Relativization and DP Structure in Old Chinese
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1. Introduction

This paper presents an analysis of two functional morphemes which were instrumental in forming relative clauses in Late Archaic Chinese of the 5th to 3rd Centuries BCE. The analysis I propose also accounts for the emergence of the corresponding functional category DE in modern Mandarin.

In modern Mandarin, DE appears in both headed and headless relative clauses, following the clause in both cases, since relative clauses in modern Mandarin are prenominal.

   at there read book DE person Cop student
   “The person reading a book over there is a student.”

   read magazine DE Cop teacher
   “The one reading a magazine is a teacher.”

Late Archaic Chinese, on the other hand, used separate morphemes to perform these two functions. ZHI is the linking element in headed relatives, while ZHE occurs in headless relatives, following the clause like DE.

(2) a. qi  ruo  cong [bi   shi] zhi shi] zai.
   how like follow escape world ZHI scholar Excl
   “How could that compare to following a scholar who escapes from the world?”

b. [Fu  [zhi yu] zhe] wei shei?
   Dem control carriage ZHE Cop who
   “Who is the one driving the carriage?”

Given the fact that the two functions are performed by a single morpheme in modern Mandarin, coupled with the phonetic similarity between ZHI and ZHE, one might arrive at the hypothesis that ZHI and ZHE are in complementary distribution and are different spell-outs of the same functional head, depending on other structural factors. Following Kayne (1994) and the application of this approach to Chinese by Wu (2000), Simpson (2001), and Simpson and Wu (2005), we could propose that both ZHI and ZHE are spell-outs of a feature bundle in D which selects a CP relative clause. The head NP in the relative clause moves to [Spec, CP], and the remnant TP then fronts to [Spec, DP], leaving the head nominal stranded below D. Following this, vocabulary insertion in the Morphological Component (in the theory of Distributed Morphology as proposed by Halle and Marantz 1993, Harley and Noyer 1999, and others)

1 This paper was presented at Diachronic Generative Syntax (DIGS) 10 at Cornell University on August 7, 2008. The current manuscript is a revised version of a 2008 paper entitled “ZHI and ZHE: A note on the historical development of Chinese relative clauses”.
determines whether D is spelled out as “zhi” or “zhe”. Specifically, “zhi” is inserted for D if both the specifier and complement contain overt material. “Zhe” is inserted if only one of these is filled.

(3) a.   DP
      \  \       
       TP    D’  
       / \      
      ZHI    CP
        \  /    
       NP C’  
         / \ 
        C <TP>

b.   DP
     \  /  
    CP    ZHE

In this paper, I reject the approach in (3), arguing instead that ZHI and ZHE occupy different positions within DP rather than being in complementary distribution. Only ZHI is located in D, while ZHE occupies a lower determiner position n (Aldridge 2009). n selects the relative clause, which is a TP (and not a CP). This analysis captures the fact that relative clauses in Archaic Chinese were not finite clauses but nominalizations. I propose that they are mixed projections in the sense of Abney (1987), Borsley and Kornfilt (2000), Baker (2005, 2011), Grohmann and Panagiotidis (2009), and others, with a nominal layer consisting of DP and nP dominating the TP. Both the relative clause and the head nominal are merged in this projection. n acts as the operator binding the gap position in the clause, as proposed elsewhere by Basilico (1996). nP is the locus of relativization. If an external head appears, this DP is merged in the specifier of nP and can provide external reference for the variable in the clause, which is merged as n’s complement. This structural relation takes much of its intuitive grounding from the traditional approach to relativization (Chomsky 1977, Safir 1986, and others) that the head nominal is related to the clause via predication. After the structure is sent to the Morphological Component for vocabulary insertion, the n head is spelled out as “zhe” in all cases except when the nP contains only n and a DP. n will be spelled out as null if it occurs with only a DP. This happens only in cases like (2a) where the ZHE is absent and ZHI acts as a linker between the clause and head nominal.
The analysis in (4) makes a number of predictions which distinguish it from (3). I consider each of these in section 2. First, if ZHI and ZHE are instantiations of different feature bundles, then we expect them to have distinct functions. I demonstrate this using possessor constructions in section 2.1. Secondly, since ZHI and ZHE are claimed not to be in complementary distribution, we expect them to be able to cooccur. This prediction is also borne out, as I show in section 2.2. Finally, I also present evidence that ZHI is located in a structurally more prominent position than ZHE. This is discussed in section 2.3. Section 3 presents the detailed analyses of DP structures formed on ZHI and ZHE. In section 4, I propose an analysis of the loss of the distinction between ZHI and ZHE and the emergence of modern Mandarin DE.

2. Differences between ZHI and ZHE

In this section, I examine the predictions made by the hypotheses in (3) and (4) and show that the empirical facts are better accounted for by (4) than (3).

2.1. Functional Difference between ZHI and ZHE

In this subsection, I show that ZHI and ZHE have different functions. Specifically, ZHI was used to mark possession, but this was not possible for ZHE. In (5) ZHI appears between the possessor and possessum. There are no examples in Late Archaic Chinese in which ZHE is immediately preceded by a possessor.

