MA Thesis in Linguistics

Chinese *zi*: Linking Reflexivization and Binding

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Chapter 1: Introduction

Mandarin Chinese long distance (LD) anaphora *zi-ji* has always been defined as a monomorphemic anaphora. Many previous studies have been devoted to capture its binding condition, like that in (1).

1) **Zhangsan$_j$** zhidao **Wangwu$_k$** piping-le **ziji $_{j/k}$.**
` Zhangsan know Wangwu criticize-Pef Anaphor
   'Zhangsan knows Wangwu criticized oneself (=Zhangsan or Wangwu)$_.$'

The most prominent proposal on this issue is the cyclic movement proposal (eg. Cole and Sung 1994, Cole, Hermon and Huang 2006). These proposals are compatible with or build upon the assumption that *zi-ji* is morphologically simplex. However, I argue that this is not the case. Both archaic Chinese data and cross-dialect evidence from modern Chinese show that *zi-ji* is bi-morphemic, consisting of a reflexive element *zi-* and a pronominal element *ji*. Besides, the morpheme *zi-* in modern Mandarin (and its equivalents in Chinese dialects) can be used independently and work as a reflexive marker in Chinese reflexive predicate '*zi*-verbs'. Here we get a clear link between binding and reflexivization in Chinese, through *zi-*. This thesis is devoted to explore this link in Chinese, and provide a new proposal on binding condition of *zi-ji* from a decomposition perspective.

Chapter 2 will mainly discuss reflexivization marker *zi-* and Chinese reflexive '*zi*-verbs', as in (2).

2) a. Zhangsan **zi-sha**-le. (Mandarin)
      Zhangsan REFL-kill-Pef.
       'Zhangsan killed himself.'

   b. Zhangsan **zi-jue** conghu
      Zhangsan REFL-consider smart.
       'Zhangsan considers himself smart.'

A complete picture and detailed discussion of Chinese reflexive verbs will be provided, with a comparison with clitics/anaphors/reflexive-prefixes in Indo-European languages. I will also list Cantonese and Quanzhou Min data to show that the first morpheme of LD anaphora in these dialects can also work as reflexivization makers. So the bimorphemic nature of LD anaphora (3a, 4a) and the linking between reflexivization and binding (3bc, 4bc) is not limited to Mandarin Chinese, but coherent across Chinese dialects. This typological coherency further indicates this is not a trivial issue, and an explanation is needed not only for theoretical necessity but also for first language acquisition.

3) a. **SiuWong$_i$** zidou **SiuMing$_j$** paiping-zo **zi-gei**$_{i/j}$ (Cantonese)
      SiuWong know SiuMing criticize-Pef Anaphor

'SiuWong knows SiuMing criticized oneself (=SiuWong or SiuMing).'

b. SiuMing **zi-saai-**zo
SiuMing REFL-kill-Pef
'SiuMing killed himself.'

c. SiuMing **zi-jingwai** hou cungming.
SiuMing REFL-consider very smart
'SiuMing considers himself very smart.'

4) a. **Zhangsan$_i$** di-do **Lisi$_j$** kan-do **gai-gi$_{i/j}$/zy-gi$_{i/j}$**. (Quanzhou Min)
Zhangsan know Lisi see Anaphor.
'Zhangsan knows Lisi sees oneself (=Zhangsan or Lisi).'

b. Zhangsan **zy-sa**-lo.
Zhangsan REFL-kill-Pef
'Zhangsan killed himself.'

c. Yi **gai-gongga** ya kiao
He REFL-consider very smart.
'He considers himself very smart.'

In the third chapter I will discuss *zi-ji*'s bi-morphemic morphological origin from a diachronic perspective (archaic Chinese data). Before Donghan Dynasty (15 A.D.- 220 A.D.), Chinese has a two-way anaphoric system, containing *zi-* and *ji*. The combined form of *zi-ji* (and *ji-zi*) appeared later. Data before Donghan Dynasty indicates archaic *zi-* in (5) was a local reflexive element, while *ji* in (6) was a non-local pronominal element. After Donghan, example data including *ji-zi* and *zi-ji* are listed in (7) and (8) respectively. This chapter will analyze syntactic characteristics of archaic *zi-* and *ji* separately (mainly before Donghan 220 A.D.), with some discussion of similar anaphoric elements in other languages, like Greek *ton idhio*.

5) Zhongwaizhiguo jiang heyi **zi ning**?
Countries inside and outside the empire will how REFL make...peaceful
'How will countries inside and outside the empire (be able to) make it (=the empire) peaceful?'
(夫久结难连兵), 中外之国 将何以自宁？
(Records of The Grand Historian 史记，孝文本纪)

6) **Chenyu$_k$** yuan **Xiangyu$_j$** fu wang **ji$_k$**.
Chenyu blame Xiangyu not let..be king Anaphor.
'Chenyu blames that Xiangyu doesn't let him (=Chenyu) be the king.'
陈余怨项羽弗王己也。
(Records of the Grand Historian,史记,高祖本纪)

7) Jian zhushounaozhe,   guo   yu   **ji-zi**   chu.
   See every person who's suffering, ascribing (that) to   Anaphor-Poss   position .
   见诸受恼者，过于己自处
   (大庄严论经，Sūtrā-laṁkāra-śāstra)

8) Neixing   **zi-ji**   qu.
    Inside reflect   Anaphor(-Poss) body.
    'To self-reflect'
    内省自己躯
    (佛五百弟子自说本起经，'Buddha's 500 pupils explaining Benqi Jing themselves')

Chapter 4 will be contributed to the discussion about the binding condition of *zi-ji*, based on the fact that co-argumenthood binding of *zi-ji* always holds, under whatever discourse/pragmatics condition in, while binding beyond co-argumenthood is highly influenced by factors beyond syntax, illustrated in (9)(10). A solutionon the binding condition of *zi-ji,* built upon decomposition perspective of its internal elements (*zi-* and *ji*), will be given. Often discussed issues about *zi-ji*, like the blocking effect and subject orientation, will be presented and re-analyzed. For example, the nature of subject orientation is actually co-argumenthood binding, since *zi-ji* can be bind by objects beyond its co-argumenthood.

9) <u>Precondition: Reference (k) $\neq$ Reference (j)</u>
    Zhangsan$_k$ shuo **wo**$_j$ chang piping   **zi-ji**$_{*k/j}$.
    Zhangsan   say I often criticize Anaphor.
    'Zhangsan said that I often criticized oneself (=I).'

10)   <u>Precondition: Reference (k) = Reference (j)</u>
      Zhangsan$_k$ shuo **wo**$_j$ chang piping **zi-ji**$_{k/j}$.
      Zhangsan   say   I   often criticize Anaphor.
      'Zhangsan said that I often criticized oneself(=I or Zhangsan).'

Chapter 2: Reflexivization in Mandarin Chinese: Analysis of '*zi*-verbs'

2.1 Introduction:

The Chinese long-distance anaphora *zi-ji* has long been regarded as a morphologically simplex (or mono-morphemic) anaphor (Cole and Sung 1994, Cole and Wang 1996, Huang and Tang 1991, Pan 1998, Cole, Hermon and Huang 2006). However, both diachronic and synchronic (typologica) evidence shows that *zi-ji* is actually complex and bi-morphemic.

 In archaic Chinese (at least before the Donghan Dynasty, 15A.D-220 A.D.), *zi* and *ji* were used as separate anaphoric elements. *Zi* is always locally bound (eg. data 11a), while *ji* strongly prefers sentence internal non-local binding (eg. data 12).

11) a. Bi   bi   shi   Zhao   er   **zi-jiu**
      They   definitely   give up   Zhao   and   REFL-save.
      'They will give up Country Zhao and save themselves.'
      彼 必 释 赵 而 自 救 .
      (*Biography of Sunzi and Wuqi* , *Records of The Grand Historian* 史记，孙子吴起列传)

12)   **Chenyu$_k$**   yuan   **Xiangyu$_j$**   fu   wang   **ji$_k$**.
       Chenyu   blame   Xiangyu   not   let..be king   Anaphor.
       'Chenyu   blames that Xiangyu doesn't let him (=Chenyu or Xiangyu) be the king.'
       陈 余 怨 项 羽 弗 王 己 也 。
       (*Biography of Emperor Gao of Han Dynasty, Records of The Grand Historian* 史记,高祖本纪)

And the combined form *zi-ji* started to appear in literature only after the Donghan Dynasty. The literature in which *zi-ji* originally appeared was not a normally written Chinese book, but a Chinese translation of a Sanskrit Buddhism Classic (Zhu 2007). After Donghan (15A.D-220 A.D.) the anaphora system of Archaic Chinese became a three-way system, containing *zi*, *ji*, and *zi-ji*. In modern Chinese, only *zi-ji* remains as an anaphoric element, while *zi* and *ji* are not independent words now. We thus claim that modern Chinese *zi-ji* is both diachronically and synchronically bimorphemic; *zi*, being the first morpheme of *zi-ji*, can also attach to verb stems and compose reflexive predicates, '*zi*-verbs' (13ab):

13) a. Zhangsan **zi-sha**-le.   (Mandarin)
       Zhangsan REFL-kill-Pef.
       'Zhangsan killed himself.'

    b. Zhangsan   **zi-jue**   conghu
       Zhangsan   REFL-consider   smart.
       'Zhangsan considers himself smart.'

Synchronically and typologically, not only the first morpheme *zi-* of Mandarin anaphora *zi-ji* ('oneself') can work as an independent reflexive marker, but also *zi-* in Cantonese anaphora *zi-gei* ('oneself'), and *gai-/zy-* in Quanzhou Min *gai-gi/zy-gi* ('oneself') (cf. (14) and (15) below).

Similar to Mandarin *zi-*, Cantonese *zi-* can reflexivize a single predicate *saai* ('kill') in (14b), and two successive predicate *jingwai hencongming* ('consider smart') in (14c). Quanzhou adopts *zy-* to reflexivize sole predicate (15b), while using *gai-* to reflexivize two sequent predicates (15c). This cross-dialect consistency cannot simply be a coincidence and needs to be explained.

14) a. **SiuWong$_i$** zidou **SiuMing$_j$** paiping-zo **zi-gei$_{i/j}$**   (Cantonese)
      SiuWong   know SiuMing criticize-Pef Anaphor
      'SiuWong knows SiuMing criticized oneself (=SiuWong or SiuMing).'

    b. SiuMing   **zi-saai-**zo
      SiuMing   REFL-kill-Pef
      'SiuMing killed himself.'

    c. SiuMing   **zi-jingwai**   hou   cungming.
      SiuMing   REFL-consider very   smart
      'SiuMing considers himself very smart.'

15) a. **Zhangsan$_i$** di-do **Lisi$_j$** kan-do **gai-gi$_{i/j}$/zy-gi$_{i/j}$.**   (Quanzhou Min)
      Zhangsan   know Lisi see   Anaphor.
      'Zhangsan knows Lisi sees oneself (=Zhangsan or Lisi) .'

    b. Zhangsan **zy-sa**-lo.
      Zhangsan REFL-kill-Pef
      'Zhangsan killed himself.'

    c. Yi **gai-gongga**   ya   kiao
      He REFL-consider very smart.
      'He considers himself very smart.'

It is not rare for a language to adopt both argument anaphora and verbal reflexives to encode reflexivity (Dimitriadis and Everaert 2014). But what is interesting about Chinese languages (Mandarin, Cantonese, and Quanzhou Min) is that the reflexive marker *zi-* (also *zi-/zy-/gai-*) ('self') which Chinese use to reflexivize verbs in (copied here: 16a) is also the first morpheme of the anaphor *zi-ji* ('oneself') in (16c).

16) a. Zhangsan **zi-sha**-le.   (Mandarin)
      Zhangsan REFL-kill-Pef.
      'Zhangsan killed himself.'

    c. Zhangsan **sha**-le   **zi-ji.**
      Zhangsan kill-Pef Anaphor.

'Zhangsan killed himself.'

This thesis will mainly discuss one of the reflexive strategies: reflexive predicate '*zi*-verbs' in Mandarin Chinese, since the reflexive predicate composition is very similar in Cantonese and Quanzhou Min. And I'll focus on the syntactic characteristics of the reflexivization marker *zi* and reflexive predicates formed by '*zi*-verbs'. In archaic Chinese, reflexive *zi* needs to be co-indexed with its co-argument; and in modern Chinese, reflexive predicate '*zi*-verb' requires the verb's two theta roles be assigned to the same individual to encode a reflexive meaning. So it is clear that the properties of the archaic reflexive *zi* are reflected in the modern reflexive marker *zi*.

It is common for the 'SELF' part of an anaphora to compose 'reflexive words', like 'self-assessment'. This is limited to nominals and adjectives. In English the construction of '*self*-verb' is impossible, but in Mandarin Chinese and its dialects, reflexive predicates, like Mandarin '*zi*-verbs', seem to be productive. In this sense, Chinese *zi* is more similar to Dutch *zich* and French *se* which can compose reflexive predicate with more verbs than English *self*, as I will explain in this paper.

This paper is written to dissect the syntactic characteristics of '*zi*-verbs'. Following mainly the theory of the Theta System (Reinhart 2002), and the lexicon-syntax parameter setting of reflexivization (Reinhart and Siloni 2005), this paper will prove *zi* is a marker of reflexivization (more specifically: bundling), similar to Dutch *zich* and French *se*. And the bundling operation applies at syntax level in Mandarin Chinese, the same as French.

Section 2.2 will briefly discuss the historical data of *zi*. The 'local-binding' nature of archaic reflexive *zi* will be discussed. In 2.3, we will briefly review the relevant theory which is mainly the Theta System (Reinhart 2002) and reflexivization operation (Reinhart and Siloni 2005). In 2.4, the 1st part will give a categorization of '*zi*-verbs'. I will distinguish two groups of '*zi*-verbs' in Mandarin Chinese: (i) reflexive '*zi*-verbs', which trigger bundling. (ii) '*zi*-verbs' without a true reflexive meaning, and bundling is not triggered. In the 2nd part of this section, I'll focus on reflexive '*zi*-verbs', and prove bundling is needed. By adopting the subject/object comparison test, I will prove '*zi*-verbs' are intransitive with only one argument. I will also prove both Agent and Theme roles are accessible in '*zi*-verb'. So '*zi*-verbs' have two theta roles, but only one argument. And bundling is needed in this case. In the last part of this section, I will demonstrate *zi* is needed to check the accusative case feature of the reflexive verb. One of the distinctions between reflexive '*zi*-verbs' and non-reflexive '*zi*-verbs' is whether *zi* can be deleted or not. *Zi* in reflexive '*zi*-verbs' are not deletable, while *zi* in non-reflexive '*zi*-verbs' can be dropped.

In section 2.5, I'll discuss at which level reflexivization will be applied in Chinese languages, lexicon or syntax. Actually there is evidence to support both sides. In this thesis, supportive evidence of both sides will be presented and my attitude towards this issue is to leave it open at this moment. Section 2.5.1 will show the ambiguous status of Chinese between syntax language and lexicon language. 2.5.2 is devoted to give evidence supporting Chinese as a syntax language.

Section 2.5.3 will explain why *zi-* in Mandarin Chinese can only reflexivize two consecutive predicate with only one subject. And this characteristic of *zi-* stays the same also in *zi-ji*'s binding condition, which establishes a link between reflexivization and binding in Chinese. 2.5.4 provides a serial verb construction solution to support Chinese as a lexicon language.

In 2.6, I'll try to partially explain why only a subset of Agentive ([+c+m]) and Sentient ([+m]) verbs can be reflexivized by *zi* in Chinese[1], but this is still a puzzle that will not be fully solved.

2.2. '*zi*-verbs' in Archaic Chinese

The construction of '*zi*-verbs' has appeared in the literature since 450BC, maybe even earlier. The examples in (11) and (12), here repeated, are cited from *Records of The Grand Historian* (*史记,*104BC—91BC) and *the Commentary of Zuo* (about 450BC.), respectively. Archaic *zi* mainly has two characteristics: (i) the unique pre-verbal position; and (ii) obligatory co-index with its co-argument, as shown in (11ab).

11) a. Bi   bi   shi   Zhao   er   **zi- jiu**
        They definitely give up Zhao   and   REFL-save.
        'They will give up Country Zhao and save themselves.'
        彼 必 释 赵 而 自 救 .
        (*Biography of Sunzi and Wuqi* , *Records of The Grand Historian* 史 记 , 孙 子 吴 起 列
        传)

    b. Wo   shi   zongyu er   buneng **zi-ke**   ye.
         I   really indulge and cannot REFL-discipline .
        'I do indulge and cannot discipline myself.'
        我实纵欲而不能自克也
        (*Duke Zhao of Lu, Commentary of Zuo* 左 传 , 昭 公 十 年)

In (12) I present an example of the anaphoric element *ji*, to show that archaic *ji* needs to be non-locally bound within the sentence.

12)   **Chenyu$_k$**   yuan **Xiangyu $_j$** fu   wang   **ji $_k$**.
       Chenyu   blame Xiangyu   not let..be king   him.
       'Chenyu$_k$ blames that Xiangyu $_j$ doesn't let him$_k$ be the king.'
       陈 余 怨 项 羽 弗 王 己 也 。
       (*Biography of Emperor Gao of Han Dynasty, Records of The Grand Historian* 史 记 , 高
       祖 本 纪)

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[1] This is actually a cross-linguistic phenomenon, not just limited to Chinese languages.

An example like (12) in itself doesn't tell us whether archaic ji's anaphoric status is that of an anaphor or a pronoun. However, a pronoun must allow deictic usage, and I haven't found *ji* having a dectic usage in literature so far, so I conclude that *ji* is anaphoric in nature.

When *zi* is a reflexive marker, it always precedes the predicate. That distinguishes *zi* from pronouns and R-expressions that usually follow the predicate in archaic Chinese. Like modern Chinese, archaic Chinese is a SVO language, and the unique syntactic position of ancient *zi* indicates it should belong to a different syntactic category.

Besides the pre-verbal position, we can also see in (11) *zi* is forcing the Agent and Patient role of the verb *jiu* (save) to be referred to the same identity, the subject *bi* (they). In (12), the situation is the same, for the verb *ke* (discipline), both the 'discipliner' and the 'disciplinee' refer to the same referent, *wo* (I).

Cheng (1999) and Dong (2002) define archaic *zi* as a local anaphor. That is, they conclude *zi* is always locally bound. If we regard '*zi*-verbs' as reflexive verbs, *zi* can also be the marker of reflexivization (bundling)[2]. No matter under which circumstance, '*zi*-verb' is a construction which has existed in Mandarin Chinese for more than 2000 years, and the base verb's two theta roles refer to the same identity.

To know how productive '*zi*-verbs' are in modern Chinese, and what kind of verbs can be reflexivized by *zi*, I need to introduce Reinhart's Theta System and explain a little why I do my research within this framework.

2.3. Theta System And Lexical Operations

2.3.1 Reinhart's Theta System

The Theta System

There have been many studies in the field of theoretical linguistics discussing how the lexicon information interacts with syntactic structures. Since Gruber (1965) and Fillmore (1968), thematic roles play an important role in transmitting lexicon information to syntactic structure.

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[2] But it is impossible to get negative evidence from historical data, so I'm not sure whether archaic *zi* is a true anaphor (true argument) or just a reflexivization marker (not a true argument). Reflexive marker is not a true argument (Reinhart and Siloni 2005), and I will discuss about it in part III.

They define how thematic role participants play in the event and determine the order in which these participants are merged (Everaert et al 2012).

Reinhart's Theta System addresses these issues. Roughly speaking, the Theta System corresponds to the Lexicon part of linguistic theory. And Reinhart defines it as the system which links the system of concepts and the computational system (syntax), and indirectly (through the syntactic representations) with the semantic inference systems (Reinhart 2002). Although Fodor believe each system should work independently, Reinhart thinks there should be some central system which gathers information that may be legible to other set of systems, and it is this central system that enables the interface.

Compared to previous studies, the Theta System explains the lexicon-syntax interface in a more detailed and exhaustive way. The Theta System describes what kind of lexicon information should be coded into thematic roles; how the information should be coded; and how these information map onto syntax. The most important contents of the Theta System are given in (17-20), and I'll explain them briefly one by one.

