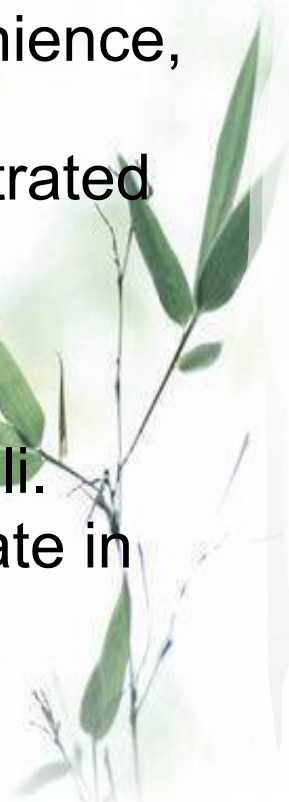Those going hospital to see the doctor often penetrated
through the quarters for

A short cut.

b.他们把钱放到我面前的盘子里。（CCPU）

Tamen ba qian fang-dao wo mianqian de panzi-li.

They letting money put-at me in front of PAR plate in

They put the money in the plate in front of me.

6.3 Categories pertaining to the relation that one scene component of lǐ schema can have to another

6.3.1 Degree of remove

(7)a. 我俩沿着省教育厅的庭院里边漫步边谈。

Wo liang yanzhe sheng jiao-yu ting de ting-yuan-li (de daolu) bian man-bu bian tan.

We two along province teaching-cultivating department PAR court-yard in (PAR road) while walk while talk

We two had a talk while walking along (the roads) in the courtyard of the provincial educating department.

b. 绕着观里反复的转,也许在哪就能碰上呢。

Raozhe guan-li (de fangzi) fanfu de zhuan, yexu zai na jiuneng peng-shang ne.

Around temple-in (PAR house) over and over PAR stroll, maybe being located at a place then meet-on PAR

Strolling around (the houses) in the temple, maybe you will meet it somewhere.

6.3.2 Relative magnitude

According to Talmy(2010:115), the spatial category of "relative magnitude" has perhaps three elements: less than, equal to, greater than.

(8)a.把鸡骨头放到盘子里，盖上盖。(CCPU)

Ba ji gu-tou fang-dao panzi-li, gai-shang gai.

letting chicken bone-end put-to dish-in, cover-PFV lid

Put the chicken bone in the dish and covered it with a lid.

b.老者停下来，晃着他手里的鸟笼说。(CCPU)

Lao-zhe ting-xia-lai, huang-zhe ta shou-li de niao-long shuo.

Old-person stop-down-coming, shake-PROG his hand-in PAR bird-cage say

The old man stopped and said, shaking the bird cage in his hand.

6. 4 Non-geometric categories
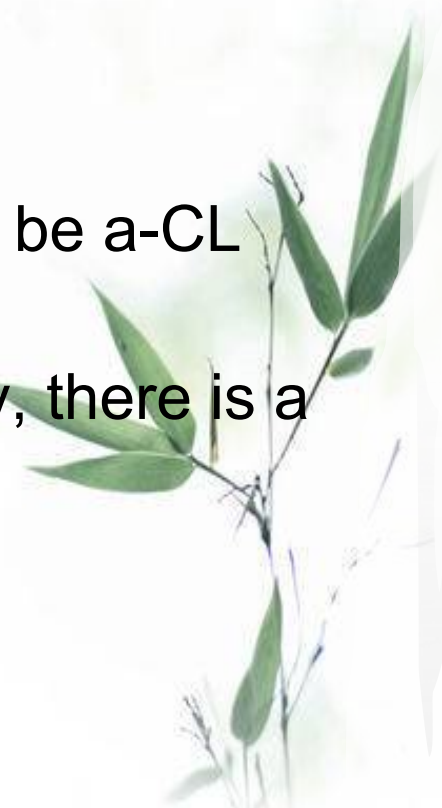
6. 4. 1 Force dynamics

The category of "force of dynamics" has two members: present or absent(Talmy, 2010: 115).

(9)天边的血红的云彩里有一个光芒四射的太阳。（CNC）

Tian-bian de xue-hong de yuncai-lǐ you yi-ge guangmangsishe de taiyang.