(5) a. 文 王 之 園 方 七十 里。 (Mencius 2)
[Wen wang zhi you] fang qishi li.
Wen king ZHI park square 70 neighborhood
“King Wen’s park was as big as 70 neighborhoods (70 square li).”
b. 荒道而事人，
Wang dao er shi ren,
bend principle Conj serve person
何必去父母之邦。
he bi qu [fumu zhi bang]?
what need leave parents ZHI land
“If (I) bent my principles to do my duty, then what need would there be to leave the land of my parents?”

The lack of possessor constructions involving ZHE cannot be attributed to an inability of ZHE to select a nominal complement. Much of the basis for Aldridge’s (2009) claim that ZHE, like ZHI, is a type of determiner comes from the fact that it could in fact select a nominal complement. In (6a) ZHE selects an NP (or NumP). In (6b) ZHE selects a relative clause formed on SUO.

(6) a. 願君去此三子者也。 (Hanfeizi 36)
desire lord dismiss this three man ZHE NMLZ
‘(I) hope your lordship will dismiss these three men.’

b. 言者有言，其所言者特未定。 (Zhuangzi, Qiwu)
Yan zhe you yan, [[qi suo yan] zhe] te wei ding.
speak ZHE have speech 3.Gen SUO say ZHE but not uniform
‘Ones who speak have things to say, but what they have to say is not uniform.’

SUO was used in Late Archaic Chinese to form a relative clause on VP-internal positions. The clause projected by SUO was nominalized, as can be seen from the fact that the subject of the relative clause has genitive case. The function of SUO was to bind an operator moving from VP to the edge of vP, thereby forming a relative clause.

The function of ZHE when it selected a nominal complement was not to bind a syntactic gap to form a relative clause. Rather, ZHE was the semantic binder for the variable introduced by the predicate NP, a role analogous to that attributed to determiners in the DP hypothesis of DP Hypothesis of Szabolcsi (1983), Abney (1987), Longobardi (1994), and many others. Aldridge (2009) proposes that the specific function of ZHE as a determiner is the role of individuation, which Cheng and Sybesma (1999) attribute to classifiers in modern Mandarin.

In sum, only ZHI was used to mark possessors, while ZHE lacked this function. This lack of overlap in function indicates that ZHI and ZHE were not different phonetic realizations of the same feature bundle. Rather, ZHI and ZHE occupied different structural positions as different morphosyntactic feature bundles.

2.2. Co-occurrence of ZHI and ZHE

In this subsection, I show that ZHI and ZHE could co-occur, indicating that the two morphemes were not in complementary distribution and had to have occupied different structural positions. First, the examples in (7) show that at headless relative clause formed with ZHE can be possessed. The possessor is marked with ZHI.
(7)  a. 晉之從政者新,
    [Jin zhi cong zheng zhe] xin
    Jin ZHI exercise power ZHE new

    未能行令。
    wei neng xing ling
    not yet can execute order

    “The commander of the Jin (forces) is new; (he) is not able to have his orders carried out.”

    b. 王之為都者，臣知五人焉。
    king ZHI govern province ZHE I know 5 person therein

    “Of your majesty’s provincial governors, I know five.”

Temporal and locative constituents can also fill the possessor position, occurring to the left of the linker ZHI. ZHE again follows the clause.

(8)  a. 守先王之道
    shou xian wang zhi dao
    observe ancient king ZHI principle

    C 以 待後之學者。
    yi dai [hou zhi xue zhe]
    C await future ZHI study ZHE

    “(He) observes the principles of the ancient kings in order to await future scholars.”

    b. 夫傳兩喜兩怒之言，
    Fu chuan liang xi liang nu zhi yan,
    Dem transmit both joy both anger ZHI word

    天下之難者也。
    [tianxia zhi nan zhe] ye.
    world ZHI difficult ZHE Decl

    “Transmitting words or joy and anger from both sides is one of the most difficult things in the world.”

The external position of the possessors in (8) is emphasized by the contrast with examples like (9), in which a temporal modifier appears inside the relative clause and lacks genitive marking by ZHI. This results in a low scope interpretation for the adverb. Hou si zhe is a humble first person expression. It can be translated literally as ‘one who will die later’, in other words someone younger than the interlocutor. It would not make sense to interpret this as ‘a future dead person’, since all humans are mortal and therefore future dead people.

(9) 天之將喪斯文也
    Tian zhi jiang sang si wen ye
    Heaven Gen will extinguish this culture NMLZ
後死者不得與於斯文也。  

(Analects, Zihan)

“If Heaven intends to extinguish this culture, then I (one who will die later) should not be able to have contact with it.’

(10) shows a construction which was common in Late Archaic Chinese but which is lacking in modern Mandarin. The head nominal appears to the left of the clause. The linker ZHI intervenes between it and the clause, and ZHE follows the relative clause. This construction has distinctive interpretative characteristics which I discuss in the next subsection.

(10) 馬之死者已過半矣。  

“Horses which have died are more than half.”  