The chart (17) defines the traditional theta roles in a more primitive way, using two primitive features [±c(ause)] and [±m(entally involved)] to describe the exact semantic content of traditional thematic-roles[3]. /+c feature is associated with a participant whose relation to the event denoted by the verb is perceived as providing a sufficient condition for the event to happen. And /+m feature means the participant's mental state is relevant for making the event happen.

I give an example in (17k). The verb *abuse* takes an Agent *John*, and a Theme *Tom*. Since *John* is a sufficient cause of the action *abuse*, and *John*'s mental status is relevant for making the action *abusing* happen. As a result, the Agent is labeled as [+c+m]. Patient *Tom* plays no role in making the action *abusing* happen, and therefore is marked as /-c. *Tom*'s mental status also has no influence on the action *abuse*, so /-m. The Patient role is therefore marked as [-c-m].

17)

Theta-clusters
a. [+c+m] Agent
b. [+c–m] Instrument
c. [–c+m] Experiencer
d. [–c–m] Theme (Patient)
e. [+c] Cause
f. [+m] Sentient
g. [–m] Subject matter/target of emotion (typically oblique)

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[3] Note that (4) is just a rough correspondence from traditional theta roles to theta clusters, and many of the feature clusters have varying contextual interpretations.

h. [–c] Goal/benefactor (typically dative/PP)
i. [_]
k. eg: John abuses Tom.
   agent   theme
   abuse([+c+m], [-c-m])

Based on the primitive features of theta-roles (17), the *Lexicon Marking* in (18) will be applied. And the marking basically has two influences on syntax (the computational system) : (i) the accusative Case marking in (18c) and (ii) the order of merge/syntactic positions in (19).

Besides the order of merge, the Theta System also determines whether or not a verb carries the accusative Case feature based on the clusters it selects in (18c). Here $[/\alpha/ -c]$ means theta clusters that have a /–c feature and are also marked with /m feature: experiencer role [+m-c] or theme role [-m-c]. So only verbs with an external theta-role (a [+] cluster) and an Experiencer or a Patient role can be marked for accusative feature.

18) *Lexicon marking*
     Given an n-place verb-entry, n > 1
     a. Mark a [–] cluster with index 2.
     b. Mark a [+] cluster with index 1.
     c. Verbs with a [+] cluster and a fully specified cluster $[/\alpha/ -c]$ is marked for Accusative
        Case.

     d. [–] clusters: [–c–m], [–c], [–m]
     e. [+] clusters: [+c+m], [+c], [+m]
     f. 'mixed clusters': [–c+m], [+c–m]

The lexical marking in (17) gives information relevant for merging as formulated in (19). The system adopts the notation of Williams (1981), where merging instructions are built into the lexical entry by indices: 1 marks the external role, and 2 an internal one. [–] clusters as in (18d) are marked with index 2 by (18a) and merge internally; and [+] clusters as in (18e) with index 1 by (18b) and merge externally. The lexicon marking of indices does not apply individually to each verb, but is uniformly determined by the feature composition of the verb's roles/clusters as detailed in (101). Importantly, one-place verbs do not undergo any marking, and the sole theta role merge externally directly, due to Economy Principle and EPP.

19) *Merging instructions*
     a. When nothing rules this out, merge externally.
     b. An argument realizing a cluster marked 2 merges internally; an argument with a
        cluster marked 1 merges externally.

Relevant lexical operations, like Decausitivization or Reflexivization (discussed in the next section), are all applied on the basis of lexicon marking. Rule (20) specifies that only two (or more)-place verbs are possible to undergo lexical operations. And reduction in lexicon (decausitivization or reflexivization) can eliminate the accusative case feature of the verb. The

operation of decausitivization and reflexivization are relevant in this paper, and I'll give two examples to illustrate the derivation process of the two operations.

20) *Lexical Operations*:
      a. Reduction applies to the marked entry (i.e. after marking).
      b. Reduction eliminates the accusative feature of verb

2.3.2 Illustrations and Analysis: Decausitivization and Reflexivization

Decausitivization always happens in the lexicon, while reflexivization can apply in either the lexicon or the syntax, depending on the parameter setting of the language put forward in Reinhart and Siloni (2005). This section only discusses reflexivization in the lexicon (eg. English). The parameter setting will be discussed in section 2.5 with details, and I'll prove Mandarin Chinese is a syntax language.

2.3.2.1 Decausitivization

Reinhart (2002, 2005) mentions that unaccusative verbs are not base entries, but deriving from their transitive alternates by decausitivization[4]. In (21a), the transitive *break* is marked for a [+c] external role, which indicates it can take an Agent/Cause/Instrument as its external role, spelled out as either [+c+m] or [+c-m], with an unspecified /m feature. As we have discussed earlier, the Agent role is marked as [+c+m], and Instrument or Cause[5] should be coded as cluster [+c-m]. If the external role in (21b) is deleted the result is (21c), the external Cause role of the transitive verbs is deleted, which is called the process of 'decausitivization'. In (21b), the transitive *break* is a two-place verb, and its [+c] role is marked as 1, and [-c-m] is marked as 2. So *Max/the storm/the hammer* is coded as [+c] role which merges externally, and Theme *the window* merges internally. According to (18c), *break* also gets accusative feature, and therefore *the window* can check accusative case in the base position. (21d) shows the process of decausitivization, this operation deletes both the [+c] cluster and the accusative feature of the verb. And a more detailed illustration is in (21e). As a result, the Theme *the window* ([-c-m]) originally mergers internally, but has to move to the external position due to case.

21) a. Max/the storm/ the hammer broke the window.
      Agent/Cause/Instrument   Theme

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[4] Previously many studies have the opposite assumption: unaccusatives are listed as basic entries, while their transitive alterantes were assumed to be the derived form. However, the outputs of unaccusative reduction have no similar properties, while the transitive entries share the property of allowing Agent, Cause or Instrument subject. So it is more likely that unaccusative verbs are derived from their transitive alternates.

[5] In Reinhart's system, the Cause role roughly corresponds to 'Natural Force'. But there is no verb which only selects a Cause role (Natural Force), without allowing Agent or Instrument role. So the Cause role actually corresponds in natural languages to the cluster [+c]. The construal [+c-m] is obtained for Cause arguments only through the cluster [+c].

$$[+c+m]/[+c-m]/[+c-m] \qquad\qquad [-c-m]$$

    b. $break_{Acc}$ ([+c]$_1$,[-c-m]$_2$)

    c. The window broke.
       Theme
       [-c-m]

    d. Decausitivization: Verb ([+c],α) ⟶ Verb (α)

    e. $break_{Acc}$ ([+c]$_1$,[-c-m]$_2$) ⟶ break ([-c-m]$_2$)

The Theta System describes the relationship between theta roles and their syntactic realizations.. It can correctly capture the distinction between theme unergative verbs and theme unaccusative verbs. In a UTAH, Uniformity of Theta-Assignment Hypothesis (Baker 1988), approach this prediction is not straightforward (cf. Everaert 2003).Following UTAH (22a), we can get the idea that the same theta-role of all verbs will be realized in the same position in D-Structure. And this idea cannot capture the difference between Theme unaccusatives (22b) and Theme unergatives (22c). Both *the window* (b) and t*he diamond* (c) are theme roles, but they have different positions in D-Structure. *The window* is originated in the object position in the D-Structure, and moves to the subject position in S-Structure to get case. But *the diamond* is originated in the subject position in D-Structure. Although these two arguments both carry the Theme role, they have very different positions in D-Structure.

  22) a. The Uniformity of Theta Assignment Hypothesis (UTAH)
       Identical thematic relationships between items are represented by identical structural
       relationships between those items at the level of D-structure.

    b. The window broke([-c-m]$_2$).   (Unaccusative)
      Theme

    c. The diamond sparkled ([-c-m]) in the sun.   (Unergative)
      Theme

But Theta System can explain this issue. We can see the theme role of unaccusative *break* has been marked as 2 in (21e), and originally merges internally. But according to the *Lexical Marking* rule in(18), the one-place unergative *sparkle* does not need lexical marking, and its external role directly merges externally. So the distinction between the two Theme arguments in (22bc) are captured.

2.3.2.2 Reflexivization

There are two ways to encode reflexivity in English: one is to use anaphora, like *himself* (23a); another is using inherently reflexive verb, like *wash* (23b). The latter can be derived and

explained by the bundling operation which is built upon the Theta System. Roughly speaking, in bundling the internal Theme role of *wash* bundles to the external Agent role, and these two roles compose a new complex Agent-Theme role, which will be assigned to the sole external argument *he* upon the merge of *he*.

23) a. He abused himself.
    b. He washed.

Bundling is designed to capture the fact: Both the external and internal roles of the verb *wash* are still available, not being deleted as in decausitivization. But syntactically the reflexive verb is a one-place unergative verb, and there is only an external argument position available. So both the two roles have to retain in the verb entry, and both of them need to be assigned to the same external argument. To make that happen without violating the Theta Criterion[6] (Chomsky 1981), the internal $[\theta i]$ cluster needs to bundle with the external cluster $[\theta j]$, as illustrated in (24). And then this complex theta cluster $[\theta i - \theta j]$ will be assigned to the sole external argument.

24)   Reflexivization Bundling
       $[\theta i], [\theta j] \longrightarrow [\theta i - \theta j]$, where θi is an external θ-role.

An example of bundling in lexicon is illustrated in (25). Other relevant details will be introduced and discussed in my analysis of Chinese reflexive verbs in later section. From (25a) to (25b), the 'washee' theta cluster [-c-m] of the verb *wash*, bundles with 'washer' theta cluster [+c+m] and these two compose a complex theta cluster[[+c+m][-c-m]]. Due to this lexical operation, the accusative case feature of *wash* is also reduced. In (25c), the complex theta cluster is assigned once to the external argument *he* upon the merge of *he*.

25)   He washed.
       a. Verb entry (Lexical Marking): washACC [+c+m]1, [-c-m]2
       b. Reflexivization output: wash [[+c+m][-c-m]]
       c. Syntactic output: He[[+c+m][-c-m]] washed.
       d. Interpretation: ∃e [wash(e) & [+c+m](e, Max) & [-c-m](e, Max)]

In conclusion, the sole syntactic argument of the verb *wash* is linked to two semantic roles (the Agent and Patient), resulting in a 'reflexive predicate' that is syntactically intransitive.

2.4 A Complete Map of Chinese '*zi*-verbs'

In this section, I'll firstly distinguish reflexive '*zi*-verbs' and '*zi*-verbs' without a clear reflexive meaning in 2.4.1. And then in section 2.4.2, I'll focus on reflexive '*zi*-verbs', and prove they have one argument but two theta roles. And that's why bundling is needed in Mandarin Chinese.

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[6] *Theta Criterion* (Chomsky 1981, p. 35) : Each argument bears one and only one θ-role, and each θ-role is assigned to one and only one argument.

2.4.1 Categorization

Remember that the marker of reflexiviry *zi-* is attached to the verb, making it morphologically complex. I will first categorize the '*zi*-verbs' in Chinese. I divide '*zi*-verbs' into two groups depending on whether *zi-* has a reflexive usage or not.

Firstly, we need to define the notion of 'reflexive'. A construction (or a device) is reflexive if there is identity between two arguments of a transitive base predicate (Dimitriadis and Everaert 2014). And this definition is based on the 'archetypal reflexive context' in Faltz (1977) which is cited as below. According to Faltz, reflexive is a construction working on a transitive verb base, and it makes the reference of the two arguments of this verb to be identical.

> "I assume that, given any language, we can isolate a class of simple **transitive** clauses expressing a two-argument predication, the arguments being a human agent or experiencer on the one hand and a patient on the other. [. . .]
>
> If the language has a grammatical device which specifically indicates that the agent/experiencer and the patient in such clauses are in fact the same referent, then that grammatical device will be called the *primary reflexive strategy* of that language." (Faltz 1977, 3)

We can conclude that the construction of reflexive needs (i) a transitive verb base (Note that after reflexivization, the output reflexivized verb can be intransitive) (ii) the index of the two co-arguments of the verb should be the same. So intensifiers[7] (*himself*) in (26a), or middles (*sich*) in (26b) are not reflexives (Everaert and Dimitriadis 2014). The reflexive device works on two theta roles of the verb, and these two roles will be assigned to the same individual.

26) a. He himself finished the homework.

    b. Dieses Buch   liest sich   leicht.   (German)
      this   book.NOM reads SE easily
      'This book reads easily.'

This definition of reflexive allows languages to differ in the way they encode reflexivity. For example, English uses both the anaphor *himself* (27a) and a 'zero' reflexive strategy (27b) to make a reflexive construction. And Mandarin Chinese can adopt both the anaphor *ziji* (28a) and the reflexive predicate *zi-sha* (28b) to express the reflexive meaning.

27) a. He kills himself.
    b. He washed.

---

[7]There are researches showing there is relationship between the intensifiers and the reflexives. Faltz (1977) and Keenan (1994) have argued that SELF forms as anaphors derive historically from adjunct uses (like emphatic usage) and have evolved into argument nominals. Here I'm not arguing against these proposals. Since intensifier is not directly relevant to this paper, so I just want to put intensifiers aside now, and leave the relationship between intensifiers and reflexives open.

'He washed himself.'

28) a. Ta$_j$ sha-le   ziji$_j$.   (Mandarin)
     He   kill-Pef   Anaphor.
     'He killed himself.'

   b. Ta   zi-sha-le.
       He   REFL-kill-Pef.
       'He killed himself.'

What I will discuss here is the second reflexivity strategy in Chinese, the reflexive predicate, '*zi*-verbs'. The categorization of *'zi*-verbs' is listed in the chart below. Group 1 and 2 are true reflexive verbs, while Group 3 and 4 are not. Each group verb is the combination of *zi*- and the verb *zi*- attaches to. Although in both Group1 and Group3, *zi*- attaches to agentive verbs, the syntactic characteristics of Goup1 and 3 are totally different, as shown in the following two rules. I use two rules in the chart to clarify whether a '*zi*-verb' is a reflexive verb or not. The first rule is whether the theta grid of '*zi*-verb' are different from that of the base verbs or not. The second rule is whether zi- is droppable or not. And I will provide explanation and give data of the two rules respectively in the following context.

.

No.	Type	Example	Theta grid of the verb has been changed?	*Zi*- is droppable?	Reflexive verb?
1	*Zi*-agentive verb	***Zi-sha*** (self-kill)	Yes	No	Yes
2	*Zi*-sentient verb (with consecutive predicates)	*Zhangsan **zi-zhi** conghui.* Zhangsan self-knows smart. 'Zhangsan knows himself smart.'			
3	*Zi*-agentive verb	***Zi-bei*** (self-prepare)	No	Yes	No
4	*Zi*-unaccusative verb	***Zi-zhuan*** (self-rotate) ***Zi-ran*** (self-burn)			
5	**Zi*-unergative	Not exist[8]			

---

[8] Unergative verbs in Chinese cannot be attached with *zi*-.Only predicatively used adjectives exist, like *zi-ao* (self-pround), *zi-xin* (self-confident). Although verbs and adjectives both can assign theta roles and share many properties, this paper will only focus on reflexive verbs, and won't discuss reflexive adjectives.

verb	

For the first rule, if *zi-* plays a role in the reflexive construction, then the two theta roles of the base verb will be forced to be assigned to the same individual, as discussed above. So after reflexive *zi-* attaching to the verb, the theta grid of the reflexive '*zi*-verb' should somehow be different from the original base verb. For example, Group1 and Group3 '*zi*-verbs' look quite similar, both containing *zi-* and an agentive verb stem, but only Group1 is reflexive verb. The most obvious distinction between Group1 and Group3 lies in whether they can take an object or not. The base verb *sha* ('kill' in 29c) and *bei* ('prepare' in 30c) can both take objects. However, after the attachment of *zi-*, Group1 *zi-sha* (self-kill) cannot take any object, which is shown in the contrast between (29a) and (29b). But *zi-bei* (self-prepare) still needs an object, as illustrated in (30a) and (30b). The reason why Group1 '*zi*-verbs', like *zi-sha,* cannot take objects should be attributed to the operation of reflexivization (bundling). The attachment of *zi* will make the verb intransitive, and therefore taking another DP/anaphora as its internal argument is impossible. (I'll prove this in detail in 2.4.2.2)

29) a. Zhangsan **zi-sha**-le.   (Group1: reflexive verb)
         Zhangsan REFL-kill-Pef.
         'Zhangsan killed himself.'

   b. *Zhangsan$_j$ **zi-sha**-le   **ziji$_j$/Lisi**.
         Zhangsanj   REFL-kill-Pef   Anaphor$_j$ /Lisi.
         'Zhangsan killed one (=Zhangsan or Lisi).'

   c. Zhangsan$_j$ **sha**-le   **Lisi/ziji$_j$.**
         Zhangsanj kill-Pef   Lisi/ Anaphor$_j$.
         'Zhangsan killed oneself (=Zhangsan or Lisi).'

30) a *Lisi   **zi-bei**-le.   (Group3: non-reflexive)
         Lisi   REFL-prepare-Pef.
         'Lisi himself prepared.'

   b. Lisi   **zi-bei**-le   **jiushui**.
         Lisi   REFL-prepare-Pef   alcohol.
         'Zhangsan prepared the alcohol himself.'

   c. Lisi   **bei**-le   **jiushui**.
         Lisi   prepare-Pef   alcohol.
         'Zhangsan prepared alcohol.'

Moreover, for Group4 '*zi*-unaccusative verbs', there is no change in the theta grid of the base verbs after the attachment of *zi*. The verbs are still unaccusative after the attachment of *zi-*. Both

base verb *ran-shao* ('burn' in 31) and *zi-ran*('self-burn' in 32) can undergo 'subject-predicate inversion' which can be applied to unaccusative verbs of Mandarin Chinese (Huang 2007) (and also Hebrew), illustrated in (31ab) and (32ab).

31) a. Cangkuli   **ranshao**-le   **yixiehuaxuewuzhi.**
      In storehouse   burn-Pef   some chemical materials
   b. Cangkuli   **yixiehuaxuewuzhi**   **ranshao-**le.
      In storehouse   some cheminal materials   burned
     (31ab) Meaning: 'Some chemical materials burned in the storehouse.'

32) a. Cangkuli   **zi-ran**-le   **yixiehuaxuewuzhi**
      In storehouse   REFL-burned   some chemical material
   b. Cangkuli   **yixiehuaxuewuzhi**   **zi-ran**-le.
      In storehouse   some chamical materials   REFL-burned.
     (32ab) Meaning: 'Some chemical materials burned in the storehouse by themselves (automatically). '

The second rule is whether *zi-* is droppable or not. The possibility of dropping *zi-* is related to the accusative case feature of the verb. I'll provide evidence to suggest that Mandarin Chinese is likely to be a syntax language in Section 2.5[9]. As a syntax language, the bundling happens in Chinese at syntax level, not in lexicon, and therefore the accusative case feature still remains in the verb's entry. In reflexive '*zi*-verbs', after bundling, the verb does not have an internal argument, and therefore *zi-* is needed to check the accusative case feature. So *zi-* is an essential part of the reflexive verb[10]. But in non-reflexive '*zi*-verbs', the attachment of *zi-* does not influence the base verbs' entries. Base verbs can remain transitive, and they can still take objects to check their accusative case. Non-reflexive *zi-*, is a normal adverbial, similar to *himself* in (25), or the 'self' in the noun 'self-producer'. Non-reflexive adverbial *zi* does not have the responsibility to check the accusative case, so its appearance can be optional. I'll explain in detail about the case issue in section 2.2.4.3.

Now I take Group2 and Group4[11] as a brief illustration for the *zi*-drop phenemenon. As we can see from the data below, (33a) is fine; but after deleting *zi-*, the sentence becomes ungrammatical

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[9] Arguments supporting both Chinese is a syntax language and Chinese is a lexicon language will be given in section 2.5. If Chinese is a syntax language, then the accusative case issue needs to be solved, and here I give an explanation. If Chinese is a lexicon language, then the accusative case feature of the base verb has already been dealt with in lexicon.
[10] In lexicon languages, like English, the accusative case feature is already reduced in the process of bundling. I've introduced this issue in section 2.3.

