

# Bidirectional grammaticalization: Chinese modal and conditional<sup>1</sup>

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Using a constructional approach to morphosyntax, this study describes a tricausal construction (a type of anankastic conditional construction) and related constructions in the history of Chinese. It demonstrates that the tricausal construction constitutes a context of morphosyntactic vagueness where category boundaries between modals and conditional protasis connectives are underdetermined; consequently, bidirectional rather than unidirectional developments occur. Morphosyntactic vagueness is defined by properties shared between two morphosyntactic categories: distributional and functional similarities. Therefore, changes enabled by morphosyntactic vagueness are argued to be regular processes of change mediated by grammatical equivalence. If grammaticalization is defined as the development of morphosyntactic categories, but not in terms of non-equivalence such as unidirectionality or increased grammaticality, grammaticalization may be systematically bidirectional when enabled by morphosyntactic vagueness.

KEYWORDS: anankastic conditional, counterdirectionality, degrammaticalization, grammaticalization, unidirectionality, vagueness

## 1. INTRODUCTION

This paper is concerned with a tricausal construction and related constructions in the history of Mandarin Chinese. Using corpus data and a constructional approach to morphosyntax (e.g. Croft 2001; Bybee 2010; Diessel 2019), it shows that modals and conditional protasis connectives (henceforth, conditionals, not to be confused with the conditional mood) may occur in a particular position of the tricausal construction. The implications of this phenomenon are then considered.

Example (1) schematizes the form and meaning of the tricausal construction. Formally, IF, WANTS, MODAL, and THEN represent positions filled by conditionals, verbs of desire, modals, and apodosis connectives, respectively.  $P_1$ ,  $Q$ , and  $P_2$  refer to clauses.

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- (1) IF WANTS  $P_1$  MODAL  $Q$  THEN  $P_2$   
 ‘If you want  $P_1$  you must  $Q$ ; then  $P_2$ .’

Functionally, the speaker uses IF WANTS  $P_1$  to presuppose the addressee’s goal (represented by  $P_1$ ) and MODAL to propose  $Q$  as the necessary means to achieve  $P_1$ . THEN  $P_2$  describes the consequence of  $Q$ , refers anaphorically to  $P_1$ , and reinforces (somewhat redundantly) the connection between  $P_1$ ,  $P_2$ , and  $Q$ . The construction is a directive speech act (Searle 1979: viii), used to direct the addressee to do  $Q$ , assuming that  $P_1$  is the goal. It is also a special type of anankastic conditional construction, e.g. *if you want P you must Q*, where  $Q$  is a necessary means to achieve  $P$  (Condoravdi & Lauer 2016).

In (2)–(3), (1) is exemplified. A modal *xūshì* ‘must’ occupies the MODAL position in (2). In the corresponding position in (3), it is *chúfēi*, typically a conditional ‘only if’ (Eifring 1995; Yang 2007; Wang et al. 2014) but rendered into ‘must’ here. Items in the IF, WANTS, MODAL, and THEN positions are in bold.

- (2) 如人要起屋，須是先築教基址堅牢，上面方可架屋  
**Rú rén yào qǐ wū xūshì xiān zhù jiào**  
 if person want raise house must first build make  
 jīzhǐ jiānláo shàngmiàn fāng kě jià wū  
 foundation firm on.top.of only.then can put.up house  
 ‘If one wants to build a house, one must first make the foundation firm; only then can one build the house on top.’ (1270; *Yǔlèi*).
- (3) 若要做見幾而諫，除非就本文添一兩字始得  
**Ruò yào zuò jiàn jī ér jiàn chúfēi jiù**  
 if want take see chance and remonstrate must to  
 běn wén tiān yì liǎng zì shǐ dé  
 original text add one two word only.then possible  
 ‘If you want to take it to mean ‘remonstrate when there is a chance’, you must add one or two words to the original text; only then is it possible (to derive the meaning).’<sup>2</sup> (1270; *Yǔlèi*)

The MODAL position is proposed to be a morphosyntactically vague context. Vagueness is a well-known concept in lexical semantics (e.g. Tuggy 1993). In morphosyntax, a context is vague when the morphosyntactic category of an item is underdetermined and has multiple compatible morphosyntactic analyses but does not require a precise one (Denison 2017, 2018; Kuo 2021, 2022a). As a vague context is where boundaries are blurred, an item in a vague context may change its morphosyntactic category (Denison 2017: 305).