(Zhuangzi, Mati)

One final point to be made in this subsection is that the co-occurrence of ZHI and ZHE should not be analyzed as recursion of DP, ZHE and ZHI each occupying a different DP head. There are two reasons for this. First is the fact observed in section 2.1 that ZHI and ZHE have different functions and accordingly should not both be analyzed as D. Secondly, there is empirical evidence against DP recursion in Late Archaic Chinese. For example, Ma (1962) observes that there are no attested examples in which more than one ZHI occurs in a relative clause. (11) shows examples of relative clauses formed on VP-internal positions. As mentioned above, this type of relative clause requires the morpheme SUO, which binds an operator in the edge of vP. Like ZHE relative clauses, SUO relatives were also nominalized. (11a) shows that the subject preceding SUO can occur with the genitive particle ZHI. (11b) shows that ZHI can appear between the clause and the relative head, as is also true of subject relatives. What is unattested in this period is the occurrence of ZHI in both positions in a single relative clause. If DP recursion were possible, we would predict the existence of unattested examples in which both the embedded subject and the external head nominal could be marked with ZHI.

(11) a. 恰二先君之所職業。  

“based on the duties discharged by my two former lords”

b. 仲子之所居之室  

“The house in which Zhongzi lives”

In sum, ZHE and ZHI can co-occur within a single DP, indicating that they occupy different structural positions and cannot be analyzed as being in complementary distribution vying for a single position.
2.3. ZHI > ZHE (Information Structure)

This subsection presents evidence for the proposal that ZHI occupies a higher position in DP than ZHE. The evidence for this claim is based on information structure. What I show in this section is that ZHI is associated with definite or generic interpretations, while ZHE expresses only specificity. First, returning to the postnominal relative clause introduced in (10) in the preceding subsection, this type of relative clause is used when the head nominal refers to a discourse topic. (12) shows part of the preceding discourse for this example. In the text, a horse trainer is describing his training program, specifically describing his treatment of the horses he trains. It is clear from the discourse that ma ‘horse’ is the topic of the discussion.

(12) 我 善 治 馬 ... 飢 之 , 渴 之 , 馳 之 ...  
Wo shan zhi ma ... ji zhi, ke zhi, chi zhi ...  
I well train horse starve 3.Obj thirst 3.Obj run 3.Obj  
馬 之 死 者 已 過 半 矣 。  
[ma zhi [si zhe]] .yi guo ban yi.  
horse ZHI die ZHE Asp surpass half Asp  
“I am good at training horses...I starve them, deprive them of water, run them...the horses which have died are more than half.” (Zhuangzi, Mati)

In contrast to constructions like (12), relative clauses of the type in (13) do not refer to topics but rather occur at the beginning of the discourse. The relative clauses in (13) are also postnominal. However, no ZHI appears; the clause simply follows head nominal without any linking morpheme.

(13) a. 吾 有司 死 者 , 三十三 人 。  
[[Wu yousi] si zhe] san-shi-san ren  
my officer die ZHE 33 person  
“I lost 33 officers.” (lit. “My officers who died were 33.”)  

b. 臣 弒 其 君 者 有 之 。  
[[chen shi qi jun] zhe] you zhi.  
minister assassinate his lord ZHE exist this  
“There are ministers who assassinate their lords.” (Mencius 6)

The contrast between postnominal relatives with and without ZHI is brought home by the fact that only the latter can occur as the complement of the existential verb. Postnominal relatives without ZHI occur very frequently in classical texts in existential constructions in order to introduce referents into the discourse. The fact that ZHI never occurs between the head nominal and the clause can be accounted for by Milsark’s (1974) Definiteness Restriction on existential constructions. The presence of ZHI forces a definite interpretation for this DP, which is incompatible with the semantics of an existential construction. ZHE, on the other hand, since it is associated with individuation, or perhaps specificity, (but not necessarily with definiteness) occurs naturally in an existential construction.
The last topic I touch upon in this subsection is ZHI relative clauses of the type seen in (2a). As mentioned above, ZHE does not appear in these constructions; ZHI alone intervenes between the clause and the head nominal. The interpretation of relative clauses of this type is nonspecific, generally generic. This fact is compatible with the proposal that ZHE imposes a specific interpretation on its complement. The lack of ZHE in (15), then, correlates with the lack of specificity.

(15) a. 富而可求，雖執鞭之士，
    Fu er ke qiu, sui zhi bian zhi shi,
    wealthy Conj Pot ask just [hold whip ZHI guard]
    吾亦為之。
    wu yi wei zhi.
    I even be 3.Obj
    “If one could simply ask to be wealthy, I might even become just a whip-holding guard.”

b. 臣聞「奔刑之臣，不若
    Chen wen, “[Ben xing zhi chen], buruo
    I hear run.to.face punishment ZHI vassal better.to
    釋之以報讎」。
    shi zhi yi bao chou”.
    release 3.Obj to take revenge
    “In the case of a vassal who commits a crime and turns himself in, I hear that it is better to release him in order to take revenge.”

The fact that ZHI is associated with a definite or generic interpretation and ZHE with a specific interpretation can be accounted for in an articulated DP structure of the type proposed in (4) in section 1. Following Borer (2005), Jackendoff (1977), Lyons (1999), and others, I assume that strong or definite determiners occupy a higher position in DP than weak determiners or determiners expressing cardinality or individuation. Therefore, it is plausible to analyze ZHI as occupying a higher structural position than ZHE. Specifically, ZHI can be analyzed as located in D and ZHE in n.