[11]According to Faltz, Group4 *zi-unaccusative verbs* can never be a reflexive construction, since *zi-* is attaching to an unaccusative verb, not a transitive verb. But I still wish to discuss this issue, because following Reinhart (2002), unaccusative verbs are actually derived from transitive verbs through the process of decausitivization. I need to prove that it is not the attachment of *zi-* that makes the transitive verb change into an unaccusative verb. Adverbial *zi-* in Group4 *zi-verbs* actually attaches to the unaccusative verb after the process of decausativization. The evidence is *zi-* can be deleted without

(33b). That is the condition of reflexive Group2 verb. However, for non-reflexive *zi-zhuan* in ('self-rotate' in 34), *zi-* is actually optional, which is shown in grammatical (34a) and (34b).

33) a. Zhangsan **zi-zhi** conghui (Group2: reflexive verb)
    Zhangsan REFL-knows smart.
    'Zhangsan knows himself smart.'

   b. *Zhangsan **zhi** conghui.
    Zhangsan knows smart.

34) a. Diqiu meitian dou **zi-zhuan**. (Group4: non-reflexive verb)
    The earth everyday all REFL-rotate.
    'The earth self-rotates everyday.'

   b. Diqiu meitian dou **zhuan**.
    The earth everyday all rotate.
    'The earth rotates everyday.'

To summarize, the theta grid of reflexive '*zi*-verbs', like *zi-sha* (self-kill), is different from that of the base verbs, like *sha* (kill), without the possibility of taking an anaphora/DP as its object. But the theta grid of non-reflexive '*zi*-verbs', like *zi-zhuan* (self-rotate), will remain the same as the base verbs, like *zhuan* (rotate). Besides, *zi* cannot be dropped in reflexive '*zi*-verbs', while in non-reflexive ones, *zi* is optional.

2.4.2 Why Bundling Happens in Chinese?

In this section, I'll prove bundling truly happens in the reflexive '*zi*-verbs' in Chinese. And Group1 reflexive '*zi*-verbs' (e.g. *zi-sha* 'self-kill') will be the focus of this section. Group2 '*zi*-verbs' (e.g. *zi-ren* 'self-consider'), which can take reflexives in ECM configuration, will be mainly discussed in section V.

Why bundling is needed in '*zi*-verbs'? Because the characteristics of '*zi*-verbs' meet the driving force of bundling: the mismatch between the number of arguments (syntax) and the number of theta-roles (semantics). Another evidence is from *zi-* checking the accusative case of the verb, which also leads to the discrepancy between the number of case features of the verb, and the number of theta roles.

2.4.2.1 Cross-linguistically: Reflexive Verbs Are Intransitive, But Not Unaccusative.

When it comes to the characteristics of reflexive verbs, there have been many studies that show reflexive predicates are intransitive cross-linguistically, although there is a debate about whether reflexive verbs are unergative or unaccusative.

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influencing the grammaticality of the sentence, and after the deletion of *zi*, the verb which is left is still an unaccusative verb.

Kayne (1975) proposed that the reflexive clitic *se* in French is not an argument of the verb, but it is instead a marker of verbal detransitivization. Kayne's evidence is from the expletive insertion in French, illustrated in (35a). While transitive verbs are disallowed in the environment of (35b), reflexive verbs can occur there (35c)[12]. If reflexives were transitive entries, they should not occupy the postverbal position of expletive constructions, just like transitive verbs.

35) a. Il est arrivé   trois filles.   (French)
         there is arrived   three girls.
         'There arrived three girls.'

   b. *Il   les$_i$a   dénoncés t$_i$ trois mille hommes ce mois-ci.
         there them$_{cl}$, has denounced three thousand men this month-here

   c. ?Il s'est dénoncé   trois mille hommes ce mois-ci.
         there SE is denounced three thousand men this month-here
         'Three thousand men denounced themselves this month.'

Syntactically, the intransitive nature of reflexive verbs can be described as a suppression/reduction of one argument. But which argument is suppressed/reduced? The external one or the internal one?

Earlier literature, like Marantz (1984), Pesetsky (1995) and Sportiche (1998), concluded that Romance reflexives are unaccusative. The evidence FOR the unaccusative analysis is that in many languages, unaccusative verbs and reflexive verbs share the same morphology (eg: French *se*). But Reinhart and Siloni (2004, 2005) argued that in fact reflexive verbs are not unaccusative, but more similar to unergative verbs. They provided the evidence that reflexive verbs fail the test of unaccusativity across languages. More specifically, subjects of reflexive verbs do not pattern with internal arguments. The morphological similarity between unaccusative verbs and reflexive verbs is not due to a similar argument structure, but to the basic operation of their derivation[13].

2.4.2.2 'Zi-verbs' Are Intransitive: Only Sloppy Reading Is Allowed.

After briefly reviewing previous studies and having a look at reflexive verbs in other languages, we will let's come back to Chinese. By adopting the Subject/Object Comparison test from Zec

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[12]Note from Reinhart and Siloni (2005): Judgments vary among speakers. According to Kayne (1975), example (35c) is grammatical. Some speakers judge it as marginal. Importantly, speakers agree that there is a clear difference in grammaticality between transitives (35b) and reflexives (35c).
[13]In earler versions, both decausitivization and reflexivization are operations of reduction. In later versions, decausitivization is a reduction operation and reflexivization is a bundling operation. But these two are still similar arity operations.

(1986), I will prove '*zi*-verbs' in Chinese are also intransitive, and therefore they are only able to take one argument.[14]

According to Zec (1986), the Object Comparison interpretation requires a syntactic transitive clause. In (36), the Object Comparison means that *George* can be interpreted as an object, to be compared with *Bill*. In order for that comparison to be possible, the verb *abuse* must take an object (*Bill*) in the first half of the sentence. If *abuse* was intransitive, and then *Bill* couldn't be its object, there would be no object comparison interpretation.

36)   Mary abuses Bill more than George.

        a.Mary abuses Bill more than George ~~abuses Bill~~. (**Subject Comparison, Strict**)
        b.Mary abuses Bill more than ~~Mary abuses~~ George. (**Object Comparison**)

In Chinese, for the base transitive verb *nvedai* (abuse) in (37), when it takes the anaphora *ziji* as its object, the object comparison meaning is allowed (37c). This indicates *Zhangsan nvedai ziji* (Zhangsan abuses himself) is a transitive clause in Chinese. However, if the base verb is reflexivized by *zi-,* the object comparison won't be allowed (38c). So *zi-nve* (self-abuse) in Chinese is syntactically intransitive, and therefore can take only one argument.

37)   Zhangsan   **nvedai   ziji**   duoguo   Lisi.
        Zhangsan   abuses   Anaphor   more than Lisi

        a.Zhangsan abuses himself more than Lisi abuses herself. (Subject comparison, **Sloppy**)
        b.Zhangsan abuses himself more than Lisi abuses Zhangsan. (Subject comparison, **Strict**)
        c.Zhangsan abuses himself more than Zhangsan abuses Lisi. (**Object comparison**)

38)   Zhangsan   **zi-nve**   duoguo   Lisi
        Zhangsan   REFL-abuse   more than Lisi
        'Zhangsan self-abuses more than Lisi.'

        a. Zhangsan   abuses himself more than Lisi abuses herself. (Subject comparison, **Sloppy)**
        b.*Zhangsan abuses himself more than Lisi abuses Zhangsan (Subject comparison, **Strict**)
        c.*Zhangsan abuses himself more than Zhangsan abuses Lisi (**Object comparison**)

At the same time, *nvedai* ('abuse' in 37) and *zi-nve* ('self-abuse' in 38) also have another distinction in possible interpretations. *Nvedai* (37) allows both Sloppy and Strict Subject Comparison meaning, while *zi-nve* (38) only allows the Sloppy reading. Why?

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[14] Zec's test has a cross-linguistic application, and Dimitriadis and Que (2009) also adopted it to test the transitivity of the double *ziji* construction in Chinese.

The strict meaning of Subject Comparison is actually the most 'demanding' interpretation for sentences containing reflexives (it should be ungrammatical if the reflexive is an 'anaphor' wrt the binding conditions). The Sloppy meaning only requires a reflexive that can have a bound variable meaning. The Object Comparison just needs a transitive verb. But the Strict meaning requires both. Strict interpretation will firstly require an independent reflexive which can be co-referenced within the sentence. Besides, strict meaning also needs a transitive verb. Since in the Strict meaning, the co-arguments of the verb do not share the same index ('*Lisi*' and '*Zhangsan*'), and therefore the verb has to be at least transitive to take two arguments with distinct references.

So the contrast between (37b) and (38b) indicates anaphora *ziji* taken by *nvedai* (in 37) is an independent reflexive which can get co-referenced within the sentence. But *zi-* in *zi-nve* is not an independent reflexive. And the unavailable Strict meaning of (38b) again justifies the intransitivity of the verb *zi-nve* (self-abuse).

For all the reflexives that have been tested in Sells, Zaenen and Zec (1987), the Strict interpretation is indeed the most demanding one for sentences containing reflexives. From the chart (39), if the sentence containing a reflexive allows the Strict interpretation, other two meanings (Sloppy and Object Comparison) will also be allowed. Japanese *zibun* gives a strong support for my idea[15].

39)

	Sloppy	Strict	Object Comparison
English *himself*	Yes	Yes	Yes
Finnish *–utu-*	Yes	No	No
Chichewa *dzi-*	Yes	Yes	Yes
German *sich*	Yes	No	No
Dutch *zich*	Yes	No	No
Japanese *zibun*	Yes	No	Yes
Serbo-Croatian *se*	Yes	No	No
Chinese anaphora *zi-ji*	Yes	Yes	Yes
Chinese *zi-*	Yes	No	No

2.4.2.3 Intranstive: Which Is The Remaining Argument? The Internal One or The External One?

As discussed above, it has been proved that '*zi*-verbs' are intransitive. Then it's necessary to think whether '*zi*-verbs' are unaccusative or unergative. The distinction between these two is the availability of internal and external argument in their base entries (or D-Structure). R&S (2005) provide the evidence that reflexive verbs fail the test of unaccusativity across languages. And I'll prove Chinese '*zi*-verbs' are not unaccusative, either.

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[15] The reason why sentence 36 allows Strict meaning and Object Comparison, but forbids Sloppy meaning is that the object of the verb *abuse* is NP *Bill*, not a reflexive.

According to Reinhart (2002), the realization of Instrument role needs to be licensed by Agent role. The theta cluster [+c-m] can be interpreted as Instrument or Cause. And whether the realization is Cause or Instrument depends on the existence of the Agent role. From (40), we can see that the realization of Instrument is licensed by an Agent role at the level of syntax or semantics. In (41c), the Agent *Mary* is overtly realized, and therefore the adding of an Instrument is certainly possible. In passives, the Agent role may not be realized in overt syntax, but is at least available at semantic level. And that's why in (41a) an optional Instrument is also licensed. But it is impossible to add an Instrument in (41b), since after decausitivization, there is only a Theme role [-c-m] left in the entry of unaccusative *break,* and there is no Agent role at any level to license Instrument.

40) *Lexical Generalization*
   A [+c-m] cluster is an Instrument iff an Agent [+c+m] role is also realized in the derivation, or contextually inferred (otherwise Cause role)

41) a. The window was broken (with a hammer).   [passive]
   b.*The window broke with a hammer.   [unaccusative]
   c. Mary broken the window (with a hammer).[transitive]

Although a theta role might not be realized overtly in syntax, whether it is still available in semantics still makes a difference.

I adopt this rule as a test to prove the existence of Agent role in the theta clusters of '*zi*-verbs'. From (42), we can see it is possible for '*zi*-verbs' to license an Instrument role. This indicates there is an Agent role available in the lexicon entries of '*zi*-verbs'. But true unaccusative verbs should not have any Agent role at any level (neither syntax nor semantics) due to decausitivization, just as *break* in (41b). As a conclusion, *zi-verbs* cannot be unaccusative verbs.

In (42), the realization of the Instrument is optional, not obligatory, which suggests the Agent role has already been realized in the Surface Structure[16]. Compared to other roles, Agent role always has the first priority to merge externally, so the subject *Zhangsan* in (42) should be the external argument.

42)   Zhangsan (**yong yiba shouqiang**) **zi–sha**-le.
     Zhangsan (with   a   gun)   RELF-kill-Pef.
     'Zhangsan killed himself (with a gun).'

Based on the discussion above, '*zi*-verbs' are instransitive, but not unaccusative. As an intransitiveverbs, '*zi*-verbs' can only take one syntactic argument which is the external one. So reflexive '*zi*-verbs' are more similar to unergative verbs, rather than unaccusative verbs.

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[16] Otherwise the overt realization of the instrument is obligatory.

2.4.2.4 One Argument, But How Many Theta Roles?

'*Zi*-verbs' can take only an external argument, but semantically they have two theta roles. As discussed in 2.4.2.3, '*zi*-verbs' have Agent role, and I'll prove they also have Patient role. To test the availability of Patient (Theme) role I will follow Dimitriadis and Everaert (2015), asuuming that the adverb *painfully* which only modifies the Patient role will be able to be used. *Painfully* requires a syntactically accessible Patient/Theme, that the event described by the predicate caused pain in the undergoer. *Painfully* is therefore incompatible with the agentive unergative (43b); but it is compatible with the transitive (43a), the unaccusative (43c) (Dimitriadis and Everaert 2014). And reflexive verb *shave* in (43d) patterns with Patient role. That indicates *shave* has a Patient role. Note that the 'pain' here should result from the action, not from other sources. Data (43e) is illegal, because this 'painfulness' is not due to the action of 'shouting', but just an emotional felling of the subject *Mary*.

43) a. Mary hit me painfully.
    b.*Bill ran painfully. [unergative]
    c. Bill fell painfully. [unaccusative]
    d. Bill shaved, painfully, with a dull razor. [reflexive]
    e.*Mary shouted painfully.

The situation is similar in Chinese, the adverbial *hentongku* (painfully) also requires a syntactically accessible Patient/Theme. It is compatible with transitive verbs (44a), theme unaccusatives (44c). And *hentongku* (painfully) is incompatible with agentive unergatives (44b), since the 'painfulness' here cannot be due to the action of 'cry'. The correctness of (44d) indicates reflexive verb *zi-nve* (self-abuse) also has a patient role.

44) a. Zhangsan **nve**dai-de   Lisi hentongku. [transitive]
       Zhangsan abuses-DE   Lisi painfully.

   b. *Zhangsan ku-de   hentongku.   [unergative]
       Zhangsan cried-DE painfully.

   c. Zhangsan shuai-de   hentongku.   [unaccusative]
      Zhangsan fell-DE   painfully.

   d. Zhangsan **zi-nve**-de   hentongku .   [reflexive]
      Zhangsan REFL-abuses-DE   painfully .

As a conclusion, reflexive '*zi*-verbs' have only the external argument, but two theta roles, which meets the driving force of bundling: the mismatch between the sole available argument and the two accessible theta roles. In order to solve this mismatch, adopting bundling is the best solution so far. Both the Agent and the Patient role bundle into a complex theta role and the complex role

is assigned once to the single argument of '*zi*-verb'. If we assign the two independent theta roles to a single NP, we'll violate the Theta Criterion (Chomsky 1981). In the operation of bundling, the argument does not receive the theta role twice, and the bundling operation only works on unassigned theta roles. The Theta Criterion can therefore be kept.

45) *Theta Criterion* (Chomsky 1981, p. 35)
Each argument bears one and only one θ-role, and each θ-role is assigned to one and only one argument.

2.4.3 Deletable & Non-deletable *zi*-: Case Driven.

As we have discussed earlier, one of the two rules to clarify reflexive '*zi*-verbs' and non-reflexive '*zi*-verbs' is to see whether *zi*- is drop-able or not. What triggers the optionality of *zi*-? The reason is that *zi*- in reflexive verbs plays the role of checking accusative case. Recall that verbs that can be reflexivized must be two-place transitive verbs (Faltz 1977), and these verbs have the accusative case feature to be checked. And more specifically, verbs that can be reflexivized by *zi* in Chinese are only a subset of Agentive verbs ([+c+m],[-c-m]) and Sentient verbs ([+m],[-c-m]). According to the *Lexical Marking rule*, these two groups of verbs do have accusative case feature:

46)   *Lexicon marking:*
Given an n-place verb-entry, n>1,
If the entry includes both a [+] cluster and a fully specified cluster[/α/-c], mark the verb with the Accusative feature.

Chinese is a syntax language, and there is no operation in the lexicon to reduce accusative case of the reflexive verb[17]. There should be some morphological element to check accusative case in the level of syntax. In Chinese, *zi*- is that 'checking accusative' element, just as *se* in French. In this case *zi* is an essential part to make sure the bundling can work. The reflexive '*zi*-verbs' take only one external argument, and therefore these verbs have no other argument to check the accusative case. But Mandarin Chinese does not seem to have overt case marking. How do we know the role of *zi*-is to check accusative case? The evidence is from passives[18].

Passive verbs cannot assign accusative case, but we know that *zi*- needs to check accusative case. Then we can make a prediction that *zi*- should be incompatible with passive verbs. And that's

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[17] Note that unaccusative verbs in all the languages (both syntax language and lexicon language) reduce accusative case in the lexicon, since the operation of decausativization happens in lexicon universally.

[18] Raising verbs also cannot assign accusative case, which can also be a test similar to passives.

exactly the situation in (47). Since there is no accusative case for zi- to check, sentence (47) is crashed[19].

47) *Zhangsan **zi-bei-sha**-le
     Zhangsan   REFL-Passive-kill-Pef.
     (Intended meaning 'Zhangsan was self-killed.')

Note that zi- can attach to some unaccusative verbs (Group3), but unaccusative verbs cannot assign accusative case. In that condition, 'zi-unaccusative verbs' are not reflexive verbs, and therefore bundling does not happen. Non-reflexive, adverbial zi- has nothing to do with case, and it is just an optional adverbial, meaning 'by oneself'.

Since I've proved that bundling indeed happens in Mandarin Chinese, what is the categorical status of zi-, clitic or prefix? and what's the exact derivation process of bundling in Chinese? Section 2.5 will be devoted to answer these questions.

2.5 Chinese Lexicon-Syntax Parameter Setting of Reflexivization[20] and Categorical Status of zi

Reinhart and Siloni (2005) suggest a lexicon-syntax parameter setting across languages. The parameter setting should be consistent in a certain language, which is not only limited to the operation of reflexivization, but also includes reciprocity, middles, passives. and etc. In terms of reflexivization, lexicon languages finish bundling and form a reflexive predicate in its lexicon, while syntax languages attach the reflexive marker to the predicate in the computational system. It seems in this framework that the grammatical category of the reflexive marker, whether $zich$, or si, is not directly related to the level (lexicon or syntax) at which bundling will happen.

However, Marelj and Reuland (2016) eliminate the lexicon-syntax parameter, and attribute the distinction between 'lexicon language' and 'syntax language' in reflexivization to whether reflexive marker in a certain language is clitic or not. One of the most important tests is to see whether a reflexive marker allows a proxy reading. A clitic, like Italian si, allows a proxy reading. The reason is clitics have an ambiguous status between XP and X^0, and therefore it can form an A'-chain with its antecedent. Since the chain is not a uniform A-chain, it is likely for the clitic to carry a proxy index. For a non-clitic, like Dutch $zich$, which will form a uniform A-chain with its antecedent cannot allow the proxy reading. So in this proposal, it is the

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[19] There may be more than one reasons which make (47) illegal. But accusative case is an important issue in reflexive predicate, and it needs to be discussed. Passive verbs is the most suitable diagnostic that I can think of now to test the accusative case assignment of reflexive verbs in Mandarin Chinese.

[20] I think this setting of other arity operations in Chinese will be consistent with reflexivization, but this paper will only talk about reflexivization.

grammatical/morphological category of the reflexive marker that determines how reflexivization is derived, instead of the lexicon/syntax parameter setting.

This section will mainly follow Reinhart and Siloni (2005) and discuss whether bundling in Chinese works in lexicon or syntax, which is in fact ambiguous. And I will also briefly talk about the grammatical category of *zi-*, with some discussion about Marelj and Reuland (2016) and prove that *zi-* is more an afiix, bound morpheme, rather than, perhaps, a clitic.