Sky-edge PAR blood-red PAR cloud-in there be a-CL radiant PAR sun

In the blood red clouds at the edge of the sky, there is a radiant sun.

7. Discussion

The fundamental conceptual schema of postposition lǐ:

(10) 少数人坐在房子里。

Shao-shu ren zuo-zai fangzi-li.

A few-number people sit-being located at house-in

A few people sat in a house.

A. An F=a few people

B. A G=a house

C. The G is a three dimensional volume: an element of the category of "dimensionality" — vs

少数人坐在地板上。

Shao-shu ren zuo-zai diban-shang.

A few-number people sit-being located at floor-on

A few people sat on the floor.

D.The G is bounded: an element of the "boundedness" category — vs 少数人坐在地上。

A few-number people sit-being located at floor-on

A few people sat on the floor.

E. The G suggests a relatively compact 3-dimensional region: an element of "state of consolidation" category

— vs 少数人坐在房子周围。

  Shao-shu ren zuo-zai fangzi-zhouwei.

A few-number people sit-being located at house-around

A few people sat around the house.

F. The F is located in a part of the G: the coincidence(with contact) is an element of "the degree of remove" category

— vs 少数人坐在房子外。

Shao-shu ren zuo-zai fangzi-wai.

A few-number people sit-being located at house-outside

A few people sat outside the house.

G. The F is smaller than the G: an element of "the degree of magnitude" category

— vs 几个人围着房子坐。

Ji-ge ren weizhe fangzi zuo.

Several-CL people surrounding house sit

Several people sat surrounding the house.

From the above analysis, we can obtain the fundamental conceptual schema of postposition lǐ:

The fundamental conceptual schema of postposition lǐ:

In the spatial schema of postposition lǐ, the F of lǐ is prototypically completely or partly within the boundary of a three dimensional volume G.
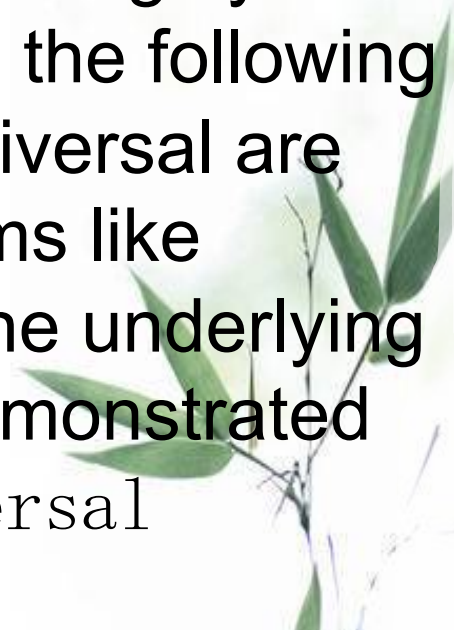
8. Conclusion

Based on the above analysis, this thesis concludes that:

1. Such spatial concepts like proximity, contiguity, and containment can be covered by Talmy's category of "degree of remove", to be more specific, by the elements of coincidence and adjacency(with contact), and proximal, perhaps medial, and distal remove (without contact).

2. Such notions like IN, ON, etc., can not be taken as to be primitive. Moreover, they can be further analyzed into more specific and primitive spatial categories and elements in Talmy's FSOSS. In this thesis, mandarin lǐ schema is analyzed as one case study in the whole research program. Several more cases are being studied by our group.

3. These fundamental spatial concepts are coded in the closed-class spatial forms like prepositions and postpositions. These basic spatial categories and elements are largely universal in nature. Here, however, the following point should be clear—what are universal are not the superficial closed-class forms like prepositions or postpositions, but the underlying spatial categories and elements demonstrated by them, `which form a core universal inventory.`

4. Levinson, Meira, et al.(2003) argued that precise and complex axial geometry seems to be involved in so-called topological concepts, like the features of boundedness, compactness, and relative magnitude. However, Talmy(2005) argues there may be only four member concepts for the category of "the shape or contour". and he also argues schemas largely exhibit topological properties of shape-neutral and bulk-neutral. For example, lǐ schema is typically idealized as a container(cf, Lakoff, George and Mark Johnson, 2003) which is neutral to the shape or contour of the G and to the shape or contour of the position or path of the F.

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Thank you!