3. Analysis of ZHI & ZHE Relatives

In this section, I present analyses for the different types of DP structure projected by ZHI and/or ZHE. The basic structure is as introduced in (4) section 1. nP is the locus of relativization. n selects the TP which comprises the relative clause and binds the gap position in this TP. An
external head DP can be merged in the specifier of $nP$. $n$ is realized as ZHE at PF unless the only other constituent dominated by $nP$ is a DP. ZHI in D selects an NP or $nP$ as its complement. ZHI can also select a possessor DP in its specifier, assigning both a theta-role and case feature to this DP. If ZHI does not select and license a possessor, it merely carries an EPP feature to raise a constituent from its c-command domain. ZHI also has a PF requirement that overt material be spelled out to both its right and left. In what follows, I explicate detailed derivations of each of the structures involving ZHI and ZHE. I also show how ungrammatical (more accurately unattested) derivations are ruled out.

The simplest derivation is the headless relative clause without an overt head nominal. $n$ binds the gap in TP and is realized at PF as ZHE. I assume an analysis of operator binding along the lines of Adger and Ramchand (2005), according to which the gap in the relative clause is pro with an unvalued phi feature. This feature is valued as ‘dep’ by the binder. The binder and gap are interpreted as an operator-variable chain at LF.

(16)  
\[ [\text{wang Zhengguo } \text{zhe} ] \text{ bi ci ren ye.} \]
\[ \text{destroy Zheng ZHE certain this person Decl} \]
\[ “The one who destroys Zheng will certainly be this person.” (Zuozhuan, Zhuang 6) \]

(17)  
\[ [[\text{Wu yousi} ] \text{ si zhe} ] \text{ san-shi-san ren} \]
\[ \text{my officer die ZHE 33 person} \]
\[ “I lost 33 officers.” (lit. “My officers who died were 33.”) \]

In a headed relative clause, the head DP is merged in the specifier of $n$ and coindexed with the gap in TP to provide this gap with external reference. This DP checks the genitive case feature on the higher D under Agree.

When ZHI selects a possessor, this DP is base merged in its specifier. The D head licenses it by assigning both case and theta-role to this position.
(18) a. 何必去父母之邦。
   (Analects 18)
   he bi qu [fumu zhi bang]?
   “… what need would there be to leave the land of my parents?”

b.  
   \[
   \begin{array}{c}
   \text{DP} \\
   \text{ZHI} \\
   \text{NP}
   \end{array}
   \]

In structures without possessors, ZHI does not have a theta-role to assign. The specifier of this DP can thus be the target of raising. The head DP in [Spec, nP] is attracted in a postnominal relative like (19). This DP has already been case licensed by the genitive D where ZHI is merged. I assume with Chomsky (2000, 2001, 2004) that the unvalued phi-feature on this D acts as a probe searching its c-command domain for a DP to value this phi-feature. Case is valued on the DP as a reflex of the phi-feature Agree relation. If no DP is found by the phi-feature probe, Agree can still take place with a DP base merged in the specifier of ZHI as possessor. In this case, just illustrated in (18), the unvalued case feature on the possessor acts as the probe initiating the Agree relation.

(19) a. 馬之死者已過半矣。
   [ma zhi [si zhe]] yi guo ban yi.
   horse ZHI die ZHE Asp surpass half Asp
   “The horses which have died are more than half.”     (Zhuangzi, Mati)

b.  \[
   \begin{array}{c}
   \text{DP} \\
   \text{ZHI} \\
   \text{nP}
   \end{array}
   \]

Since case and phi features are valued in a single Agree relation, I assume that both of these features are required for Agree to take place. Specifically, the DP with a valued phi-feature must also have an unvalued case feature. Consequently, the ID feature on ZHE or the embedded subject will not be able to value the phi-feature of the ZHI D. In this way, I account for the lack of examples of the type in (20). In (20), the clause has moved to the specifier of the ZHI DP. If the derivation were to converge, both ZHI and ZHE would be spelled, resulting in a “zhi zhe” sequence following the clause. Such relative clauses are unattested in the literature and can be
ruled out by the analysis at hand, because there is no DP to value the case and phi features of ZHI.

(20)  
\[
\begin{array}{c}
*\text{DP} \\
\text{TP} \quad \text{D'} \\
\quad \text{ZHI} \quad \text{nP} \\
\quad \quad \langle\text{TP}\rangle \quad \text{ZHE}_{[\text{ID:DEP}]} \\
\quad \quad \quad \text{pro}_{[\text{ID:DEP}]} \quad \ldots
\end{array}
\]

Also ruled out are cases where a possessor is merged in the specifier of ZHI and an external head DP is merged in the specifier of nP. Since ZHI will no longer be able to value case once its phi-feature has been valued, the unvalued case feature on one of these DPs will cause the derivation to crash.

(21)  
\[
\begin{array}{c}
*\text{DP} \\
\text{DP} \quad \text{D'} \\
\quad \text{ZHI} \quad \text{nP} \\
\quad \quad \text{DP}_i \quad \text{n'} \\
\quad \quad \quad \text{TP} \quad \text{ZHE}_{[\text{ID:DEP}]} \\
\quad \quad \quad \text{pro}_{[\text{ID:DEP}]} \quad \ldots
\end{array}
\]

Cases like (22) are allowed, however, with an external possessor of a ZHE constituent. But note that the ZHE nP does not have an external head nominal. The possessor is licensed by the case and theta-role of D.