2.5.1 The Ambiguous Status

To judge whether bundling happens in syntax or lexicon in a certain language, Reinhart and Siloni (2005) have four criteria: the existence of (i) a Reflexivized ECM, (ii) a Dative construction, (iii) a Reflexive nominal; and (iv) whether or not reflexive predicates are productive. From the chart below (48), '*zi*-verbs' in Chinese can properly fit into neither of these two categories. '*Zi*-words' in Mandarin does not allow 'reflexive nominal' which should be possible in lexicon languages, and Chinese also has the '*zi*-consecutive verbs' construction which can be analyzed as 'reflexive ECM structure'. So Chinese does not behave like a canonical lexicon language. But at the same time, Chinese does not allow reflexive dative construction, which does not make Chinese a proper syntax language, either. This ambiguous status of *zi-* might be attributed to the diachronic evolution of Chinese, since in archaic Chinese, the '*zi*-verb'-construction was very productive and allowed dative construction (details will be presented later). It is likely that the reflexivization operation in Chinese is moving from syntax to lexicon from past till now. The problem is that, synchronically, there needs to be an explanation.

48)	ECM	Dative construction	Productivity	Reflexive Nominal[21]
(R&S) Lexicon language	No	No	No	Yes
(R&S) Syntax language	Yes	Yes	Yes	No
Chinese reflexive-verbs	**maybe**	No	No	No

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[21] Leixon languages, like Hebrew, allow reflexive nominals, as below (Reinhart and Siloni 2005). However, Chinese does not allow it, like in (ii)
  (i) hitraxcut
      'self-washing'
  (ii) *zi-xi
        'self-washing' [intended meaning]

Among the four criteria above, I think the split with regard to the existence of reflexive ECM construction should be the most fundamental and determinant diagnostic, while other three diagnostics might not always be reliable. In Chinese, the *zi*-construction which might be a reflexive ECM structure looks like (13b), copied from previous text. Whether Chinese is a lexicon language or a syntax language depends on how we explain this structure. Section 2.5.2 will provide more data of this structure and analyze its syntactic characteristics.

13) b. Zhangsan **zi-jue**   conghui
      Zhangsan REFL-consider   smart.
      'Zhangsan considers himself smart.'

2.5.2 Argument Supporting Chinese as a Syntax Language: Reflexive 'ECM'

In R&S (2005), lexicon languages do not allow the use of reflexives (49), but syntax languages do (cf. 50). The reason is reflexivization of ECM predicates involves theta clusters of two distinct predicates. In the lexicon, there is no relation between these two predicates. Only syntax can put them together. Hence, a lexical operation of bundling definitely cannot form ECM reflexives. If a certain language allows a reflexive ECM structure, this language cannot be a lexicon language.

49) *Okos-nak gondol-kod-t-unk.   (Hungarian)
    clever-dat think-Refl-Past-1pl + indef.obj.agr.
    (Intended meaning: 'We thought ourselves clever.')

50) Peter se smatra   [$_{AP}$ pametnim].   (Serbo-Croatian)
    Peter SE considers intelligent-inst
    'Peter considers himself intelligent.'

In Mandarin Chinese, the condition is the same. *Zi-* can attach to Sentient[22] ([+m]) verb stems, and compose Group2 '*zi*-verbs' which can take two consecutive predicates which we can analyze as ECM. In the ECM structure of (51), the matrix predicate *zhi* (know) and the embedded predicate *tianfuguoren* (highly talented) have no relationship in the lexicon. So it is impossible for the reflexivization operation applying to two irrelevant words at the same time in lexicon. In lexicon, *zi-* at least has nothing to do with the embedded predicate *tianfuguoren* (highly talented).

51) Zhangsan **zi-zhi**   tianfuguoren.
    Zhangsan REFL-knows   highly talented.
    'Zhangsan considers himself very talented.'

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[22] Although these verbs, like *zhi* (know), *jue* (feel), *ren* (consider), look also like experiencer verbs ([+m,-c]), they are actually not. Sentient ([+m]) obligatory merges externally, while Experiencer ([+m,-c]) can merge both externally or internally, depending on the context. And the verbs here are only Sentient verbs.

From the chart (48), we know that in terms of productivity, Chinese behaves more like a lexicon language. In principle, reflexivization should be a productive operation in syntax languages: transitive verbs whose external argument can be interpreted as bearing a [+m] feature should be able to be reflexivized (Reinhart and Siloni 2005). Chinese has exception for this generalization: in (52), the Cause [+c] verb *yule* (amuse) which is compatible with an Agent ([+c,+m]) role, can take an anaphora (36a), but it cannot be reflexivized by *zi-* in (52b). However, that in itself does not prove that Chinese is a lexicon language. Firstly, reflexivization in lexicon languages should be limited to only a subset of Agent-Theme verbs, not including Sentient or Experiencer verbs. But Chinese do allow the reflexivization of Sentient verbs (with ECM). The ungrammaticality of (52b), I would attribute it to the diachronic evolution of Chinese.

Generally speaking, the construction of '*zi*-verbs' in archaic Chinese is more productive than what it is in modern Chinese[23]. Although the interpretation of 'self-amuse' cannot be expressed by a '*zi*-verb' in modern Chinese, archaic Chinese did allow this construction. In (52c), *zi-yu* (self-amuse) is possible. So it is likely that the reflexivization operation in Chinese is in the process of moving from syntax to lexicon.

52) a. Zhangsan tongguo kan dianshi (lai) yule **ziji.**
    Zhangsan by watch TV amuse Anaphor.
    'Zhangsan amuses himself by watching TV.'

  b.??Zhangsan tongguo kan dianshi **zi-yu**
    Zhangsan by watch TV REFL-amuse
    (Intended meaning: 'Zhangsan can self-amuse by watching TV.')

  c. Qiewen Changqing hao zhi, yuan yi **zi-yu**.
    (pro)$_i$ hear Changqing$_y$ like it$_k$, (pro)$_i$ wish (pro)$_y$ with (pro)$_k$ REFL-amuse.
    'I heard Changqing likes it, and I hope Changqing can self-amuse with it.'
    窃 闻 长 卿 好 之 , 愿 以 自 娱 。
    (*Biography of Simaxiangru* , *Records of The Grand Historian* 史 记 , 司 马 相 如 列 传)

Moreover, Chinese does not allow dative reflexivization (53b) , which also does not perfectly fit into syntax language (eg: French in data 53a). But this cannot indicate Chinese is not a syntax language, either. Reinhart and Siloni (2005; footnote 18) mention not all syntax languages allow reflexive dative construction. For example, Greek, as a syntax language, does not allow reflexive dative construction. Papangeli (2004) gives an explanation from a morphological perspective: While the reflexive morphology in French (clitic *se*) is associated to the head INFL and is therefore a general case reducer, in Greek the reflexive morphology is a verbal affix which is only limited to reduce accusative case. It is hard to clarify whether Chinese *zi-* here is a clitic or a verbal affix, due to Chinese having limited overt morphology. Since clitics are more free than

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[23] To prove this idea, a full, precise, diachronic study will be needed. I would like to work on it, but due to the limited space and time, I can only point out this idea here.

affixes, it is also possible that, diachronically, *zi-* is changing from a clitic to an affix, and that this evolution is still going on. In conclusion, the fact that Chinese lacks a reflexive dative construction might be due to other reasons, without influencing whether or not Chinese is still basically a syntax language now.

53) a. Jean s'est envoye une lettre.
      Jean SE is sent   a   letter.
      'Jean sent himself a letter.'

   b.*Zhangsan **zi-song**-le   yifeng xin.
      Zhangsan REFL-send-Pef   a   letter.
      (Intended meaning 'Zhangsan sent himself a letter.')

Here I give the derivation process of Group1 reflexive '*zi*-verbs' in Chinese. It is *zi-* that checks the accusative case of the verb *sha* (kill), and the Theme role still retains with the verb. Once *Zhangsan* merges, with the assignment of the Agent role, the Theme role is bundled with Agent role. A complex <Agent-Theme> role is assigned to *Zhangsan*. And (54d) is the interpretation.

54) a. Zhangsan **zi-sha**-le.
      Zhangsan REFL-kill-Pef.

   b. VP: [zi sha$_{\text{Agent, Theme}}$]

   c. IP: [Zhangsan $_{\text{<Agent, Theme>}}$ [zi sha$_j$ [VP t$_j$]]]

   d. ∃e [kill(e) & [+c+m](e, Zhangsan) & [-c-m](e, Zhangsan)]

Following the assumptions of Reinhart and Siloni (2015), more specifically their reformulation of the Theta-Criterion (56) and EPP (57), I will sketch, below, the derivation of the reflexive 'ECM' structure in Chinese, taken as a syntax language. I take (51) as an example, copied here as (55a).

55) a. Zhangsan **zi-yiwei**   tianfuguoren.
      Zhangsan REFL-considers   highly talented.
      'Zhangsan considers himself very talented.'

   b. Embedded ECM: [$_{\text{IP}}$ [tianfuguoren $_{\text{<θi>}}$]]

   c. Next VP   [$_{\text{VP}}$ zi-yiwei$_{\text{<θk>}}$ [$_{\text{IP}}$ [tianfuguoren $_{\text{<θi>}}$]]$_{\text{<θf>}}$]

   d. Matrix IP   [$_{\text{IP}}$ Zhangsan $_{\text{<θk+θi>}}$ [$_{\text{VP}}$ zi-yiwei [$_{\text{IP}}$ [tianfuguoren]]$_{\text{<θf>}}$]]

56) *Theta-Criterion*[24]
   Every theta-role must be assigned in the smallest full IP.

57) *EPP*
   Merging the outmost SpecIP of the cycle is obligatory.

In (55b), the external theta role$_{<\theta i>}$ is retained in the embedded predicate *tianfuguoren* (highly talented). It is possible for $<\theta i>$ to stay on the verb, since the embedded IP is not full, but Specless. The maximal domain where the theta role obligatorily has to be assigned can be defined by the EPP in (57). Since there is no Spec in the embedded IP, the C therefore cannot merge. And the cycle is not complete. Rule (56) also suggests the projection of a full SpecIP is a requirement to complete the cycle. In the ECM structure (55b), the maximal domain in which $<\theta i>$ must be assigned has not been met. As a result, the theta role $<\theta i>$ can still stay on the verb at this stage.

In (55c), the matrix verb *yiwei* (considers) is attached by *zi,* and its accusative case feature is checked by *zi.* If *zi-* does not exist, then the derivation will crash due to case. The matrix verb assigns its internal theta role $<\theta f>$ to the embedded IP, and its external theta role$<\theta k>$ still retains on the matrix verb, waiting for the external argument merging. So at this time, the external role of both the matrix predicate, and the embedded predicate (θk and θi) are unassigned. Upon the merger of the matrix subject *Zhangsan*, with the assignment of external $<\theta k>$, embedded $<\theta i>$ bundles with $<\theta k>$, and a complex role $<\theta i+ \theta k >$ is assigned to *Zhangsan*.

2.5.3 Specless: The Requisite of Bundling in Reflexive '*zi*-verbs'.

In Chinese, '*zi*-sentient verbs' can be reflexive or non-reflexive. A basic fact is that reflexive '*zi*-verbs' take specless 'ECM', while non-reflexive '*zi*-verbs' take full IP with specifier as its internal argument. It is actually the Specless feature of '*zi*-consecutive verbs' construction that enables bundling happen.

Let us look back at the derivation in (55a-d). And based on the discussion there, we can make a prediction: if the embedded IP is full (with Spec), then the external role of the embedded predicate will have to be assigned within the embedded IP. As a result, bundling cannot happen in the matrix clause. That's exactly what happens in (58a). In (58a), the embedded clause is a full SpecIP. Z*i* in matrix predicate *zi-yiwei* is just a non-reflexive adverbial, similar to an intensifier. And just as I mentioned earlier, this kind of non-reflexive *zi* can be deleted without influencing the grammaticality of the sentence, illustrated in (58b).

58) a. Zhangsan **zi-yiwei**   Lisi tianfuguoren.
        Zhangsan REFL-considers Lisi talented.

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[24] This is cited from Reinhart and Siloni (2005), their 'full IP' is equivalent to the regular TP of Chomsky (2001).

'Zhangsan himself considers Lisi talented.'

b. Zhangsan **yiwei** Lisi tianfuguoren.
Zhangsan considers Lisi talented.
'Zhangsan thinks Lisi is talented.'

Things are even clearer in (59a). Data (59a) includes two '*zi*-verbs': *zi-yiwei* (self-consider) is the matrix predicate, and *zi-ze* (self-blame) is the embedded predicate. The embedded IP is full, and therefore both the internal and external theta-roles of the embedded verb *ze* (blame) have to be assigned within the embedded IP, according to (56). As a result, bundling can only happen within the embedded clause: both the Agent and the Patient roles of embedded verb *ze* (blame) are assigned to the lower subject *Lisi* through bundling. It is impossible to bundle the embedded external role with the matrix external role in this case. For the matrix verb *yiwei*, it assigns its internal theta-role to the embedded IP, and its external theta-role to the matrix subject *Zhangsan*. There is no bundling in the matrix clause. And *zi-* of *zi-yiwei* in (59a) is the same as that in (58a): non-reflexive adverbials. And these two *zi-* are both droppable, illustrated in (58b) and (59b).

59) a. Zhangsan **zi-yiwei** Lisi changchang **zi-ze**.
Zhangsan REFL-considers Lisi always REFL-blame.
'Zhangsan himself thinks Lisi always blames himself (Lisi).'

b. Zhangsan **yiwei** Lisi changchang **zi-ze**.
Zhangsan thinks Lisi always REFL-blame
'Zhangsan thinks Lisi always blames himself (Lisi).'

2.5.4 Possible Evidence Supporting Chinese As A Lexicon Language

As discussed in the previous section the bundling marker *zi-* cannot play a role beyond its nearest specifier, as the contrast in (60) and (61). For this linguistic fact, there are two ways to explain it. One option is to treat it as a reflexive 'ECM' structure, as the proposal in 2.5.2. Another way is to regard the two predicate in (60), *yiwei* ('consider') and *tianfuguoren* ('very talented') as a serial verb construction. In this case, it is possible for *zi-* to be an affix and attach to the serial verb construction in lexicon[25]. And in this case the two predicates in (60) share the same agent *Zhangsan*. The serial verb construction is blocked once *Lisi* inserted in between in (61).

60) Zhangsan **zi-yiwei** tianfuguoren.
Zhangsan REFL-considers highly talented.
'Zhangsan considers himself very talented.'

61) hangsan **zi-yiwei** Lisi tianfuguoren.
Zhangsan REFL-considers Lisi talented.
'Zhangsan by himself considers Lisi talented.'

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[25] It needs to be noted that even in this case, it is still possbile for *zi-* to incorporate to the serial verb construction with syntactic operation, as a noun.

Previous descriptive studies on serial verb construction in Mandarin and Cantonese (eg: Li and Thompson 1989, Matthews 2006) offer a summary of grammatical/morphological characteristics of serial verb constructions in Chinese. But it seems there is no strict defining rule or proper test of this construction. Defining *yiwei tianfuguoren* ('consider smart') in (60) as a serial verb construction does not oppose these characteristics summarized in literature, though likely to suffer a risk of overgeneralization.

2.5.5 The Grammatical/Morphological Category of Reflexive Marker *Zi-*

I have given a possible proposal of the derivation of '*zi*-verbs' under the framework of Reinhart and Siloni (2005) in 2.5.2 - 2.5.4. in this part I will discuss the reflexive marker *zi-* adopting Marelj and Reuland's (2016) approach, and see if *zi-* is a clitic or not, and, therefore, whether it would be a lexicon or a syntax langage.

As discussed in previous section, Marelj and Reuland (2016) eliminate the lexicon-syntax parameter, and attribute the distinction between 'lexicon language' and 'syntax language' in reflexivization to the status of the reflexive marker as a clitic or not. Two of the most important benefits of this proposal are: this solution can (i) explain why some reflexive elements, like *si*, can have proxy reading, while other reflexive markers, like *zich*, cannot. (ii) capture the fact that clitics, like *si* can be combined with subject-experiencer verbs, but non-clitics, like *zich* cannot.

These two phenomena are both related to chain formation. The fundamental distinction between clitic and non-clitic is that a clitic has an ambiguous morphological/syntactic category of X^0/XP. As a result, it is possible for a clitic to occupy both A- and A'- position in chain formation, and therefore the chain is not a uniform A-chain. For a non-clitic reflexive marker, like *zich*, its chain is formed among several A positions, and hence it is a pure A-chain. The A'-chain of the clitic *si* makes it be able to encode a proxy index which differs slightly from its antecedent. And this non-uniform A'-chain prevents *si* from suffering IDI. As a result, there is nothing to forbid *si* being combined with subject-experiencer verbs which cannot bundle (Bundling is one of the ways to avoid IDI and protect a reflexive chain.) However, for *zich* which carries a uniform A-chain, it is unlikely for this uniform chain to encode a proxy meaning. Besides, this uniform chain cannot prevent IDI, and hence bundling is a necessary protection for *zich* to encode a reflexive meaning. Since subject-experiencer verbs cannot undergo bundling, they cannot be combined with *zich*.

Let's look back at Chinese *zi-*. As a matter of fact, (62a) has no proxy reading, which indicates and confirms that there is true bundling with *zi-*. True bundling means the two theta roles of the predicate are both assigned to the same external argument, and it is impossible for these two roles to get different index. And *zi-* cannot be combined with a single subject-experiencer verb, unless it is part of a complex verb construction, as in (62b). So *zi-* behaves more like *zich*, rather than *si*, in terms of encoding proxy reading and combination with subject-experiencer verbs.

Besides, the syntactic distribution of *zi-* is more fixed (always preceding the verb) than clitics. Based on the discussion above, there is no reason to categorize *zi-* as a clitic in Marelj and Reuland (2016) framework.

62) a. Zhangsan **zi-sha**-le. (Mandarin)
   Zhangsan REFL-kill-Pef.
   'Zhangsan killed himself.'

b. Zhangsan **zi-jue**   conghui
   Zhangsan REFL-consider   smart.
   'Zhangsan considers himself smart.'

The possibility to encode a proxy reading and being combined with subject-experiencer verbs should be attributed to chain formation of *zi-*. And as a non-clitic, *zi-* should form an A-chain, as *zich*. But the question is whther *zi-* occupies an argument position: (i) the internal argument position in Mandarin is after the predicate; (ii) *zi-* is by no means an argument of the predicate. That indicates *zi-* cannot form a uniform A-chain with *Zhangsan* in (62ab). So there are two possibilities: (a) M&R (2016) does not apply to Chinese, or (b) *zi-* does not form a chain with the external argument. In the latter case, *zi-* might attach to the predicate through incorporation or compounding.

63)	bundling	theta role absorb[26]	proxy-reading	chain formation
Zich	yes	No	no	A-chain
Si	no	yes	yes	A'-chain
Zi-	yes	no	no	no chain or ?-chain

2.6. Why Only A Certain Group of Verbs Can Be Reflexivized by Z*i-*

Let's firstly reviewed the complete map of '*zi*-verbs' that we have discussed in section 2.4. It's not surprising that Group4 and Group5 verbs are not reflexive, since their base entries are intransitive. But for transitive verbs, why only a subset of Agentive verbs (Group1) and Sentient verbs (Group2) can be reflexivized by *zi-* and become reflexive verbs?

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[26] *Si* is a true argument, which can absorb a theta role. *Zich* and *zi-* are just bundling marker and bear no theta role.

64)

No.	Type	Example	Theta grid of the verb has been changed?	Zi- is droppable?	Reflexive verb?
1	*Zi*-agentive verb	**Zi-sha** (self-kill)	Yes	No	Yes
2	*Zi*-sentient verb (with ECM)	*Zhangsan **zi-zhi** conghui.* Zhangsan self-knows smart. 'Zhangsan knows himself smart'			
3	*Zi*-agentive verb	**Zi-bei** (self-prepare)	No	Yes	No
4	*Zi*-unaccusative verb	**Zi-zhuan** (self-rotate) **Zi-ran** (self-burn)			
5	**Zi*-unergative verb	Not exist			

65) a. Agent-theme verb ([+c+m],[-c-m])
    b. Sentient verb ([+m], [-c-m])

There are two pre-requisites of bundling. One is the existence of an external theta-role; another is the animacy of realization of the two roles. Bundling is dependent on the existence of the external theta-role (Reinhart & Siloni 2005), and there has to be a theta role obligatorily merging externally. Without the external theta-role, the internal role has nothing to be bundled with. Secondly, a reflexive verb in Mandarin Chinese requires the bundled complex theta-role be realized as an animate reference. More specifically, both the base verb's external and internal theta role should be able to be realized as animate. If one role is realized animate, but another can only be realized inanimate, it is impossible for these two roles to compose one role and to be assigned to the same reference.