[2] Previously, the addressee asks whether *jī jiàn* means ‘remonstrate when there is a chance’ (*jī jiàn* ‘lit. chance remonstrate’) or ‘remonstrate gently’ (*jī jiàn* ‘lit. subtly remonstrate’). The addressee, responding that it is the latter, says (3).

The development of grammatical items, such as modals and conditionals, is typically regarded as unidirectional (Hopper & Traugott 2003; Norde 2009; Narrog 2012; Kuteva et al. 2019). However, the vagueness observed in the tricausal construction suggests the possibility of bidirectionality, the phenomenon whereby instances of one morphosyntactic category may develop into another and vice versa (Kuo 2022a). *Xūshì* ‘must’ will be shown to occur in the tricausal construction first, i.e. (2), and then in conditional constructions, thus being an example of the morphosyntactic development MODAL > CONDITIONAL. The reversal, CONDITIONAL > MODAL, involves *chúfēi* ‘only if; must’, i.e. (3). Both developments have cross-linguistic parallels. MODAL > CONDITIONAL is found in Germanic languages (van der Auwera & Plungian 1998) and CONDITIONAL > MODAL in Japanese (Fujii 2004) and possibly Korean, Manchu, and Turkic languages (Rentzsch 2012: 866). In Chinese, *yào* ‘will; have to; if’ exemplifies MODAL > CONDITIONAL (Yu 1998; Hsu et al. 2015) and *fēi* ‘unless; must’, CONDITIONAL > MODAL (Eifring 1995; Wang 2008; Kuo 2022a).

This paper argues that bidirectionality between modals and conditionals in Chinese is neither unconstrained nor unprincipled. It is conditioned by morphosyntactic vagueness, which is only observed under specific, yet systematic, conditions where distributional and functional similarities exist between morphosyntactic categories, such that the morphosyntactic status of an item is underdetermined and not at issue. Therefore, even though not unidirectional, bidirectional changes, when enabled by morphosyntactic vagueness, are regular processes that are mediated by grammatical equivalence. If grammaticalization is defined as the development of grammatical categories, but not in terms of grammatical non-equivalence, e.g. unidirectionality and increased grammaticality, grammaticalization may be systematically bidirectional when enabled by morphosyntactic vagueness.

Unless otherwise stated, all data were drawn from the Academia Sinica Corpora of Ancient Chinese and Modern Mandarin Chinese, particularly the Corpus of Early Mandarin Chinese (seventh–nineteenth centuries CE). These corpora are relatively modest in size but contain quality data that are fully tagged and segmented into words. The methodology used in this paper is predominantly qualitative, but some quantitative evidence and analysis are provided.

The paper is structured as follows. Section 2 introduces the constructional approach to morphosyntax, the notion of morphosyntactic vagueness, and its instantiation in Chinese modals and conditionals. Section 3 describes the tricausal construction. Section 4 describes the histories of *chúfēi* and *xūshì* as bidirectional and attributes their bidirectionality to occurrences within the tricausal construction. Section 5 discusses implications. Section 6 concludes.

## 2. MORPHOSYNTACTIC VAGUENESS IN CONSTRUCTION GRAMMAR AND CHINESE

Section 2.1 introduces Radical Construction Grammar (Croft 2001) and its approach to morphosyntax. Section 2.2 interprets Denison’s (2017) notion of morphosyntactic vagueness in terms of Radical Construction Grammar.

Section 2.3 proposes that Modal and Conditional in Chinese are vague. Henceforth, morphosyntactic categories are capitalized.

## 2.1 *Constructions and morphosyntax*

As in other constructional theories (e.g. Goldberg 1995; Bybee 2010; Traugott & Trousdale 2013; Diessel 2019), constructions in Radical Construction Grammar are learned and conventionalized form-meaning pairings. They consist of syntax, morphology, and phonology on the formal side and semantics, pragmatics, and discourse functions on the meaning side. Non-predictability is frequently used to define constructions: something is a construction iff some aspect of its form or meaning ‘is not strictly predictable from [a construction]’s component parts or from other previously established constructions’ (Goldberg 1995: 4). Distributional preferences of the components of a construction, an aspect of non-predictability, can also be a criterion (Hilpert 2014). The reasoning is that if something is non-predictable, users must learn and store its form and meaning. Sufficient frequency can lead to storage and hence constructions, too, but proposing a frequency threshold for constructions is problematic (Goldberg 2019: 54).