(22) a. 王之為都者，臣知五人焉。
[Wang zhi [wei du zhe]] chen zhi wu ren yan.  
“Of your majesty’s provincial governors, I know five.”  (Mencius 4)

b. 天下之難者也。
[tianxia zhi [nan zhe]] ye.  
“… one of the most difficult things in the world.”  (Zhuangzi 4)

One final unattested case to be ruled out is the possibility of n selecting only a DP. This DP would be able to value case with the ZHI D. But I assume that the structure will be semantically uninterpretable. ZHE will be interpreted as an operator. But there is no variable for it to bind.
This then leads to the question of how ZHE taking an NP complement can be interpreted. In this case, I follow the DP Hypothesis in assuming that the determiner ZHE binds the variable which is introduced by the predicate NP.

Finally, I give the derivation for a prenominal relative clause. In this case, no ZHE appears. TP is attracted from nP and the head DP is stranded in the specifier of nP. This DP values case with the ZHI D, as described above for (19). ZHE is not spelled out, since the only other constituent dominated by nP is a DP.

To summarize the paper thus far, Late Archaic Chinese ZHI and ZHE were clearly separate functional heads in DP. This has been demonstrated by the fact that the two had different functions and were associated with different interpretations. I have also shown that ZHI occupied a higher position in the structure than ZHE. The following table summarizes the features of ZHI and ZHE which drive the derivations just illustrated. In brief, ZHI is basically a linker and genitive case marker. It optionally selects a possessor. ZHE is an operator which binds a variable either syntactically (to form a relative clause) or semantically (to make a nominal specific).
Table 1:  

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ZHI</td>
<td>[EPP; Case:GEN; ID: ]</td>
<td></td>
</tr>
<tr>
<td>ZHE</td>
<td>[ID:DEP]</td>
<td></td>
</tr>
</tbody>
</table>

In terms of selection, ZHI optionally selects a DP possessor and assigns it a \textit{theta}-role. ZHE selects a TP or NP which will provide a variable for ZHE to bind. ZHE can also select a DP which provides an external referent for the gap in the relative clause selected by ZHE. This DP is dependent of the c-commanding D head for case, which will be valued as genitive. But it does not receive a \textit{theta}-role. I assume that it receives an interpretation by virtue of being coindexed with the gap in the relative clause.

4. Diachronic Implications

In the remainder of this paper, I show how the analysis just presented accounts for diachronic changes in Chinese relative clauses. I first address the controversy over whether ZHI or ZHE was the precursor for modern Mandarin DE. I show specifically that ZHI began to be lost in early Middle Chinese and therefore could not have been the morpheme replaced by DE in late Middle Chinese. I then show that ZHE continued to be used throughout Middle Chinese, undergoing extension and acquiring functions previously performed by ZHI. Consequently, I accept the conclusion of Lü (1943), Ohta (1958), Cao (1986), Feng (1991), Jiang (1999), and others that ZHE was the morpheme replaced by DE in Middle Chinese. Finally, I propose that modern Mandarin DE can occupy two positions within the DP, one formerly occupied by ZHE and the other the former position of ZHI.

(26)

\begin{center}
\begin{tikzpicture}
  \node (dp) {DP};
  \node (de1) [below left of=dp] {D'};
  \node (de2) [below right of=dp] {DE1};
  \node (np) [below of=de1] {nP};
  \node (n) [below of=np] {n};
  \node (de2) [right of=n] {DE2};

  \draw (dp) -- (de1);
  \draw (dp) -- (de2);
  \draw (de1) -- (np);
  \draw (np) -- (n);
  \draw (n) -- (de2);
\end{tikzpicture}
\end{center}

4.1. Early Changes from Archaic to Middle Chinese

In this subsection, I show that loss of ZHI is observed in early Middle Chinese\textsuperscript{2} texts. For this reason, ZHI could not have been the morpheme which is later replaced by modern Mandarin DE. First, (27) shows that ZHI ceased to be obligatory as a linking element in relative clauses and other modification structures. The following examples are taken from a Western Han text of approximately 100 BCE. Both are examples in which a modifier appears without the linking element ZHI between it and the head nominal.

\textsuperscript{2} It is common practice in Chinese historical linguistics to date the beginning of middle Chinese to the Eastern Han dynasty (1\textsuperscript{st} – 2\textsuperscript{nd} centuries CE). However, owing to significant grammatically discrepancies between Western Han and the immediately preceding classical period texts, I place the beginning of middle Chinese as early as Western Han times (1\textsuperscript{st} – 2\textsuperscript{nd} centuries BCE).
(27) a. 守者乃請出棄
Guard ZHE then ask remove discard

【守者（Shou zhe）】
【棄中死人。[[ze zhong] _____ [si ren]].
mat be.in (ZHI) dead person

“The guard then asked to take out and discard the dead person that was in the mat.”

b. 始嘗欲殺文公宦者履鞮
beginning before want kill Wen lord (ZHI) eunuch Lü Di

【始嘗欲殺文公宦者履鞮【Shi chang yu sha Wen Gong huanzhe Lü Di】】

beginning before want kill Wen lord (ZHI) eunuch Lü Di

知其謀。
know 3.Gen plot

“The eunuch Lü Di, who wanted to kill the lord Wen in the beginning, knew of their plot.”