From (65), we know that both Agentive verbs and Sentient verbs have a [+] cluster, which makes sure they must have a theta role which is obligatorily realized externally. The existence of [+] cluster ensures bundling can happen. Although combined clusters, like [-c+m] or [+c-m], are likely to merge externally, they can also merge internally sometimes, depending on the context. But how about Cause verbs with a [+c] cluster? The [+c] cluster can be realized as inanimate Natural Force, which does not meet the second prerequisite of bundling, so Cause verbs are excluded.

Another question is why *zi*- cannot attach to all the Agent-Theme verbs, like Group3 '*zi*-verbs'? The reason also comes from animacy. Verbs like *xue* (study), *bei* (prepare) can hardly realize its internal role to an animate reference in Chinese, and therefore it is unlikely for the inanimate internal role to be bundled with the animate external role. But Sentient verbs (65b) do not have to have two animate theta roles, since the role which is bundled with the external [+m] cluster of

the Sentient verb is the embedded external role. The [-c-m] internal role in (65b) does not need to be involved in bundling, and therefore its animacy won't influence reflexivization.

In conclusion, why only a subset of Agentive verbs ([+c+m]) and Sentient verbs ([+m]) can be reflexivized by *zi-*? There are only three groups of verbs having the [+] cluster to ensure the existence of the external theta-role, and [+c] Cause verbs are excluded due to possible inanimate realization. Agentive verbs whose internal role cannot be realized as an animate reference also need to be excluded.

2.7. Summary

This paper dissected the syntactic characteristics of '*zi*-verbs' in Mandarin Chinese, and argued reflexivization operates at syntax level in Mandarin Chinese. From a diachronic perspective, I showed modern '*zi*-verbs' are clearly evolved from archaic '*zi*-verbs'. From a synchronic view, I distinguished reflexive '*zi*-verbs' from non-reflexive ones with two rules: (i) whether the theta grid of '*zi*-verbs' are distinct from that of their base verbs or not; (ii) whether *zi* is droppable or not. The first rule reflects the theta grid of a reflexive verb is different from its transitive base verb; and the second rule corresponds to the fact that *zi* is needed to check accusative case feature of reflexive verbs. And then by adopting Subject/Object comparison test and proving the '*zi*-verbs' can license Instrument role, I justified reflexive '*zi*-verbs' are unergative with only one external argument. And I also demonstrated the availability of two theta roles of '*zi*-verbs'. Following this way, I got the idea that bundling is the best strategy to capture the nature of reflexive '*zi*-verbs'.

Since reflexive '*zi*-verbs' have only one external argument, there is no internal argument to check these base verbs' accusative case feature. As a result, *zi* is an essential part of reflexive '*zi*-verbs' to check accusative case. In non-reflexive '*zi*-verbs', *zi* is just an optional adverbial, without the function of checking accusative feature. To prove the fact that *zi* needs to check accusative feature of reflexive verbs in Chinese (as a syntax language), I demonstrated reflexive marker *zi* is incompatible with passive verbs which have no accusative case feature for *zi* to check.

Mandarin Chinese does not perfectly fit into the four criteria distinguishing syntax languages from lexicon languages in Reinhart and Siloni (2005). The most determinant factor is whether '*zi*-consecutive verbs' is derived through syntax or lexicon. Proposals of both two sides have been given, and the grammatical category of *zi-* is judged as a non-clitic, but part of the word.

In the end, I analyzed why only a subset of Agentive and Sentient verbs can be reflexivized in Mandarin Chinese by pointing out the two pre-requisites of reflexivization (at least in Chinese) : (i) the obligatory existence of an external theta role; (ii) the 'animate' realization of both external and internal theta roles.

Chapter 3: The Ancestors of Modern Chinese Anaphor *zi-ji*: 'Local' *zi* And 'Long-distance' *ji* in Classical Chinese

3.1 Introduction

In modern Chinese, the reflexive *zi-ji* can be bound both locally and non-locally, which makes it violate the canonical Binding Principle A. Sentence (66) illustrates this issue, and *zi-ji* can refer to *Zhangsan* or *Wangwu*. I will argue that, from a historical perspective, this complex binding condition of *zi-ji* is inherited from two separate words *zi* and *ji* in Classic(ancient) Chinese. This chapter will focus on the historical changes and evolution of Chinese anaphora system.

66) **Zhangsan$_j$** zhidao **Wangwu$_k$** piping-le **ziji$_{j/k}$.**
`
      Zhangsan   know   Wangwu criticize-Pef   Anaphor
      Zhangsan knows Wangwu criticized oneself (=Zhangsan or Wangwu).

Modern Chinese only has a one-way anaphora system which includes only *zi-ji*. But things were different in Classic Chinese. In Classical Chinese (at least before Donghan Dynasty, 15A.D-220 A.D.), both *zi* and *ji* were independent words, and *zi-ji* did not exist. So the system of anaphora in Classic Chinese at that time was a two-way system, including *zi* and *ji*. After the Donghan Dynasty, *zi-ji* began to appear. The first source in the literature is not a normal in Chinese written book, but a Chinese translation of a Sanskrit Buddhism Classic. The anaphora system of Classic Chinese became a three-way system, containing *zi*, *ji*, and *zi-ji*. Although *zi* and *ji* can rarely be used as separate words in modern spoken Chinese, they still work separately in many Chinese idioms which are widely used now.[27] Also, at that time, both *zi-ji* and *ji-zi* were found in the literature. Only *zi-ji* remains in modern Chinese, and the reason behind it is still a mystery since there seems to be very limited study of Classic Chinese data after Donghan Dynasty.

Zi was a reflexive element and can only play a role in the local domain[28] in the literature that has been studied. However, *ji* is an element that is hard to categorize. In the historical literature, *ji*, as an object, has a strong tendency to be non-locally bound, and stays free in the local domain. This makes it distinct from *zi* or other local anaphors. *Ji* is actually a pronominal element. Data will be given in following text.

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[27] (i) is an example of such an idiom:

  (i) zhi   ji   zhi   bi, baizhan   bu dai.
     Know   Anaphor   know others, hundereds of wars   not lose.
     'One's knowing of oneself and others will assure one not lose in wars.'

[28] In both synchronic data in Chapter 2 and diachronic data in this chapter, *zi-* can only work in the domain whose upper boundary is the external argument of the predicate following *zi-*. I have proved in Chapter 2 that modern *zi-* is a verbal reflexive marker, not a true anaphor which can be an argument. For diachronic data, it is impossible to find negative evidence. And it is hard to define whether archaic *zi-* is a local reflexive anaphor or a reflexive marker as modern *zi-*.

In 3.2, I'll discuss *zi* and *ji* as used before Donghan Dynasty (15A.D.-220 A.D.). The first part will analyze syntactic characteristics of *zi* and *ji* from a generative perspective. Anaphors from other languages with similar binding conditions will also be dicussed. Archaic Chinese data after 220 A.D. will be discussed in the appendix, with the appearance of both *zi-ji* and *ji-zi*..

3.2 Before Donghan Dynasty: Local *zi* and Non-local *ji*

Most data in this section is cited from Cheng (1999) and Dong (2002). Dong's data is mainly from *the Records of the Grand Historian* (史 记,104B.C.—91B.C.[29]) and Cheng collects all his data from *the Commentary of Zuo* (春 秋 左 氏 传, about 450B.C.[30])

3.2.1 Reflexive Element *zi*

Defining classic *zi* as a reflexive element is due to the following reasons. Firstly, *zi* can only work in the local domain. Deictic reference is impossible for *zi*. Moreover, *zi* always precedes the predicate, which distinguishes it from pronouns and R-expressions that usually follow the predicate. Since Classical Chinese is a SVO language, the unique distribution of ancient *zi* indicates that it belongs to a different category. Furthermore, *zi* has an emphatic usage. In many languages, reflexive elements also have an emphatic usage, like *X-self* in English[31]. Some linguists, like Levinson (1991), claim that the anaphoric usage of reflexives is developed from their emphatic usages. So the emphatic usage of *zi* to some extent indicates it might be a reflexive element. I will firstly discuss the 'anaphoric' *zi* and then the emphatic *zi*.

 'Local' Reflexive zi-
The anaphoric *zi* always precedes the predicate, illustrated in data (67)-(71) from *Commentary of Zuo* and *Records of the Grand Historian*. The time that *the Records* finished is 350 years later than *the Commentary of Zuo*, so the data from these two books can reflect the usage of *zi* in a long period of time.

> 67) a. Bi   bi   shi   Zhao   er   **zi**   **jiu**
> They will give up Country Zhao and REFL   save.
> 'They will give up Country Zhao and try to save themselves.'
> 彼 必 释 赵 而 自 救.
> （Records of The Grand Historian 史 记，孙 子 吴 起 列 传 ）

> 68)   Zhongwaizhiguo   jiang heyi **zi** **ning**?

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[29]The time period here refers to the time when this book was written down, not the history period that this book covered.
[30]The specific time when this book was finished is still debated.
[31] This phenomenon is not universal the same. In some European languages, intensifiers (German *selbst*) have different forms from some anaphors (German *sich*).

Countries inside and outside the empire   will   how   REFL   make...peaceful

'How will countries inside and outside the empire   (be able to) make it (=empire) peaceful?'

(夫 久 结 难 连 兵), 中 外 之 国 将 何 以 自 宁 ?

(Records of The Grand Historian 史 记，孝 文 本 纪 ）

69)   Wo   shi   zongyu   er   buneng   **zi**   **ke**   ye.
     I   really   indulge   and   cannot   REFL   discipline.
     'I do indulge and cannot discipline oneself .'
     我 实 纵 欲 而 不 能 自 克 也
     (Commentary of Zuo 左 传 ，昭 公 十 年)

70)   Zhanger Chenyu   nai   bianmingxing, ju   zhi   Chen,
     Zhanger and Chenyu$_j$ then   change names, both   arrive at the place of Chen, (pro$_j$)

     Weilijianmen   yi   **zi**   **shi.**
     be   small officer   to   REFL   feed.
     'Zhanger and Chenyu   change their names, go the the place of Chen, and work as small officers to feed themselves (=Zhanger and Chenyu)'
     张 耳 陈 余 $_j$ 乃 变 名 姓 , 俱 之 陈 , 为 里 监 门 以 自 $_j$ 食 。
     (Records of The Grand Historian, 史 记，张 耳 陈 余 列 传)

71)   Yuqiuxiang   jin   zhi$_k$ yu Chuzhuangwang   yi PRO$_k$ **zi**   **dai** ye.
     Yuqiu, the prime minister recommend him$_k$ to   Lord Zhuang of Chu to   PRO$_k$ REFL   replace
     'The prime minister of   Yuqiu $_j$ recommended him $_k$ (Sunshuao, another person mentioned earlier) to the Lord Zhuang of Chu to PRO$_k$ replace oneself$_j$.'
     (孙 叔 敖 者 ，楚 之 处 士 也 。) 虞 丘 相 $_j$ 进 之 於 楚 庄 王 以 自 $_j$ 代 也 。
     (Records of The Grand Historian 史 记 ，循 吏 列 传)

In (67)-(71), the domain for *zi* to work is always delimited by the external argument of the predicate which *zi*- precedes. According to Cheng (1999) and Dong (2002), neither of them have found a sentence in which *zi* is bound beyond the local domain. The only possible exception might be (71). *zi* seems to work beyond the argumenthood domain of the verb it attaches to, *dai* ('replace'), and have referential relationship with the matrix subject *Yuqiu Xiang*. But 'replace' can be analyzed as a three place verb, and in this sense, and *Yuqiu Xiang* is also its argument. So *zi*- still works within the argumenthood of *dai* ('replace').

Emphatic zi-

By emphatic *zi* I mean those examples in which *zi* means 'by oneself' or 'on one's own'. From examples (72)—(74), it is clear that this emphatic usage of *zi* has already appeared in the time of the *Commentary of Zuo* (450B.C.) and is still widely adopted in the *Records of the Grand Historian* (104B.C.—91B.C.).

Emphatic *zi* is usually located before the predicate, adhering to it as an adjunct, in (72)-(74). The predicates following after *zi* assign their internal theta role to independent objects, and *zi* does not influence theta-role assignment of the verb. For example, in (73), the object of *jiang* ('lead') is *bing* ('the army'). And the emphatic *zi-ji* in modern Chinese also keeps this position.

72) Wo jiang **zi** **wang** qing zhi.
   I will   Emphatic go   invite him
   'I will go and ask him for help by my self.'
   我 将 自 往 请 之
   (Records of the Grand Historian ,史 记 ,赵 世 家)

73) Shang **zi** **jiang** bing   jimie Bu.
   Emperor Emphatic lead the army conquer QingBu
   'The emperor led the army on his own and conquered the king, QingBu.'
   上 自 将 兵 击 灭 布. (Records of the Grand Historian ,史 记,淮 南 衡 山 列 传)

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74) Yu Tianzi,   ze zhuqing   jie xing,
   (noble girlrs marrying) to the emperor, then all ministers all see off,

   gong   bu **zi**   **song**.
   the king not   Emphatic see off.

   '(If noble girls of the country marrying) to the emperor, then all the ministers will see the girl off, while the king himself not seeing her off.'
   于 天 子 , 则 诸 卿 皆 行 , 公 不 自 送。
   (Commentary of Zuo 左 传·桓 公 三 年）

3.2.2 Non-local Bound *ji*

The syntactic distribution, binding condition and other syntactic characteristics reveal that *ji* is a special anaphor with pronominal characteristics. The syntactic distribution of *ji* is largely distinct from *zi*. The same as pronouns and R-expression, *ji* only follow the verb, while *zi* always precedes the verb. Also, *ji* is usually non-local bound in the literature, i.e.the antecedent of *ji* is usually not its co-argument. Besides, *ji* does not have the emphatic usage. All those characteristics make *ji* look like a pronominal element.

Pronominal ji
In the data of both *Commentary of Zuo* (about 450B.C.), *ji* is always bound within the sentence when it is an object, but the binding is almost always non-local. As illustrated in (75), there is a local antecedent of *ji*, Z*hengshenhou* (Marquis of Shen in Country Zheng), and Z*hengshenhou* (Marquis of Shen in Country Zheng) can c-command *ji*. But *ji* is bound across the complex possessive NP by the higher subject *Chen YuanXuanzhong* (YuanXuanzhong of Chen)[32]. In (76),

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[32]There is one exception in the Commentary of Zuo in which *ji* is locally bound. I list it below in (i). Cheng (1999) claims that this local-binding condition of *ji* is not a typical anaphoric usage, because it

ji, as a possessor, has no co-argumenthood. And it is bound across the most local antecedent pro by the matrix subject *ZhuangJiang*[33].

75) **ChenYuanXuanzhong$_k$** yuan **Zhengshenhouzhi$_j$**   fan
    Yuan Xuanzhong of Country Chen$_k$ hate   Marquis of Shenin Country Zheng's betray

    ji$_k$ yu   Zhaoling.
    Anaphor   in   Zhaoling.

    'Yuan Xuanzhong of Country Chen hates Marquis of Shen in Country Zheng's betraying him (=Yuan Xuanzhong of Country Chen) in Zhaoling.'
    陈 辕 宣 仲 怨 郑 申 侯 之 反 己 于 召 陵
    (Commetary of Zuo, 左 传 ，僖 公 五 年)

76) **Zhuang Jiang $_k$** yi   **(pro$_j$)**   wei **ji$_k$**   zi.
    Zhuang Jiang   regard (pro)   as   Anaphor-(Poss) son.
    'Zhuang Jiang regards/treats (pro) as her (Zhuangjiang's) son.'
    庄 姜 以 为 己 子
    (Commetary of Zuo 左 传, 隐 公 三 年)

According to Dong (2002), *ji* is never bound by a local antecedent in the *Records of the Grand Historian* and the agent of the verb preceding *ji* does not work as its antecedent. An example from *Records of the Grand Historian* is listed in (77). *Ji* is also bound by the further antecedent *Chenyu,* not the local one, *Xiangyu*.

This observation above is based on historical data, which means we cannot get negative evidence.

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suggests a contrast between oneself and others. *Yu and Tang* do self-reflection, and they get good results; While *Zhou and Jie* blame others, and they fail. There is a contrast in between. For this reason, Cheng (1999) asserts the local binding usage of *ji* is highly restricted, and also statistically it is very rare. I have no comment about this opinion of Cheng (1999), but one thing that might need to be noticed is that in the later literature the *Records of the Grand Historian*, there is no such local-binding data of *ji*. This may indicate that with time passing by, *ji*'s non-local binding becomes steady.

(i)Yu, Tang$_j$ **zui**   **ji$_j$**,   qi xing ye boyan;   Zhou, Jie zui ren,   qi wangyehuyan.
    Yu, Tang reflect Anaphor, their thrive quick ;   Zhou, Jie blame others, their being destroyed quick
    'Yu and Tang $_j$ reflect themselves$_j$, so they thrive quickly; Zhou and Jie blame others, so they were destroyed quickly.
    禹， 汤 罪 己 ， 其 兴 也 悖 焉 ； 纣, 桀罪人， 其 亡 也 忽   焉。(左
    传， 庄 公 十 一 年)

[33] Cheng (1999) claims that *ji*'s being able to occupy a possessor's position, showing *ji* is a pronoun. It is quite common for reflexives or even reciprocals to occupy the possessor position. Icelandic *sinn* and Norwegian *sin*, for instance, are possessive reflexives. English reciprocal *each other* can also form possessive phrases like *each other's book*. So, Cheng's observation in itself does not say anything about the pronominal or anaphoric status of *ji*.

More specifically, although in (75)-(77), *ji* is always non-locally bound, we cannot say the sentence will become ungrammatical when *ji* is bound by the local antecedent. But from the fact that *ji* is almost always non-locally bound in all the data from the two huge literature can tell us Classic *ji*at least has a strong tendency to be long-distance bound within the sentence.

77) **Chenyu_k** yuan **Xiangyu_j**   fu   wang   **ji_k**.
     Chenyu   blame   Xiangyu   not   let..be king   Anaphor.
     'Chenyu blames that Xiangyu doesn't let him (=Chenyu) be the king.'
     陈 余 怨 项 羽 弗 王 己 也 。
     (Records of the Grand Historian, 史 记 , 高 祖 本 纪)

The binding properties of *ji* indicate it is not anaphor. Bit how do we categorize *ji*?: anaphor or a pronoun? Being free in the local domain makes *ji* look a bit like a pronominal element. However, a true pronominal should also be able to be used deictically, or be discourse bound, which means it can co-reference with an antecedent in the discourse beyond the sentence. Example (78) might be evidence to show *ji* has deictic usage, but that is not for sure.

78) Wuguo   xiang   wang,   **Zhao_k**   du   fou,
     Governors of five countries   each other   respect...as King, governor of Zhao_k only disagrees,

     yue:' wuqishi,   gan   chu   qi minghu?'
     saying 'not qualifying, how dare to own its reputation?'

     Ling   guoren   wei **ji_k**   yue jun
     (pro_k)ask   people of Zhao   call   Anaphor_k as   Jun

     'Governors of five countries respecting each other as King, only the governor of Zhao refuses, saying 'I'm not qualified as a King, how dare to own the reputation of King?' (Pro=governor of Zhao) ask people of country Zhao call him Jun34 instead of King.'