A construction may be specific or schematic. A word like *cake* is a specific construction because its form is fully specified and arbitrarily (i.e. non-predictably) associated with its meaning. A bound morpheme, e.g. plural *-s*, is part of a schematic construction, as it abstracts over more specific constructions, e.g. *cats*, *cakes*, etc. The plural *-s* construction can be represented as [COUNT\_NOUN-*s*]. Brackets indicate that it is a construction, while small caps indicate a ‘slot’, or a position within a construction, which represents an abstraction over expressions that may occur there. For example, *cat* and *cake* may fill in the COUNT\_NOUN slot in the plural *-s* construction. A construction may be more complex than a word. The ditransitive construction has the form [SUBJECT VERB OBJECT<sub>1</sub> OBJECT<sub>2</sub>] with the meaning ‘X causes Y to receive Z’ (Goldberg 1995). See Zhan & Traugott (2015), Zhan (2017), Peng (2017), and Kuo (2020, 2021, 2022a) for complex constructions in Chinese.

In Radical Construction Grammar, morphosyntactic categories are generalizations over items in particular slots and result from cross-constructional associations. An item is an adjective in the unfilled slots of the comparative construction ([ADJECTIVE-*er*]) and the superlative one ([ADJECTIVE-*est*]), because both slots are associated with the prototypical adjectival property of gradability and similar items may occur in both. For example, *red* is as an adjective in *redder* and *reddest*. However, this does not mean that *red* may not be something else. It is a noun in *red is my favorite* because it is in the subject position, a nominal slot. In other words, constructions are used as categorization tools for morphosyntax. The traditional category of an expression may be reconceptualized as derived from the most typical kind of slot that it occurs in.

2.2 *Morphosyntactic vagueness in Radical Construction Grammar*

Vagueness is a well-known concept in lexical semantics (e.g. Tuggy 1993). For example, *cousin* is vague with respect to gender. Typically, this kind of under-specification does not hamper communication (unless specification is required contextually). This contrasts with ambiguity, where deciding on precisely which one of the possible meanings is intended by a speaker is typically at stake (e.g. *bank* ‘financial institution; river edge’). Recently, Denison (2017, 2018) has extended vagueness to morphosyntax: the category status of an expression may be under-determined.

Whereas Denison does not distinguish between types of morphosyntactic vagueness, two are proposed here: item-level and slot-level. An item is vague if it has multiple compatible analyses. A slot is vague if it generalizes over multiple compatible analyses of items in it. Slot-level vagueness is by definition schematic, as it generalizes over various similar instances, whereas item-level vagueness is lexically specific in the sense that it is associated with particular items. Distributional and functional similarities characterize both types.<sup>3</sup>

Some English words display item-level vagueness between Noun and Adjective in some contexts. For example, most nouns and adjectives may occur in a pair of constructions with similar slots: the compounding construction [NOUN NOUN] and the attributive adjective construction [ADJECTIVE NOUN], where the slots in bold are prenominal modifier slots. The category of a word in a prenominal modifier slot is vague between Noun and Adjective if the word may be attributed to [NOUN NOUN] and [ADJECTIVE NOUN]. Such attribution is possible if there is no distributional pattern specific to Noun or Adjective (e.g. *very* preceding the slot renders it adjectival) and the word is functionally similar to Noun, in being referential, and Adjective, in being gradable. See Croft (2001: Ch. 2) for Noun, Verb, and Adjective in Radical Construction Grammar.

For example, Denison (2017: 304) observes that *expert* is an adjective in (4a) and a noun in (4b), but in (4c), where *expert* is a prenominal modifier, ‘AD/R [addressee/reader] cannot know whether *expert* is noun or adjective here... the choice makes no difference to interpretation and no difference to constituent structure.’

- (4) (a) Naihe from Ka’u on the Big Island was so expert a surfer that his fellow chiefs grew jealous...
  - (b) An expert’s decision is usually final and binding.
  - (c) You could do it yourself or get expert help.
- (Denison 2017: 304; originally from the British National Corpus)

That is, *expert help* may be interpreted as NOUN NOUN or ADJECTIVE NOUN. Yet it is not at issue which one it is because *expert* is similar to Noun and Adjective functionally

[3] This characterization is a corrective to the un-constructional view in Kuo (2022a) that morphosyntactic vagueness is only a distributional phenomenon.