ZHI was lost in other environments as well. Recall from (11a) in section 2.2 that ZHI could mark the subject of a relative clause formed on SUO. By the 5th century CE, it is clear from texts like the following that ZHI no longer marked genitive case. In the *Baiyujing* genitive case on subjects of SUO relatives is entirely dictated by prosodic factors. In Middle Chinese translations of Buddhist texts, there was a tendency to create four-syllable phrases. Genitive case was frequently added or omitted in order to ensure this pattern. No genitive case appears on the subject of a SUO relative if the clause or phrase already consists of four syllables, as in (28a). But genitive case can be added if this would result in a phrase four syllables long, as in (28b). I take this pattern as evidence that ZHI no longer existed in the spoken language. Its appearance in writing had become purely stylistic.

(28) a. 是我所作。
This I make

[Shi wo suo zuo].

‘This is something I made.’

b. 我之所記終無違失。
I Gen SUO record finally not.exist exception

[I Gen SUO record finally not.exist exception]

‘In the end, there were no exceptions to what I recorded.’

It can also be demonstrated that genitive case in general was lost in Middle Chinese. A number of morphological case distinctions existed in Late Archaic Chinese. *Zhi* 之 was used for third person accusative pronouns. Note that the same graph is used to write the accusative pronoun and the genitive case marker on possessor DPs. These two morphemes are etymologically related, tracing their origins to a demonstrative pronoun, as proposed first by Mullie (1942) and Zhou (1959) and later elaborated on by Djamouri (1999). In Classical Chinese of the late Archaic period, however, the accusative object pronoun *zhi* was distinct from the genitive case marker ZHI. (29) shows that *zhi* was used for the theme in a dative construction, the goal in a double
object construction. *Zhi* also was used for an exceptionally case-marked embedded subject. This distribution suggests a clear connection with structural accusative case.

(29) a. 臣之子亦不能受之於臣。  
\[Chen \ zhi \ \text{zi} \ y\ i \ \text{bu} \ \text{neng} \ [\text{shou} \ \text{zhi} \ \text{yu} \ \text{chen}].\]
\[I \ \text{GEN} \ \text{son} \ \text{also} \ \text{not} \ \text{can} \ \text{receive} \ 3. \ 	ext{OBJ} \ P \ \text{I}\]
\[‘My son also cannot receive it from me.’ \]  
\[\text{(Zhuangzi 13)}\]

b. 矢授之國。  
\[\text{Zu} \ [\text{shou} \ \text{zhi} \ \text{guo}] .\]
\[\text{finally} \ \text{bestow} \ 3. \ 	ext{OBJ} \ \text{nation}\]
\[‘In the end, I gave him (responsibility for) the nation.’ \]  
\[\text{(Zhuangzi 5)}\]

c. 上賢使之為三公。  
\[\text{Shang xian shi} \ [\text{zhi} \ \text{wei} \ \text{sangong}] .\]
\[\text{most} \ \text{able} \ \text{make} \ 3. \ 	ext{OBJ} \ \text{be} \ \text{sangong}\]
\[‘The most capable, make them into sangong (the highest official rank).’ \]  
\[\text{(Xunzi 12)}\]

On the other hand, subjects of nom inalized embedded clauses were marked with genitive case. When this subject was a third person pronoun, the form was *qi*. Thus, the accusative *qi* is clearly distinguished in this period from the genitive pronoun *qi*.

(30) a. 周公知其將畔而使之與?  
\[\text{Zhou gong zhi} \ [\text{qi} \ \text{jiang pan}] \ er \ \text{shi} \ \text{zhi} \ \text{yu}?\]
\[\text{Zhou} \ \text{duke} \ \text{know} \ 3. \ \text{GEN} \ \text{will} \ \text{rebel} \ \text{CONJ} \ \text{send} \ 3. \ \text{OBJ} \ \text{Q}\]
\[‘Did the duke of Zhou send him, knowing [that he would rebel]’ \]  
\[\text{(Mencius 4)}\]

b. 莫知求其所已知者。  
\[\text{Mo zhi qiu} \ [\text{qi} \ \text{soo y} i \ \text{zhi} \ \text{zhe}] .\]
\[\text{noone} \ \text{think} \ \text{seek} \ 3. \ \text{GEN} \ \text{SUO} \ \text{PERF} \ \text{know} \ \text{DET}\]
\[‘Noone thinks to seek [what he already knows].’ \]  
\[\text{(Zhuangzi 2.3)}\]

From early Middle Chinese, however, the genitive pronoun *qi* came to be used for ECM embedded subjects.