     五 国 相 王 , 赵 独 否 , 曰 : " 无 其 实 , 敢 处 其 名 乎 ? " 令 国 人 谓 己 曰 君 。
     （ *Records of the Grand Historian* 史 记 , 赵 世 家 ）

(78) consists of two sentences, and *ji* in the second sentence *Ling guorenweijiyuejun* (ask people of Zhao to call one as Jun) does not have a sentence internal antecedent. *Ji* in this case co-refers with the NP *Zhao* (governor of Zhao) which is in the first sentence and precedes the question. It seems this is an instance of discourse binding. However, the second sentence might have a pro as its subject, and the pro co-index with *Zhao*. Both Classic Chinese and modern Chinese are pro-drop languages, and it is quite common for a Chinese sentence having a covert subject in the S-structure. If *ji* was the subject of the second sentence, it would be quite clear that Classic *ji* could have a discourse antecedent. However, as an object, it might be the case that *ji* is still an anaphora and it is sentence-internally bound by the matrix subject pro which is co-indexed with

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[34]A respectful name of a ruler but less noble than 'King'

Zhao. And this kind of data in which *ji* is not sentence-internally bound is also statistically very rare.

Based on the discussion above, there is not enough evidence to support *ji* to be a true pronoun, but *ji* is still an anaphora with 'pronominal' characteristics.

Pronominal Anaphora Across Languages

Ji tends to only allow the non-local binding and the local binding seems to be blocked, which makes it distinct from long-distance anaphors in many other languages, even including modern Chinese *zi-ji*. But in Greek, there is an anaphor *ton idhio* that shares the 'non-local binding only' characteristic of *ji*, although the syntactic distribution of *ton idhio* is not exactly the same as *ji*. I'll discuss three proposals of *ton idhio* and see whether they can shed some light to the analysis of *ji* :Itatridou (1986), Anagnostopoulou and Everaert (2013), and Varlokosta and Hornstein (1993). As I'll show, both the category and binding condition of *ji* and *ton idhio* are hard to explain.

From a typological perspective, it is not rare for an anaphora to be non-locally bound, but most long-distance anaphors can also be locally bound. For example, Romanian reflexive *sine* allows both local and long-distance binding (Everaert 2005)[35]. Moreover, Icelandic *sig* can appear in infinitival clauses and be bound by the matrix subject in (79), and *sig* can also be bound across a subjunctive tensed clause (Thráinsson 1991). Japanese *jibun* can be also be bound across a tensed clause, like in (80). The same holds true for modern Chinese *ziji* in (81).If we want to classify *ji*, it seems *ji* should not be in the same category with them.

79) Pétur$_i$ bað Jens$_j$ um [PRO$_j$ að raka sig$_{i/j}$][36].
     Peter$_i$ asked Jens$_j$[PRO to shave oneself $_{i/j}$]

80)[37] Tarō $_j$ga Hanako $_k$ ga **jibun $_{j/k}$** o seme-ru to waomottemominakatta (koto)
          Nom   Nom Anaphor blame-PRES COMP top never-thought (fact)
      'Tarō never though that Hanako would blame one (=Tarō OR Hanako).'

81) Zhangsan$_j$ zhidao Lisi $_k$ xiangyao shale **ziji $_{j/k}$**.

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[35] Below is the data of Romanian *sine* from Sevcenco (2006). In (i), it is locally bound. While in (ii), it can be bound locally or non-locally.
   (i).Directorulseadmiăpe sine.
      Director-the se $_{REFL\ CL\ ACC}$admires$_{3SG}$pe$_{PREP\ ACC}$self.
      'The director admires himself'.

   (ii).Georgevreaca Alex săcontezeon sine.
      George wants that$_{COMP\ SUBJ}$ Alex să $_{SUBJ}$ count on self.
      'George wants that Alex count on Alex/George'.

[36]Cited from Thráinsson (1991).
[37]Cited from Kitagawa (1991).

Zhangsan knows   Lisi   wants to kill   Anaphor.
'Zhangsan knows Lisi wants to kill oneself(=Zhangsan or Lisi).'

However, Greek has a long distance 'anaphor' that behaves differently from the examples above. Greek has two anaphors, a local anaphor *o eaftos mu* ('the self my') and *o idhios* ('the same'). *O idhios* needs to be both locally free and bound within a sentence, when it is the object. This is the same as Classic Chinese *ji*. Itatridou (1986) gives an example, copied in (82). Itatridou also formulated a Principle D in (83) to explain this issue.

82) [38] O Janis$_j$ theli [o Vasilis   knavoithisi   ton idhio$_{j/*k}$]
The Janis   wants [the Vasilis.$_{NOM SBJV}$ helps   the same.$_{MASC}$]
'John wants Bill to help him'

83)   Principle D:
O idhios should be bound in the whole sentence but free in the governing category.

However, this Principle D has two possible problems. The 'governing category' for anaphors of different languages is actually different, as I have mentioned in the previous section. Even if we follow the canonical notion of 'minimal governing category', creating another Binding Principle only for this particular *o idhios* would break the two-way systems of anaphora and pronoun set by the canonical Binding Theory[39]. Moreover, as pointed out by Anagnostopoulou and Everaert (2013), the binding condition of the complement anaphor *o idhios* is far more complicated than this Principle D. They mentioned object anaphora *o idhios* is well-formed only (i) as part of a co-ordination of two direct objects, and (ii) as an object of a preposition[40].

Anagnostopoulou and Everaert (2013) also found that *ton idhios* has a mixed behavior in the four anaphoric diagnostics cited in the earlier section. It qualifies as an 'reflexive' anaphor, since it requires a sentence internal c-commanding antecedent and not tolerating split antecedents. But at the same time it behaves also as a pronoun since it allows strict reading in ellipsis sentence. So *ton idhio* is an element that cannot be properly defined by current anaphora/pronoun framework.

If we would follow Anagnostopoulou and Everaert (2013), the distribution of t*on idhio* is different from that of *ji* since *ji* can occupy the direct object position without a co-object or a preposition. Varlokosta and Hornstein (1993) also proposed to explain the non-local binding of object *ton idhio*. These two papers have different judgements for the distribution of object *ton idhio*. Anagnostopoulou and Everaert (2013) mentions *ton idhio* cannot be the sole direct object of verb, while Varlokosta and Hornstein (1993) thinks it is fine for *ton idhio* to occupy the direct object position by itself. It's impossible for me to make a judgement for Greek since I'm not a native speaker. But I'd like to briefly discuss Varlokosta and Hornstein (1993)'s proposal, because *ji* can properly occupy the direct object position by itself, which is similar to the distribution of *ton idhio* defined by them.

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[38]Cite from Anagnastopoulou&Everaert (2013)

[39] But I have to admit the two-way system of pronoun and anaphors may not be the ultimate truth. It is just at this moment, it seems we still need to make efforts to determine whether a defective nominal expression is a pronoun or an anaphor under the current development of the theory.

[40]Anagnostopoulou and Everaert (2013) have different grammatical judgement from Itatridou (1986). Sentences like 17 in which ton idhio works as the sole direct object is unacceptable.

Varlokosta and Hornstein (1993) propose that *ton idhio* is A'-bound by a φ-operator which needs to be identified by a full specified antecedent. This operator resides in the most local spec CP and it moves to the COMP most local to the antecedent that identifies it. The antecedent must c-command the operator. The authors show if the spec CP position which is nearest to *ton idhio* is occupied, for example, a wh-element, *ton idhio* cannot be bound in this case. Another evidence is from the comparison between (84) and (85). NP does not have a spec CP, and therefore the only available spec CP is the matrix one, *O Yanis*. Following the authors' proposal, the φ-operator can only land in the matrix spec CP *O Yanis,* and as a result, *O Yanis* cannot c-command the operator. Then the operator is not bound and not identified. If we put the embedded *ton idhio* one more clause down in (86), the sentence becomes grammatical again. I can draw a conclusion from their proposal that object *ton idhio*[41]always needs an antecedent higher than a CP.

84)   O Yanis$_i$ dhiavase [$_{NP}$enavivliogia ton afton$_i$]
        John   read   a book about him(self)

85)   *O Yanis$_i$dhiavase [$_{NP}$enavivliogia ton idhio$_i$]

86)   O Yanis$_i$ nomiziotii Maria dhiavase enavivliogia ton idhio$_i$
          John   thinks that Mary   read a book about   him.

Although *ji* also prefers non-local binding, it does not necessarily require an antecedent which is higher than a CP, (repeated here as 87), *ji* is the possessor and in the spec DP position. And its antecedent is *Zhuang Jiang*, the spec IP. *Zhuang Jiang* does not c-command any element in spec CP position which can be resided by a φ-operator. So the φ-operator resolution cannot be directly applied to *ji*.

87)   Zhuang Jiang$_k$ yi (pro $_j$)   wei **ji $_k$**   **zi.**
        Zhuang Jiang treat (pro)   as   Anaphor(-Poss) son.
        Zhuang Jiang treats (pro) as her (=Zhuang Jiang's) son.

        庄 姜 以 为 己 子 (Commetary of Zuo 左 传 , 隐 公 三 年)

3.3 Summary

Based on the discussion above, archaic *zi*-is clearly a reflexive element, with a local 'domain' and an emphatic usage. The situation of *ji* is a bit more complicated.

ji should be an anaphor with a non-local pronominal characteristic. Whether *ji* has deictic usage cannot be settled. Greek *ton idhio* is a similar element to *ji*, which indicates a cross-linguistic pattern of such non-canonical anaphora.

(88) **Chenyu$_k$** yuan **Xiangyu$_j$**   fu   wang   **ji$_k$**.
        Chenyu blame Xiangyu   not   let..be king   Anaphor.
        'Chenyu blames that Xiangyu doesn't let him (=Chenyu) be the king.'

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[41]Subject *ton idhio* is a different element in their proposal.

陈 余 怨 项 羽 弗 王 己 也 。
(Records of the Grand Historian, 史 记 , 高 祖 本 纪)

(89) O Yanis_i nomiziotii Maria dhiavase enavivliogia ton idhio_i
       John   thinks that Mary   read a book about   him.

To find a resolution for the binding condition of *ji* and t*on idhio* is quite hard. If we want to stick to the basic spirit of Binding Principle A, and explain the binding condition of anaphors which allow both local and non-local binding, we might reduce long distance binding, in a sense, to local binding by covert (and also cyclic) movement at a certain stage, like in LF. In this way, the anaphor can co-index with both local and non-local antecedents. However, for *ji* and *ton idhio*, we have to explain why these two elements somehow skip the local antecedent and prefer the further one, and these two elements even differ in the preference of how 'further' their antecedents should be. Based on current data, *ton idhio* seems to prefer a further antecedent than *ji*.

The proposal of Varlokosta and Hornstein (1993) is more specified than the principle D in Iatridou (1986), since they defined how 'non-local' the antecedent of *ton idhio* should be, and principle D only claims *ton idhio* cannot be locally bound. But adopting an operator to explain the problem might not have a cross-linguistic application, and how to confront this proposal with the big map of binding theory may also be a problem. And adopting the proposal for *ton idhio* directly to *ji* is not appropriate, due to their distinct syntactic distributions, different preference for antecedents, and the lack of negative evidence of Classic Chinese *ji*.

(90) Principle D:
      O idhios should be bound in the whole sentence but free in the governing category.

Chapter 4: Binding of *zi-ji*: A Decomposition Perspective

4.1 The Morphology of *zi-ji*

The Chinese long-distance anaphora *zi-ji* has been regarded as a morphologically simplex (or mono-morphemic) anaphora in the long past, contrasting with the complex anaphora *ta-zi-ji*. However, both synchronic (chapter 2) and diachronic evidence (chapter 3) show that *zi-ji* is bi-morphemic and complex.

Many previous studies were built directly on the assumption of *zi-ji*'s simplex morphology, and since *zi-ji* is not simplex, these proposals have to be modified. Cole and Sung (1994) was proposed upon a general hypothesis: there is a systematic difference in the morphological properties of LD (long distance) anaphora and local reflexives: morphologically complex anaphors are always local while simplex anaphors are non-local. Cole and Sung categorized *zi-ji* as a mono-morphemic element and an X^0 which can undergo head movement. But as a bi-morphemic element, there is no reason to assume that *zi-ji* is a X^0 capable of undergoing head movement. The same also holds for Battistella (1989), Cole and Wang (1996), and Sung (1990) which define *zi-ji* as X^0.

The fact that *zi-ji*, as a long distance (LD) anaphora, is bi-morphemic also casts doubt on the dependent relationship between the simplex/complex morphology of an anaphora and its binding domain. But that does not mean there is no relationship between an anaphor's internal properties and its binding condition. I will show that the binding condition *zi-ji* adheres to can still be captured through a decomposition perspective.

4.2 The Asymmetry of Local and Non-local Binding of zi-ji

Except for the simplex morphology idea, most previous studies on *zi-ji* hold the same view that the relationship between *zi-ji* and its antecedent is always covertly local. So that the mechanism which derives the local and non-local binding of *zi-ji* is the same. But if the local and long distance binding is achieved in an identical operation, I would predict the accessibility of local and long-distance index will be influenced by the same factor. However, this is not the case in many aspects.

4.2.1 Data Showing Asymmetry in Local and LD Binding: Blocking Effect Not Always Exists

It was widely accepted that a difference in phi-features of local and LD antecedents will block the LD binding of *zi-ji* (Cole and Sung 1994, Huang and Tang 1991), like in (91a).

91) a. <u>Precondition: Reference (k) ≠ Reference (j)</u>
    Zhangsan$_k$ shuo **wo**$_j$ chang piping **zi-ji**$_{*k/j}$.
    Zhangsan say I often criticize Anaphor.
    '**Zhangsan**$_k$ said that **I**$_j$ often criticized **oneself**$_{*k/j}$.'

  b. <u>Precondition: Reference (k) = Reference (j)</u>
    Zhangsan$_k$ shuo   **wo**$_j$ chang piping **zi-ji**$_{k/j}$.
    Zhangsan say   I   often criticize Anaphor.
    '**Zhangsan**$_k$ said that **I**$_j$ often criticized **oneself**$_{k/j}$.'

However, recently it has been notified that the person feature blocking is not symmetric (Cole, Hermon and Huang 2006), as in (92). From the contrast between (91a) and (92), it is clear that a local 1st person antecedent can block the LD binding of a 3rd person antecedent, while a local 3rd person antecedent cannot block the LD binding of a 1st person antecedent[42].[43]

92)   <u>No Precondition on reference of (k) and (j)</u>
    Wo$_k$ shuo   **Zhangsan**$_j$ piping-le **zi-ji**$_{k/j}$.
    I   say   Zhangsan criticize-Pef Anaphor
    '**I**$_k$ say that **Zhangsan**$_j$ criticized **oneself**$_{k/j}$.'

Except for the non-uniform person feature blocking effect, other phi-features, like gender and number, do not always show blocking effect either. Data (93) shows there is no blocking effect between local and non-local antecedents with distinct gender features. The gender feature of the 3rd person pronoun in Mandarin is not marked on the phonological form, but on the written character (with 他 as 3rd person, singular, male; and 她 as 3rd person, singular, female). Given this, it is not clear whether the gender feature is specified, but not phonoloigically visible, or not specified on the subject. In (93) with a gender feature conflicting between the matrix subject *he*

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[42] The same assymetry is identical between 2nd person and 3rd person antecedents.

  (i) a. **Zhangsan**$_k$ shuo **ni**$_j$ chang piping **ziji**$_{*k/j}$.
            Zhangsan   say **you** often criticize Anaphor.
           'Zhangsan$_k$ said that you$_j$ often criticized oneself$_{*k/j}$.'

      b. **Ni**$_k$ shuo   **Zhangsan**$_j$ piping-le   **ziji**$_{k/j}$.
          You say   **Zhangsan**   criticize-Pef Anaphor
        'You$_k$ say that Zhangsan$_j$ criticized oneself$_{k/j}$.'

[43] Besides, from the contrast between (91a) and (91b), we can see that a local 1st person antecedent does not necessarily block the binding between *zi-ji* and the LD 3rd person antecedent, if these two antecedents have the same reference.

(他), and the embedded subject *she* (她), *zi-ji* can freely choose its antecedent between these two subjects with no blocking effect[44].

93) **Ta$_k$ (他)** zhidao   **ta$_j$ (她)** xihuan **zi-ji$_{k/j}$**.
    He   know   she   like   Anaphor
    'He knows she likes oneself (=he or she)$_)$.'

For the number feature, while plural local antecedent *laoshimen* ('teachers') in (94a) does not block the LD binding between *zi-ji* and *Zhangsan*, the singular local *Zhangsan* in (94b) can (at least to some extent) block *zi-ji* co-indexing with the LD plural antecedent *laoshimen* ('teachers').

94) a. **Zhangsan$_k$** renwei **laoshi-men$_j$** hen   xihuan   **zi-ji$_{k/j}$**.
     Zhangsan   think   teachers   very   like   Anaphor
     'Zhangsan thinks teachers like oneself (=Zhangsan or teachers) very much.'

   b. **Laoshimen$_k$** renwei   **Zhangsan$_j$** hen   xihuan   **zi-ji$_{??k/j}$**.
     Teachers   think   Zhangsan   very   like   Anaphor
     'Teachers think Zhangsan likes oneself (=Zhangsan or ??teachers) very much.'

From the discussion above, there are three kinds of factors influencing the blocking of the long-distance binding of *zi-ji*: for a certain phi-feature, like person, the feature conflicting between local and LD antecedents does not necessarily block the LD binding, but depending on (i) which specific person feature these two antecedents carry, and (ii) whether these two antecedents share the same index. Besides, (iii) not all phi-feature conflicting can lead to the blocking of LD co-index of *zi-ji*, like gender feature. However, none of these three conditions above can influence the local binding of *zi-ji*, and the local binding always exists.

4.2.2 What The Asymmetry of Blocking Effect in Local and Non-local Domain Can Tell Us

Previous literature points out that the contrast between (91a) and (92), can be attributed to discourse factor, like the speaker's perspective or PIVOT (Huang and Liu 2006). That can be true, but only the LD binding is influenced by discourse/pragmatic factor, while local binding always keeps steady. Why would that be the case? Why would these two binding be derived through the same mechanism? From an interface perspective, the computational result from narrow syntax will be sent to the interpretation surface, and pragmatics/discourse might play a role later. If the computational system (narrow syntax) derives the local and long-distance binding of *zi-ji* with the same operation, then there will be the exact same space left in both local

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[44] If we switch the position of 'he'他 and 'she' 她, there is still no blocking effect.

and LD binding domain for interpretative/pragmatic/discourse to enter. If we believe there is syntax-interpretative/pragmatic interface, and interpretative/pragmatic/discourse can only play a role in the space which narrow syntax left for them, why these non-syntactic factors only play a role in the LD domain, without entering the local domain?

We can make a rule claiming that non-syntactic factors cannot play a role in the local domain, but only in the non-local domain. The question is, why? Even if we accept this rule without condition, there are still lots of potential problems: I take (91a) and (92) as an example, following the cyclic movement strategy: In (91a), it is narrow syntax that blocks LD binding, due to person feature conflicting. In (92), narrow syntax blocks the LD binding, but discourse allows it. As a result, we get the LD binding meaning. The problem is how could discourse make the LD binding which has already been blocked by syntax possible, if we believe discourse/pragmatic factor comes later than syntax? Logically it's possible for discourse and pragmatics to exclude a meaning which is permitted by syntax, but they cannot revive an interpretation which has already been forbidden in syntax. We can take (95) as an example. Syntax blocks *him* to be bind by its local antecedent *Tom*, and allows it to co-index with any other antecedents beyond the local domain, like *John*, or *William* or any other guy mentioned in previous context. With the context/discourse factor provided in (95), readers probably refer *him* to *William*, excluding other possible antecedents which are allowed by syntax. But in whatever context, *him* can never refer to *Tom*, which has already been blocked by syntax.

95)   Tom always looks at William with strong affection. And even John noticed Tom likes **him**.

The same also holds for the contrast between (91a) and (91b).If we stick to the cyclic movement proposal, narrow syntax will say no to the LD binding in both (91ab). However, with a pragmatic/discourse distinction, the LD binding becomes possible in (91b), but still impossible in (91a). It is hard to explain why PIVOT/ perspective factor can make the LD binding of *zi-ji* possible while narrow syntax rejects it.