(31) a. 全趙令其止。  
\[\text{Quan Zhao ling} \ [\text{TP} \ \text{qi} \ \text{zhi}] .\]
\[\text{protect} \ \text{Zhao} \ \text{make} \ 3. \ \text{GEN} \ \text{stop}\]
\[‘(You) protect Zhao and make them stop.’ \]  
\[\text{(1 st C. BCE; Zhanguoce, Xi Zhou)}\]

b. 欲使其生於階庭耳。  
\[\text{Yu shi} \ [\text{qi} \ \text{sheng y} u \ \text{jieting}] \ er.\]
\[\text{want} \ \text{make} \ 3. \ \text{GEN} \ \text{grow} \ \text{in} \ \text{courtyard} \ \text{PART}\]
\[‘(You) want to make them grow in a courtyard.’ \]  
\[\text{(5 th C. CE; Shishuo Xinyu, Yanyu)}\]

Later in Middle Chinese, *qi* could be found as the goal in a double object construction.
(32) a. 唯願世尊與其長壽。
Wei yuan Shizun yu qi changshou.
‘(I) only ask the Buddha to give him long life.’

(5th C. CE; Zabao Zangjing 47)

b. 吾與其眼。
Wu yu qi yan.
‘I give him eyes.’

In Middle Chinese, then, we can conclude that the morphological form of the third person pronoun no longer directly reflected the case licensed in the syntax. A final argument for the proposal that genitive case was lost in Middle Chinese comes from the fact that subjects within other types of embedded clauses, e.g. sentential subjects, were no longer required to appear with the genitive marking. (33a) shows an Archaic period sentential subject with genitive marking on the embedded subject. As subject and object embedded clauses in Late Archaic Chinese were nominalized, this genitive marking was in fact obligatory in this period. (33b) shows a similar sentence in a Han period (early Middle Chinese) historical chronicle. The Han example does not use genitive case for the embedded subject.

(33) a. 天下之無道也久矣。
[Tianxia zhi wu dao ye] jiu yi.
‘It is a long time since the world has been without the proper way.’

(5th C. BCE; Analects 3)

b. 天下無道久矣。
[Tianxia wu dao] jiu yi.
‘It is a long time since the world has been without the proper way.’

As genitive case (and its morphological realization as ZHI or the pronoun qi) is lost from the language, ZHE can be found in functions previously performed only by ZHI. As Lü (1943), Feng (1991), and Jiang (1999) point out, ZHE can be found marking possessors in Middle Chinese texts.

(34) a. 聽弦者音
[wen xian zhe yin]
‘hearing the sound of the string(s)’

(Early Middle Chinese: Zhanguoce)

b. 南海所生，尤勝蜀者。
[Nanhai suo sheng, you sheng [shu zhe].
Nanhai Rel produce more better Shu ZHE
‘The ones produced in Nanhai far surpass those of Shu.’

(Early Modern Chinese: Guoshibu 1.7)
It should be pointed out that (34b) reflects an innovation in this period which allowed the possessum non-overt. This possibility is perfectly grammatical in modern Mandarin, as (35b) attests.

(35) a. wo de shu
   I DE book
   “my book”

   b. wo de
   I DE
   “mine”

Late Archaic Chinese lacked constructions corresponding to (35b), using either ZHI or ZHE.

(36) a. 文 王 之 園
   Wen wang zhi *(you)
   Wen king ZHI park
   “King Wen’s (park)”

   b. *文 王 者
   Wen wang zhe
   Wen king ZHE
   “King Wen’s”

I have already discussed how the analysis spelled out in section 3 accounts for this asymmetry in Late Archaic Chinese. (36a) is ruled out because the linking element ZHI requires overt material both preceding and following it. (36b) is not possible on the given interpretation, because ZHE does not have a possessor theta-role to assign. The question to be asked now is what allowed the Middle Chinese innovation seen in (35b). In Middle Chinese, ZHE acquires the new function of being able to select a possessor, as in (35a). But it also retains its earlier function of being able to license an empty category, hence the possibility of a non-overt possessum in (35b).

Returning to the historical discussion, the graph 者 ZHE is eventually replaced by the phonetically similar 底 di. The following examples show DI with a possessor, modifier, and as the linker between a relative clause and the head nominal. In short, DI at this time has all the functions of modern Mandarin DE.

(37) a. 汝底
   ru di
   you DE
   ‘your’

   b. 虚底
   xu di
   empty DE
   ‘empty one’

   c. 不辨生死底人
   bu bian sheng si di ren
   not discern live die DE person
   ‘someone who could be dead or alive’
To summarize this subsection, ZHI begins to drop out of the language in early middle Chinese. ZHE takes over the functions of ZHI, meaning that it can occupy both $n$ and $D$. DI replaces ZHE in early modern Chinese, and DI becomes DE in modern Mandarin. This means that modern Mandarin DE does not descend from ZHI, but rather from ZHE. This conclusion allows us to account for the extension of functions of ZHE in terms of grammaticalization along the lines of Roberts and Roussou (2003). ZHE acquires the functions of ZHI because it can move into the $D$ position. In time, ZHE can be base merged in either $n$ or $D$ with the feature bundles appropriate to each position. This means further that we expect the articulated DP structure proposed for Archaic Chinese ZHI and ZHE in section 3 to be maintained in modern Chinese varieties. I offer evidence in sections 4.2 and 4.3 that this is indeed the case.

4.2. Position(s) of Modern Mandarin DE

There is evidence that the articulated DP structure of Late Archaic and Middle Chinese has been inherited by modern Mandarin. Wu (2000), Simpson (2001), and Simpson and Wu (2002) have proposed the following analysis of modern Mandarin DE in relative clauses. In its essentials, this is the rejected hypothesis (3) in this paper. DE heads DP and raises the relative clause from its complement to produce a pronominal relative clause. Wu (2000), Simpson (2001), and Simpson and Wu (2002) further assume that DE derives historically from ZHI and that ZHI was also the head of DP.