And from the contrast between (91a) and (93), we can see person feature can block LD binding (under certain 'perspective' condition), while gender does not. Then we need to assume the phi-feature percolation is partial in the cyclic movement of *zi-ji*, which means *zi-ji* only agrees with the person feature with its potential antecedent in the successive movement, leaving the gender feature undetermined. And from the contrast between (94ab), it is clear that distinction in number feature sometimes can lead to the blocking of *zi-ji* LD binding. How can we explain this 'partial phi-feature percolation' in cyclic movement in narrow syntax?

Above is my doubt about all the previous literature dealing with binding condition of Chinese *zi-ji* with a cyclic movement strategy which applies the same movement operation to *zi-ji* in both

local and non-local domains. And most of them mistakenly assume *zi-ji* is mono-morphemic and capable of head movement.

So firstly I think there is no uniform covert movement strategy of *zi-ji* in its local and non-local binding domains. The local and non-local binding of *zi-ji* should be derived by different operations, and there should be underlying reason behind it. Secondly, even if there is a covert movement of *zi-ji*, the head movement of the whole *zi-ji* that previous literature proposed is not right.

4.2.3 Animacy, Prominence, And Subject Orientation

In this section, I will provide more supportive evidence to show there is indeed an asymmetry between the local and non-local binding of *zi-ji*: the local binding always exists, while the non-local one can be influenced by discourse/pragmatic factor. And the nature of subject-orientation of *zi-ji* is actually co-argumenthood binding.

4.2.3.1 Animacy and Prominence

The widely assumed idea that *zi-ji* might be inherently animate (Tang 1989, Cole and Sung 1994, Pan 1998) is problematic.

In the first place, the fact that *zi-ji* can bear a proxy (statue) reading suggests *zi-ji* has no inherent setting of animacy, because a statue is by no means animate. Data (96) can have both the meaning of 'Zhangsan touched Zhangsan' or 'Zhangsan touched Zhangsan's wax statue'.

96) **Zhangsan$_k$** pengdao-le **zi-ji$_k$.**
    Zhangsan touch-Pef Anaphor.
    'Zhangsan touches himself.'

Besides that, when *zi-ji* has more than one potential antecedent, animacy of these antecedents might influence *zi-ji*'s preference for antecedents. But there is no way to say *zi-ji* is inherently animate, since *zi-ji* can always co-index with its co-argumenthood antecedent which can be inanimate. In (97a), *zi-ji* can co-index with its co-argumenthood antecedent *Zhangsan DE wenzhang* ('Zhangsan's article') and *Zhangsan*, a LD antecedent beyond co-argumenthood domain. Animacy can only play a role with respect to *zi-ji*'s binding preference beyond its co-argumenthood domain. In (97b), readers might prefer *Zhangsan*, rather than *Zhangsan DE nabenshu* ('Zhangsan's that book') to co-index with *zi-ji*. However, there is nothing in narrow syntax or logical semantics to block local *Zhangsan DE nabenshu* ('Zhangsan's that book') co-indexing with *zi-ji*. Imagine that the content of that book can be: The best way to treat a book is

to burn it. And readers of the book burn it according to its content. Neither syntax nor logic can forbid *zi-ji* to co-index with 'Zhangsan's book' in (97b), just as the English counterpart 'Zhangsan's book ruins itself'. The preference of *Zhangsan* over *Zhangsan DE shu* as *zi-ji*'s antecedent indeed exists, due to pragmatic issue or people's world knowledge, but syntax has nothing to do with preference.

97) a. **Zhangsan$_k$**   DE   **wenzhang$_j$**   pipingfansi-le **zi-ji$_{k/j}$**.
      Zhangsan   Poss   article   criticize-Pef   Anaphor.
      'Zhangsan's article criticized oneself (=Zhangsan or Zhangsan's article). '

    b. **Zhangsan$_k$** DE   **nabenshu$_j$**   hui-le   **zi-ji$_{k/j}$**.
      Zhangsan Poss   that book   ruin-Pef   Anaphor.
      'Zhangsan's that book ruined oneself(=Zhangsan or Zhangsan's book). '

The fact that *zi-ji* is not inherently animate takes us to look back at two previous proposals which are directly related to animacy. One is Tang (1989)'s claim in (98) and her sub-command notion which is defined as (99-100). This notion is designed to make sure *zi-ji* can always co-index with an animate antecedent, based on the assumption that *zi-ji* is inherently animate[45]. My discussion above shows animacy might be related to pragmatic, but syntax should not be involved in. That casts doubt on the sub-command proposal.

98)   The antecedent of a reflexive must be animate.

99)   β **sub-commands** α iff
    a. β c-commands α, or
    b. β is an NP contained in an NP that c-commands α or that sub-commands α, and
        any argument containing β is in subject position.

    A **potential binder** for α is any NP which satisfies all conditions of being a binder of α except that it is not yet coindexed with α.

100)   A reflexive α can be **bound by** β iff
    a. β is coindexed with α and
    b. β sub-commands α, and
    c. β is not contained in a potential binder of α.

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[45] It might need to be noted that all the previous literature regarding *zi-ji* as inherently animate does not provide a strict definition of 'animacy': whether it is a syntactic notion, like [+m] in Reinhart's theta system, or a direct reflection of world knowledge. In this thesis, I argue there is no animacy setting of *zi-ji* at all.

Similar to animacy, the notion of prominence (Pan 1998, Pan and Hu 2001) can reveal *ta-zi-ji*'s preference on choosing antecedent, but preference is not a syntactic issue. The exact way to rank binding preference of *ta-zi-ji* is a bit different in these two proposals. But both two combine syntactic (locality/closeness or [±subject]) and pragmatic factors ([±human] or [±animate]) together to encode the binding properties of *zi-ji*. This way of combination is fine, but *ta-zi-ji* encode no animacy feature, the same as *zi-ji*. The distinction between *ta-zi-ji* and *zi-ji* is that the former is coded for 3rd person, singular, while the latter is not specified for person. An example (101) is taken from Pan (1998) which mentions *ta-zi-ji* skips the local antecedent *nabenshu* ('that book') and can only co-index with the LD *Zhangsan*.[46] However, the co-argumenthood binding condition of *ta-zi-ji* in (101) is very similar to co-argument binding of *zi-ji* in (97ab). Neither syntax nor logic can block *ta-zi-ji* co-indexing *nabenshu* ('that book') in (101).

101) **Zhangsan_j** shuo **nabenshu_k** hai-le   **ta-ziji_{j/k}.**
      Zhangsan   say   that book   ruin-Pef   3rd.Singular-Anaphora
      '**Zhangsan_j** says that **book_k** ruined **oneself_{j/k}.**'

                                                                    (Pan 1998)

In spell out form, *ta-zi-ji* does not encode gender, only in written form. As I have mentioned in section 4.2.1, the three English 3rd person singular pronouns' equivalency in Mandarin has the same pronunciation *ta*. From a UG perspective, it is the spell out form that counts, and therefore there shouldn't be different syntactic accounts for *ta-zi-ji* (him/her/it-self). The two proposals (Pan 1998, Pan and Hu 2001) only consider *ta-zi-ji* ('him/her-self'), without dealing with *ta-zi-ji* ('itself'), and the constraint ranking cannot be applied to *ta-zi-ji* (itself). Data (101) is an example.

4.2.3.2 Subject Orientation

In all the previous data which contains bare *zi-ji* (91-94; 96-97;101), it is clear that *zi-ji* can always refer to its co-argumenthood antecedent which is the subject of the embedded clause. However, in domains beyond co-argumenthood (102ab), or when *zi-ji* has no co-argumenthood antecedent (103a-c), *zi-ji* can refer to any clause internal DP as long as the pragmatic/discourse status is appropriate.

From (102a) and (102b), we can see the co-index between *zi-ji* and antecedents beyond co-argumenthood is not always stable, and can be influenced by context, while the co-argumenthood binding can always exist. The contrast between (102a) and (102c) shows that it is not 'this article' could not be an antecedent of *zi-ji*. The reason is that in (102a), the context is not proper for 'this article' to co-index with *zi-ji*.[47]

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[46] The data is copied from Pan (1998), but the binding condition is annotated according to my judgement.
[47] I am using *onseself* as a cover term for *himself/herself/itself*.

102) a. **Zhepianwenzhang₁** jiaoyu **Zhangsan₁ meiyouren₁** keyi yizhi zhaogu **zi-ji** ₂ᵢ/ⱼ/ₖ.
This article   teach Zhangsan   no one   can always take care Anaphor
'This article teaches Zhangsan that no one can always take care of oneself (=one or Zhangsan or ?this article).'

b. **Zhangsan₁** yaoqiu **Lisi₁** kanzhe **zi-ji** ⱼ/ₖ.
Zhangsan require Lisi   look at   Anaphor
'Zhangsan requires Lisi to look at oneself (=Zhangsan or Lisi).'

c. **Lisi₁** renwen **zhepianwenzhang₁** pipan-le **zi-ji** ⱼ/ₖ.
Lisi believe   this article   criticize-Pef Anaphor
'Lisi believes this article criticized oneself (=Lisi or this article).'

From (103a) and (103b), it is clear that: (i) any DP beyond co-argumenthood domain can be *zi-ji*'s potential antecedent, and there is no subject-orientation obligation; (ii) discourse can fairly change *zi-ji*'s co-indexing antecedent beyond its co-argument domain (or when there is no such domain for *zi-ji*). And (i) can be confirmed by (103c) in which *zi-ji* is within a possessive phrase and not in co-argumenthood relationship with any DP. In that case, *zi-ji* can refer to all the three DP in this sentence, given the proper context (103c) provided. So the subject-orientation of *zi-ji* is co-argumenthood in nature.

103) a. **Yuangongmen₁** baoyuan **laoban₁** shuo **zi-ji**₊ⱼ/ₖ bu fa gongzi,
Employee-Pl complain boss   say Anaphor not pay salary,

hai rang dahuoer   jiaban.
and let all of them   do extra work
'**Employees₁** complain about the **boss₁**, saying that **one**₊ⱼ/ₖ does not pay salary and also let them do extra work.'

b. **Yuangongmen₁** baoyuan **laoban₁** shuo
Employee-Pl complain boss   say

zi-ji ⱼ/₊ₖ meiyou nadao-guo yingdede gongzi.
Anphoara not   get-Pef   deserved salary.

'Employees complain about the boss, saying that they (=employees) haven't received the salary that they (=employees) deserved.'

c. **Zhangsan₁** quan **Lisi₁** song **Wangwu₁** hui **zi-ji**ᵢ/ⱼ/ₖ-DE   jia

Zhangsan advise Lisi send Wangwu back Anaphor-Poss home.
'Zhangsan advised Lisi to send Wangwu back to the home of him (=Zhangsan or
 Lisi or Wangwu). '

In terms of subject orientation, double object construction might provide some interesting hint. When *zi-ji* is an argument of the predicate *dailai* ('bring') in (104a), it can only refer to the subject *Zhangsan*. However, when *zi-ji* is in a possessive NP and it is not an argument of the verb, it can freely refer to both the subject and the other object in the sentence in (104bc), *Zhangsan* and *Milaoshu* ('Mickey Mouse').

104) a. Zhangsan$_j$ gei Milaoshu$_k$ dailai-le **zi-ji** $_{j/*k}$.[48]
    Zhangsan to Mickey Mouse bring-Pef Anaphor.
    'Zhangsan brough himself to Mickey Mouse.'

   b. Zhangsan$_j$ gei Milaoshu$_k$ dailai **zi-ji**$_{j/k}$-DE-yashua.
    Zhangsan to Mickey Mouse bring Anaphor-Poss-toothbrush
    'Zhangsan brings Mickey Mouse his (=Zhangsan's or Mickey's) toothbrush'

   c. Zhangsan$_j$ dai Milaoshu$_k$ (hui) dao **zi-ji**$_{j/k}$-DE-jia.
    Zhangsan bring Mickey Mouse to Anaphor-Poss-home.
    'Zhangsan$_j$ brings Mickey Mouse$_k$ to his (=Zhangsan's or Mickey's) home.'

Zi-ji only shows subject orientation in co-argumenthood domain. One of the biggest benefits of cyclic head movement proposal for *zi-ji* is to explain the subject-orientation of *zi-ji* in both local and LD domains. But *zi-ji* is not always subject-oriented,

Here argumenthood domain is defined by a predicate and its arguments. When *zi-ji* is a predicate's argument, it can compose a co-argumenthood domain with other arguments of that predicate. When *zi-ji* is not an argument of the predicate (eg. in a prepositional phrase or a possessive NP), it shows no subject-orientation. That has long been ignored in previous literature about *zi-ji*.

In conclusion, *zi-ji* has no animacy setting and by no means inherently animate. And 'subject-orientation' of *zi-ji* is co-argumenthood binding in nature.

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[48] This sentence may not sound very natural to some readers in pragmatic sense.

4.3. What Should Be The Role and The Limit of Syntax?

Cole, Hermon and Huang (2006) mentioned that long-distance reflexives in some languages (like Icelandic *sig* and Mandarin *zi-ji*) can be a bound anaphor and a 'free anaphor' with the same form in different grammatical and discourse contexts. The idea that local binding and non-local binding of *ziji* should be explained separately was mentioned also in some previous literature, like Huang and Liu (2006).

But there should be some underlying reason behind approaching the problem like this. Although syntax is not responsible to capture all the binding/co-index situation of *zi-ji*, ideally it should be clear for which domain syntax is responsible, explain why that domain is limited, and how syntax can leave proper space for pragmatic and discourse factors to come in and play a role.

Local binding[49] is alway possible for *zi-ji*, because it is syntax which 'forces' the co-argumenthood binding. Beyond co-argumenthood domain, *zi-ji* is a pronominal anaphor which just needs to find a sentence internal antecedent. The fact that *zi-ji* (i) can have a LD antecedent, and (ii) needs a sentence internal antecedent could be attributed to syntax: (i) its pronominal nature and inner structure makes a non-local antecedent possible; (ii) as an anaphor[50] without phi-features, it needs a sentence internal antecedent. But its (preference for) co-indexing with an antecedent beyond its argumenthood is dependent on pragmatic/discourse matter, similar to pronouns, like English *him*. In the next section, I will explain how my proposal can deal with these problems.

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[49] There are many parameters to define 'local domain'. In this thesis, local domain is equivalent to the co-argumenthood domain.
[50] Anaphora in this thesis means an element whose index is dependent on other expressions. Both 'pronouns' and 'reflexives' are anaphors.

4.4 One Anaphoric *zi-ji* with Optional Movement of *zi-* at LF[51]

My proposal below is designed mainly to answer two questions about *zi-ji* (105ab). Section 4.4.1 will be devoted to answer (105a) by analyzing *zi-ji*'s inner structure. Section 4.4.2 will provide a solution for (105b).

105) a. What is the underlying reason for *zi-ji* to be able to co-index with both a LD and local antecedent?

b. Why is there an asymmetry between co-argumenthood and non-coargumenthood binding of *zi-ji*? As discussed in Section 4.2, pragmatic/discourse factor can only influence the latter, like the blocking effect, so why is local binding always possible?

4.4.1 Inner structure of *zi-ji*

As discussed in Chapter 2 and 3, *zi-ji* is bi-morphemic both from a diachronic and synchronic perspective. It has a morphologically complex inner structure. I will offer independent evidence from syntactic distribution that *ji* should be the head of anaphoric *zi-ji*, rather than *zi-*. In modern Chinese, *zi-ji* occupies a post-verbal position, as other objects in Mandarin. *Zi-* is located before the verb in diachronic (106a) and synchronic (106b) data. *Ji* follows the predicate in historical data (107a); in modern Mandarin, *ji* is more like a morpheme than an independent word, only appearing in a post-verbal position (107b). Since anaphoric *zi-ji* takes the diachronic and synchronic position of *ji*, I will take *ji* is the head of *zi-ji*.

106) a. Bi   bi   shi   Zhao   er   **zi**   jiu
        They will   give up   Country Zhao   and   REFL   save.
        'They will give up Country Zhao and try to save themselves.'
        彼 必 释 赵 而 自 救.

(Records of The Grand Historian 史 记, 孙 子 吴 起 列 传)

b. Zhangsan **zi-sha**-le.
        Zhangsan REFL-kill-Pef.
        'Zhangsan killed himself.'

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[51] I will not discuss the anaphor *ta-zi-ji* (3rd, singular-*zi-ji*). The situation with *ta-zi-ji* is probably more complicated, since there are three morphemes within it. As far as I can think now, there is at least two *ta-zi-ji*'s with two different inner structures. One is the anaphoric *zi-ji* (with *ji* as head) plus *ta* with phi-features. Another is the pronoun *ta* ('him') plus an intensifying *zi-ji* (with *zi-* as its head). So both two *ta-zi-ji* are true anaphors in nature. The difference might be: the former one needs to be bound sentence internally, while the latter one is completely a pronoun with some intensifying emphasis. But I haven't figured out how to derive the binding of *ta-zi-ji* from decomposition properly.

107) a. **Chenyu** yuan **Xiangyu** fu wang **ji**

    Chenyu blame Xiangyu not let..be king Anaphor.

    'Chenyu blames that Xiangyu doesn't let him (=Chenyu) be the king.'

    陈 余 怨 项 羽 弗 王 己 也。

    (*Biography of Emperor Gao of Han Dynasty, Records of The Grand Historian* 史 记, 高 祖 本 纪)

  b. Shu-**ji**

    forgive-JI

    'forgive oneself'

108)   **Zhangsan$_k$** pengdao-le **zi-ji$_k$**.

    Zhangsan touch-Pef Anaphor.

    'Zhangsan touches himself.

The syntactic characteristics and the grammatical category of *zi-* has been extensively discussed in Chapter 2 and the first part of Chapter 3. Synchronically *zi-* (with a clear reflexive meaning) is a bundling marker. Diachronically, *zi-* shares the same syntactic distribution with modern bundling marker *zi-*, but it's hard to define whether archaic *zi-* is a bundling marker or a local anaphor, due to lack of negative evidence.

The category of *ji* is a bit blurred. It is clear that *ji* needs to be bind within clause, but at the same time it needs to stay free in its co-argumenthood domain. Cross-linguistically, there are some anaphors similar to *ji*. One is Greek *ton idhio* (discussed in Chapter 3), another example might be the disjoint anaphor[52] *yi-* (or its counterparts) in Athabaskan languages (Rice and Saxon 2005), like Navajo.

Yi- needs an A-antecedent which it is disjoint from, like 'he$_f$' in (109b), and be bound by an A'-antecedent, like the null topic *Joe* in (109a) provided by discourse (Horseherder 1993). The A-antecedent it is disjoint from cannot be defined as a co-argumenthood antecedent of *yi-*. But that disjointing A-antecedent is indeed the nearest antecedent to *yi-,* and from the data I can see in this paper, it is normally the most accessible subject with which *yi-* is disjoint.

In this sense, I could define archaic *ji* needing to have its (nearest) co-argumenthood subject to be disjoint with. When *ji* has a co-argumenthood antecedent, it needs to keep disjoint with it. When *ji* has no co-argumenthood domain, like when *ji* is within a possessive NP, it does not need to be disjoint with any antecedent.

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[52] Disjoint anaphora is basically defined as an anaphor which is always disjoint in reference from the most locally accessible antecedent.
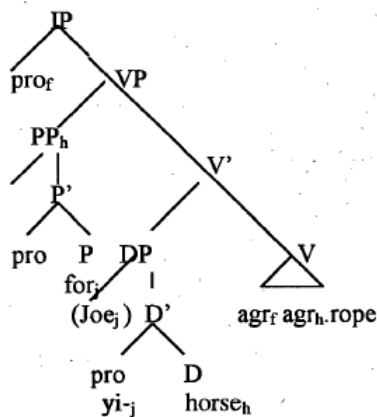
109) a.

haayit'eego   Frank Joe yika'elwod
Q.in.what.way Frank Joe 3.for/after.run
'How did Frank$_f$ help Joe$_i$'

b.

yi-łįį' yaa yizloh
yi-horse 3.for 3-3.Pf.rope
'he$_f$ roped his$_j$ horse for him$_j$'

c.

The inner structure of *zi-ji* would be as in (110). As a pronominal element, *ji-* is the head D. And *zi-* is the N part. So with *ji* as its head, *zi-ji* is basically a pronominal element, rather than a local reflexive in the traditional sense. And it can certainly be bound by any LD antecedent, depending on context. If we assume it lacks full phi-feature specification it would make sure that it can only find LD antecedents within the clause boundary. Co-argumenthood binding is forced by the reflexive function *zi-* which can undergo an optional movement at LF, adjoining directly to the predicate. I will explain in details in next section 4.4.2.

110)   Inner Structure
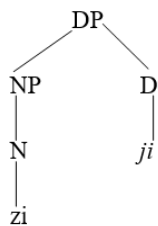
4.4.2 How Binding Is Derived

In 4.4.1, I argued that *zi-ji* is basically a pronominal and a non-local anaphoric element, with *ji* as its head. So it is very natural that *zi-ji* can allow LD binding. And the co-argumenthood binding of *zi-ji* is forced by the movement of *zi-* at LF. This section is devoted to explain how this proposal can be derived.

The proposal

I take (111a) as an example. The co-argumenthood binding between *Wangwu* and *zi-ji* is derived by (111b), and the LD binding between *Zhangsan* and *zi-ji* is got by (111d). In (111b), the movement of *zi-* happens at LF, and *zi-* moves as a N^0, incorporating to V^0, similar to noun incorporation. Here *zi-* works as a relational function, as in (111c).[53] The index of *zi-ji* (or head *ji*) is got from *Wangwu*, through the relational function *zi-*. When *zi-* does not move at LF in (111d), it cannot work. Because *zi-* can only play a role in the position preceding the verb, the same as where it is in modern Chinese reflexive '*zi*-verbs', or archaic Chinese '*zi*-verbs'. Since *zi-* is not in its working position in (111d), the index of *zi-ji* completely depends on non-local pronominal *ji*. As a result, *zi-ji* refers to LD *Zhangsan* in (111d).

111) a. **Zhangsan$_j$** zhidao **Wangwu$_k$** piping-le   **ziji $_{j/k}$.**
`   Zhangsan know   Wangwu criticize-Pef   Anaphor
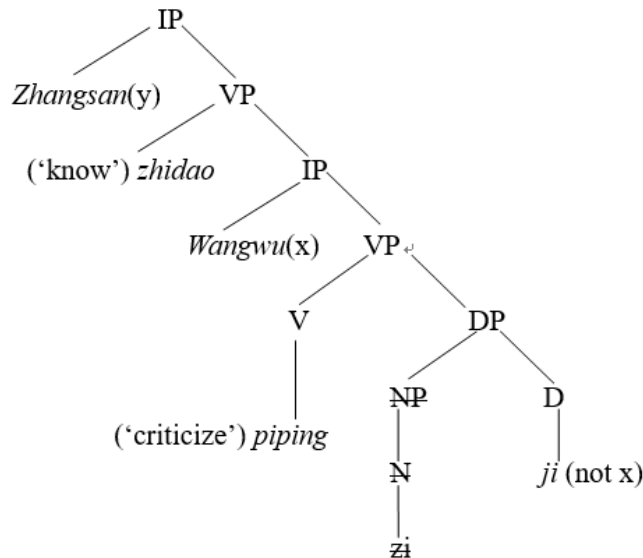   Zhangsan knows Wangwu criticized oneself (=Zhangsan or Wangwu).

   b. when *zi-* moves

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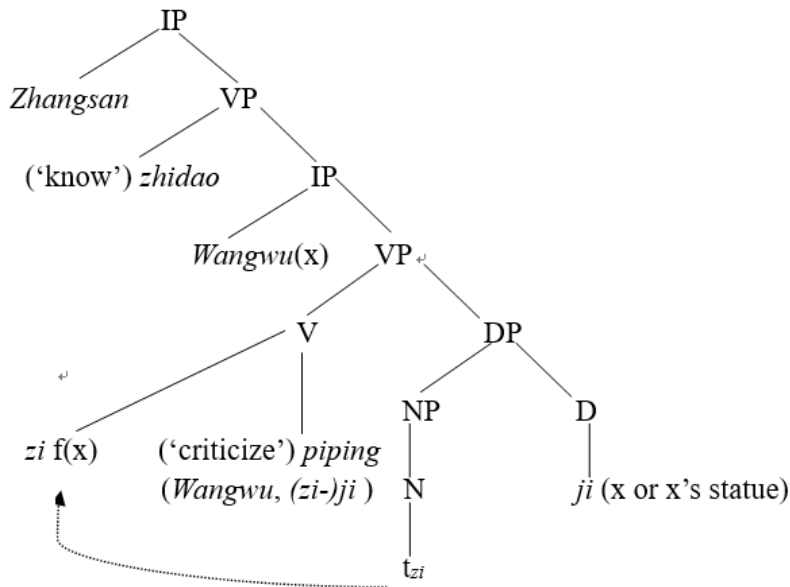
[53] Note that the ji-part of zi-ji is responsible for not violiationg the IDI, allowing the procy-function.

c. f_{zi} (x)= x or x's statue

d. when *zi-* does not move

There might be four questions about this proposal:

112) (i) Why can *zi-* move to adjoin to the verb?
(ii) Why can *zi-* only move within the argumenthood domain of the verb it attaches to?
(iii) Why is this movement optional?
(iv) Why can *zi-* work as a relationship function as in (111c) and allow a proxy meaning?

The underlying reason is that the morpheme *zi-* in *zi-ji* is the same morpheme as *zi-* in reflexive '*zi*-vebrs', and hence *zi-* works the same way in these two situations.

With respect to (112i), the preverbal position of *zi-* in '*zi*-verbs' triggers *zi-* in *zi-ji* to move to the preverbal position. As a N^0, *zi-* can directly adjoins to V^0. This follows the syntactic distribution of bundling marker *zi-*. When it comes to (112ii), we might need to define the notion of 'argumenthood' more precisely. 'argumenthood' domain is a predicate-centered domain, composed of a predicate and all of its arguments. Arguments of a certain predicate are arguments which receive theta roles from that predicate and these arguments are called 'co-arguments'. This notion follows from the concept of 'syntax argument' in Reinhart and Reuland (1993).

From the data we can see in archaic Chinese, archaic *zi-* always plays a role inside the argumenthood domain of its following verb (113), no matter whether archaic *zi-* here is a local anaphor or a bundling marker.

113) Bi   bi   shi   Zhao   er   **zi**   **jiu**
      They will give up Country Zhao and REFL   save.
      'They will give up Country Zhao and try to save themselves.'
      彼 必 释 赵 而 自 救.
      (Records of The Grand Historian 史记，孙子吴起列传)

In modern Chinese, there are two kinds of reflexive '*zi*-verbs', as in (114a) and (114b).

114) a. Zhangsan **zi-sha**-le.
        Zhangsan REFL-kill-Pef.
        'Zhangsan killed himself.'

    b. Zhangsan **zi-jue**   tianfuguoren
        Zhangsan REFL-consider   smart.
        'Zhangsan considers himself smart.'

In (114a), subject *Zhangsan* receives a bundled agent-patient role from the verb *sha* ('kill'), and the bundling marker *zi-* clearly only works within the argumenthood domain of the verb. As for the second group '*zi*-consecutive predicates' in (114b), what happens becomes clearer from the contrast between (114b) and (115a), (115a) and (115b).

115) a. Zhangsan **zi-yiwei**   **Lisi** tianfuguoren.
        Zhangsan REFL-consider Lisi   talented.
        'Zhangsan by himself considers Lisi talented.'

    b. Zhangsan   **zi-yiwei**   **Lisi** changchang **zi-ze**.
        Zhangsan   REFL-consider   Lisi always   REFL-blame.
        'Zhangsan by himself thinks Lisi always blames himself (=Lisi).'

When there is a nearby argument *Lisi* available for *tianfuguoren* to assign its external theta role to in (115a), bundling marker *zi-* is out of the argumenthood of *tianfuguoren*. And therefore there is no bundling happening to *tianfuguoren*, while in (114b) *tianfuguoren* is involved in bundling, and its external theta role is assigned to *Zhangsan*. When both the embedded and matrix predicate are '*zi*-verbs', like in (115b), the embedded *zi* can only bundle the two theta roles of the embedded predicate *ze* ('blame') together and assign it to *Lisi* within the argumenthood of *ze* ('criticize'), with no influence on the matrix sentence. And the matrix *zi-* does not work as a bundling marker, but just an intensifier ('by oneself'), because *yiwei* ('think/consider') has two independent arguments (*Zhangsan* and the embedded clause) to assign its two theta roles, no

bundling protection needed[54].So both diachronic and synchronic evidence shows that *zi-* is quite local and can only work within the predicate's argumenthood domain. And therefore *zi-* in (111b) can only adjoin to the predicate *piping* ('criticize') which assigns theta-role to *zi-ji,* and work within its co-arugmenthood domain. And technically, head movement or noun incorporation is also local.

Since I have proved why *zi-* can move (112i) and explained why it moves this way (112ii), it's time to deal with the question why this movement can be optional (112iii). There are two reasons. Firstly, it has been mentioned that *zi-* can only play its role in pre-verbal position. The difference between (116a) and (116b) is that *zi-* precedes the verb in spell-out form, while *zi-* is only likely to be in its working position until LF (116b). So in *zi-* in (116a) is in the working position when spelled out, while *zi-* in (116b) is not. And the covert movement at LF does not have to be obligatory, like quantifiers' inverse raising. We would like to argue for *zi-* to stay at the original post-verbal position, and not to move in (116b). Secondly and more importantly, *zi-* in (116a) has to play its role as a bundling marker, since there is nothing to protect (116a) from violating the IDI without bundling. As a result, *zi-* in (116a) has to work and cannot be inert. However, in (116b), *sha* has a true argument *zi-ji* which can receive its internal theta role, and if ji is the protecting element there is no threat of violating IDI. That means *zi-* in (116b) does not necessarily need to move and play a role.

116) a. Zhangsan **zi-sha**-le.
       Zhangsan REFL-kill-Pef.
       'Zhangsan killed himself.'

    b. Lisi$_j$ zhidao Zhangsan$_k$ sha-le **zi-ji $_{j/k}$** .
       Lisi knows Zhangsan kill-Pef Anaphor.
       'Lisi knows Zhangsan kills oneself (=Lisi or Zhangsan).'

We finally reach (112iv), and need to think about why *ji-* in *zi-ji* can work as a relationship function, like (111c). So far I can only stipulate that *ji* has this function

In the bundling case, *zi-* retains the two theta-roles on the verb and helps them bundle together to be assigned to the external argument. In this way, *zi-* builds a relationship between the index of the two roles of the predicate, which is forcing the same index to them by assigning them to the sole argument. In binding, *zi-* also establishes a referential relationship between the two theta-role receivers of the verb, *(zi-)ji* and its co-argument antecedent.

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[54] More relevant details about *zi-* in modern Chinese can be found in 2.5.3 (Specless: The Requisite of Bundling in Reflexive '*zi*-verbs'.)

The difference is, with bundling in (116a), it is impossible for the two theta roles of the verb, which have been bundled together before spell out, to have different indices, so the proxy reading is impossible with bundling marker *zi-*. However, *zi-ji* is an independent argument, so that relational function *ji-* can give *(zi-)ji* a slight different index with its antecedent, the proxy reading.

How is this proposal implemented?

From this proposal, the co-argumenthood binding is purely derived by syntax, and therefore this interpretation can always be kept steady, without blocking from discourse/pragmatic factor. But binding of *zi-ji* beyond its co-argumenthood is similar to binding of a pronoun. Any DP outside co-argumenthood (and within clause) is a possible antecedent for *zi-ji*, allowed by syntax (due to pronominal feature of *ji*), but the co-index of *zi-ji* is largely determined and influenced by discourse/pragmatic factor. So the co-argumenthood binding and binding outside co-argumenthood of *zi-ji* are derived by different operations, and influenced by different factors. As a result, it is not surprising that there is an asymmetry between local and LD binding of *zi-ji,* as discussed in 4.2.

I pick up some puzzling data from 4.2 which cannot be properly explained by the cyclic movement proposal or the prominence proposal, and see how our current solution can give an explanation. For the asymmetry in blocking effect in (117) and (118), co-argumenthood binding forced by LF incorporation of *zi-* remains in all three sentences. The sentence-internal non-coargumenthood binding, which is actually pronominal co-indexing without the movement of *zi-*, depends on factors beyond syntax. What syntax does is (i) to make all the binding beyond *zi-ji*'s co-argumenthood possible, due to pronominal nature of *ji* (ii) requires *zi-ji* to be bound sentence-internally, due to lack of phi-features of *zi-ji*. Discourse/pragmatics are determinant factors in deciding which LD antecedent *zi-ji* will choose, just as it would influence the interpretation of 'nomal' pronominals. That's why the non-local binding cannot be kept steady, once perspective changes, as shown in (117a) and (117b), (117a) and (118).

117) a. <u>Precondition: Reference (k) $\neq$ Reference (j)</u>
   Zhangsan$_k$ shuo **wo**$_j$ chang piping   **zi-ji**$_{*k/j}$.
   Zhangsan   say   I   often   criticize   Anaphor.
   'Zhangsan said that I often criticized oneself (=I).'

   b. <u>Precondition: Reference (k) = Reference (j)</u>
   Zhangsan$_k$ shuo **wo**$_j$ chang piping   **zi-ji**$_{k/j}$.
   Zhangsan   say   I   often   criticize   Anaphor.
   'Zhangsan said that I often criticized oneself (=I or Zhangsan).'

118)   <u>No Precondition on reference of (k) and (j)</u>

Wo_k shuo **Zhangsan_j** piping-le   **zi-ji _{k/j}**.

I   say   Zhangsan criticize-Pef Anaphor

'I say that Zhangsan   criticized oneself (=I or Zhangsan).'

The same holds for (119) and (120). *Zhepianwenzhang* ('this article') in (120) can be bound with (*zi-)ji*, forced by movement of *zi-*. And the same *Zhepianwenzhang* in (119) cannot co-index with *zi-ji*, due to improper context and no accessible (local) forcing from *zi-*.

119) **Zhepianwenzhang_i** jiaoyu **Zhangsan_j meiyouren_k** keyi yizhi zhaogu **zi-ji _{?i/j/k}**.

   This article   teach Zhangsan   no one   can always take care Anaphor

   'This article_i teaches Zhangsan_j that no one_k can always take care of oneself (=Zhangsan or no one or ?this article).'

120) **Lisi_j** renwen **zhepianwenzhang_k** pipan-le   **zi-ji _{j/k}**.

   Lisi believe   this article   criticize-Pef Anaphor

   'Lisi believes this article criticized oneself (=Lisi or this article).'

The examples in (121a-c) are cases in which *zi-ji* has no co-argumenthood domain, and therefore *zi-* does not work at all. In such situation, syntax allows all the DP within clause to be pronominal *zi-ji*'s antecedent, and the co-index of *zi-ji* will finally be determined by factors beyond syntax. That's why *zi-ji* has different co-indexing relations between *yuangongmen* ('employees') and *laoban* ('boss') in (121ab), in which these two R-expressions have the same structural relationship with *zi-ji*.

121) a. **Yuangongmen_j** baoyuan **laoban_k** shuo **zi-ji _{*j/k}**   bu fa gongzi,

   Employee-Pl   complain boss   say Anaphor not pay salary,

   hai rang dahuoer   jiaban.
   and let   all of them   do extra work

   'Employees complain about the boss, saying that he (=the boss) does not pay salary and
     also let them (employees) do extra work.'

   b. **Yuangongmen_j** baoyuan **laoban_k** shuo **zi-ji _{j/*k}** meiyou nadao-guo yingdede gongzi.
   Employee-Pl complain boss   say Anphoara not   get-Pef   deserved salary.
   'Employees complain about the boss, saying that they (=employees) haven't get the salary that they (employees) deserved.'

   c. **Zhangsan_i** quan **Lisi_j** song **Wangwu_k** hui **zi-ji _{i/j/k}**-DE   jia
   Zhangsan advise Lisi send Wangwu back   Anaphor-Poss home.
   'Zhangsan advised Lisi to send Wangwu back the home of him (=Zhangsan or Lisi or

Wangwu). '

It's unlikely to capture the binding difference between (121a) and (121b) in syntax. In (121c), *zi-ji* can co-index with any of the three DP preceding it, with no subject-orientation requirement. According to my proposal, the subject-orientation of *zi-ji* is co-argumenthood binding in nature and driven by *zi-* incorporation. When there is no co-argumenthood domain for *zi-*to incorporate, subject orientation should disappear, with the pronominal nature of *zi-ji*, as in (121c).

Benefits of this proposal
(a)There is persuasive and combined diachronic and synchronic independent evidence for both the inner structure of *zi-ji* and the optional movement of *zi-* at LF.

(b) Synchronically, this proposal keeps the role of *zi-* uniform in both the bundling of reflexive '*zi*-verbs' and the co-argumenthood binding of *zi-ji*. (i) In both bundling and co-argumenthood bindng, *zi-* builds up a referential relationship between the index of the theta role receivers of the predicate it attaches to. (ii) In both two cases, *zi-* cannot work beyond the argumenthood domain of the predicate it works on. That's why only the co-argumenthood binding of *zi-ji* can always be steady. (iii) In both cases, *zi-* is not anaphoric (not a true anaphor which can receive theta role), but a bundling marker.

(c) Having one inner structure to define the anaphoric *zi-ji*, this proposal leaves some space for the intensifying *zi-ji* which might probably have an inner structure with *zi-* as its head, since sometimes the *ji-* part can be deleted when *zi-ji* works as an intensifier, like in (122b). And the intensifying *zi-ji* takes the preverbal position of *zi-*, while anaphoric *zi-ji* takes the post-verbal position of *ji*.

122) a. Ta **zi-ji**   qu qu-le   xin-jian.
         He by himself   go   get-Pef letter.
         'He went to get his letter by himself.'

     b. Ta **zi**   qu   qu-le   xinjian.
         He by himself   go   get-Pef letter.
         'He went to get his letter by himself.'

4.5 Summary

In this chapter, I make two proposals to derive the binding condition of *zi-ji*, from a decomposition perspective of anaphor *zi-ji*. Chapter 2 and Chapter 3 are to some extent foundations of this chapter, discussing syntactic characteristics of *zi-* and *ji* separately from both

synchronic and diachronic perspective. Both of the two proposals have benefits and difficulties. I hope there can be chance to further explore this issue in the future.

Appendix:

Data After Donghan Dynasty (After 15A.D-220 A.D.)

The first appearance of both *zi-ji* and *ji-zi* appear in the Chinese translation of Buddhism classics; an example is listed in (88). The translators are normally Buddhists whose mother tongue is not Chinese. Before Tang Dynasty (619A.D.--917A.D), *zi-ji* and *ji-zi* mainly appear in the Buddhism classics, rarely showing up in other 'normal written 'literature (Zhu 2007). This suggests during a long period of time, *zi-ji/ji-zi* has not been widely used. Before Tang Dynasty, in more than 150 sentences that include *zi-ji/ji-zi*, 120 of them are used as possessors (Zhu 2007), like in (i) and (ii). After Tang Dynasty, *ji-zi* disappears in the literature, and only *zi-ji* remains.

(i)   Jian zhushounaozhe,   guo   yu   **ji-zi**   chu.
      See every person who's suffering, ascribing (that) to   Anaphor's position .
      见诸受恼者，过于己自处 (大庄严论经[55]，Sūtrā-laṁkāra-śāstra)

(ii) Neixing   **zi-ji**   qu.
      Inside reflect   Anaphor body.
      'To self-reflect'
      内省自己躯
      (佛五百弟子自说本起经，'Buddha's 500 pupils explaining Benqi Jing themselves')

Since the syntactic distribution and binding condition of *zi* and *ji* are quite different in archaic Chinese, how could they combine together and compose a new word? After Donghan Dynasty, *zi* starts to be able to occupy the position of possesser which is also a possible position of *ji* . The syntactic distribution of *zi* and *ji* start overlapping in this position, and the possessor position is the place where *zi-ji/ji-zi* mainly appear before Tang Dynasty. An example is data (iii).

(iii) Jiang ru   **zi**   she
       Will   enter REFL's   accommodation
       将入自舍
       (十诵律，'Ten Chanting Law')

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[55]I haven't found the English version of this classic.

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