(38) a. [wo zuotian mai] de] shu
   I yesterday buy DE book
   “book which I bought yesterday”

b. 
   DP
   TP  D'
   DE   CP
   NP  C'
   C  <TP>

As I have argued in this paper, ZHI indeed should be analyzed as the head of DP. However, I disagree that ZHI is the historical antecedent of DE, as discussed in the preceding subsection. That analysis in turn suggests the possibility that DE is not restricted to the $D$ position. (39) provides evidence that DE can in fact be merged in different positions. In (39), a relative clause appears either following or preceding a numeral-classifier sequence.

(34) a. san ben [wo mai] de] shu
   3 Cl I  buy DE book
   “three books which I bought.”
b. [[wo mai] de] san ben shu
   I buy DE 3 Cl book
   “three books which I bought.”

Given the current view (Cheng & Sybesma 1999 and others) that the classifier is also a
determiner-type functional category on the spine of DP, it is unlikely that the numeral classifier
sequence can be analyzed as a modifier freely adjoined in different positions. Therefore, we must
conclude that there is more than one structural location for a relative clause. A possible approach
is sketched in (40). A relative clause can be merged in [Spec, DP] or [Spec, nP]. DE is merged in
the head of the projection housing the relative clause. CIP is projected by the classifier, following

(40)

```
DP
  RC
  D'  DE1 NumP
      Num CIP
      Cl  nP
      RC  n'
      DE2 NP
```

The possibility of two positions for relative clauses also accounts for the following difference in
interpretation. Specifically, Huang (1982), Tang (1990, 2007), and others point out that the high
modifier receives a definite interpretation not felicitous in an existential construction, as per the
Definiteness Restriction.

(41) a. You [liang ben [Zhangsan xie de]] shu zai zhuozi-shang.
    exist two Cl Zhangsan write DE book on desk-top
    “There are two books that Zhangsan wrote on the desk.”

   exist Zhangsan write DE two Cl book on desk-top

4.2. Different ‘DE’ in other Sinitic Languages

The proposal that DE can appear in different positions within DP receives support from other
varieties of Chinese. The Liangcheng dialect of Hakka, for example, has two separate
morphemes corresponding to Mandarin DE. DE1 is e₃⁵ and DE2 is e₃₂. They differ in terms of
tone, DE1 having a mid falling tone and DE2 a mid rising tone.
The functions DE1 and DE2 are parallel to archaic Chinese ZHI and ZHE, respectively. DE1 occurs in a headed relative clause and DE2 in a headless relative.

(43) a. 燒 (lau^{33} lau^{33}) e^{35} 粥 (headed relative clause)  
    steaming.hot DE1 rice.gruel  
    “steaming hot rice gruel”  
 b. 燒 (lau^{33} lau^{33}) e^{32} (headless relative)  
    steaming.hot DE2  
    “steaming hot one” (Yue-Hashimoto 1993:229)

Although DE1 and DE2 differ only by tone, they are clearly differentiated by native speakers. In linear sequences of DE1 and DE2, the two morphemes are both pronounced and their tone distinction is retained. In (44), DE2 forms a headless relative clause which in turn functions as a possessor. The possession is marked by DE1.

Liangcheng (Yue-Hashimoto 1993:230)  
(44) 送 信 e^{32} e^{35} 單車  
    [deliver letter DE2] DE1 bicycle  
    “the bicycle of the one who delivers mail”

Contrast this with the Mandarin example in (45). (45a) is a headless relative. In (45b), this headless relative functions as a possessor. As a possessor, it should be followed by DE1 in the DP head position. However, only one DE is actually pronounced, due to a phonological process which deletes one of two phonetically identical functional morphemes in sequence.

Mandarin (Yue-Hashimoto 1993:230)  
(45) a. 送 信 的  
    song xin de  
    deliver letter DE2  
    “one who delivers letters”  
 b. 送 信 的 自行車  
    [song xin de] zixingche  
    deliver letter DE2 (DE1) bicycle  
    “the bicycle of the one who delivers mail”
The existence of two phonetically distinct DE in Liangcheng Hakka is very strong evidence for the continuation of the articulated DP structure of Late Archaic Chinese.

5. Conclusion

This paper has argued for an articulated DP structure for both Late Archaic Chinese and modern Sinitic varieties. Late Archaic Chinese had two determiner elements. ZHI was essentially a linking element which assigned genitive case and could also license a possessor. It occupied the head of DP, i.e. the highest functional position in the nominal projection. ZHE was located lower on the DP spine, specifically heading a $n$P projection. The main function of ZHE was to bind a variable, either syntactically to form a relative clause or semantically to make a nominal specific.

In Middle Chinese, morphological genitive case disappeared from the language. Consequently, ZHI eventually dropped out of use. ZHE, however, was retained, and because it could undergo movement to the empty D position, in time it acquired the former functions of ZHI. The graph for ZHE was replaced by a phonetically similar graph which was in turn replaced in modern Mandarin by DE 的. DE continues to be able to project $n$P or DP in modern Mandarin.

References