(in being potentially referential and gradable) and distributionally (in occurring without category-specific morphosyntax, e.g. Noun-specific possessive 's and Adjective-specific *very*). This type of vagueness that Denison discusses is more likely item-level than slot-level. For example, the prenominal items in *expert advice*, *killer punches*, and *powerhouse songs* are identified as vague by Denison, and such vagueness is more likely associated with the items and the phrases that they occur in, rather than with one schematic slot. In fact, most prenominal items are consistently nominal or adjectival. For example, *bread* in *bread rolls* is not vague, as it is not construed as gradable (cf. *breadly*).

Lexically specific contexts where item-level vagueness is observed may be contexts of change. For example, Denison (2017: 305) suggests that, after occurring frequently before nouns, such as *punch*, *killer* may become vague and then adjectival (by acquiring gradable semantics). He thus likens lexically specific contexts of morphosyntactic vagueness to Heine's (2002) bridging contexts, where original and innovative analyses overlap and enable morphosyntactic change. By the same token, as a vague slot generalizes over multiple vague items, it may also be a bridging context. The multiple analyses available in a vague context by definition have low saliency, a general enabler of change (De Smet 2012); this is because in such a context 'the matter of which exact interpretation one selects is of little or no consequence' (Traugott 2017: 100).<sup>4</sup>

In sum, morphosyntactic vagueness is observed in contexts where distributional and functional similarities between multiple categories neutralize any possible distinction between such categories. Without distributional similarity, there will be category-specific cues (e.g. *very* cues Adjective). Without functional similarity, even given distributional similarity, morphosyntactic categories by hypothesis will serve distinct functional purposes that keep them conceptually apart, assuming a conceptual view on morphosyntax (e.g. Croft 2001; Diessel 2019).

### 2.3 *Morphosyntactic vagueness between Chinese Modal and Conditional*

Sections 2.3.1–2.3.2 discuss distributional and functional similarities that characterize vagueness between Chinese Modal and Conditional, in order to show that a slot may be vague between Modal and Conditional.

#### 2.3.1 *Distributional similarities between Modal and Conditional*

Modal in Chinese may be pre- or post-verbal. The post-verbal subtypes (Li & Thompson 1981: Chs. 7 & 22) will not be discussed, as their distributions are clearly distinct from Conditional, which is pre-verbal. The pre-verbal subtypes are

[4] Bridging contexts are originally conceptualized as ambiguous. However, Traugott (2017: 99–100) observes: 'Such structures [analyses available in bridging contexts] need not be pragmatically or semantically ambiguous, strictly-speaking, but need to allow multiple analyses (see Harris and Campbell 1995: 70–72)'.

Auxiliary and Adverb. Being distributionally more specialized than Adverb (Li & Thompson 1981: Ch. 5), Auxiliary is more sharply distinguished from Conditional. Auxiliary and its distributional properties proposed by Li & Thompson (1981) will be examined vis-à-vis Conditional, to show that even assuming many and even stringent distributional criteria cannot reliably distinguish Auxiliary from Conditional. Henceforth, Modal exclusively refers to Auxiliary. This subsection is based on Kuo (2022a, 2022b).

Li & Thompson (1981: Ch. 5) propose eight distributional criteria for Modal, summarized and renumbered in (5).<sup>5</sup>

- (5) A modal
- (a) may occur in the polar question construction, [X *bù* ‘not’ X].
  - (b) may occur in the negation construction, [*bù* ‘not’ X].
  - (c) does not occur in any aspect construction.
  - (d) does not occur in any intensifier construction.
  - (e) does not occur in any nominalization construction.
  - (f) takes no direct object.
  - (g) must take a following verbal complement (unless contextually recoverable).
  - (h) cannot be pre-subject.

Criteria (5a, b) distinguish Modal from Conditional, but many verbs also occur in those constructions (Li & Thompson 1981: 173). As no modal appears exclusively in these constructions, (5a, b) alone cannot reliably differentiate between Modal and Conditional. Like Modal, Conditional also does not occur in the constructions described in (5c–f).

Criteria (5g–h) deserve more discussion. A conditional takes a clausal complement and can be pre-subject or post-subject (Li & Thompson 1981; Eifring 1995). Therefore, (5g) may distinguish Modal from Conditional. However, in null-subject contexts or when it is post-subject, a conditional immediately precedes the predicate, which would appear as if it took a verbal complement. Similarly, (5h) may distinguish between Modal and Conditional, but the latter is not consistently pre-subject and in null-subject contexts this criterion is ineffective. To provide evidence for the distribution of Conditional and its subject, 5,000 instances of *ruò* ‘if’, the most frequent Early Mandarin conditional, were sampled from the corpus. Assuming that a proper name, a common noun, or a pronoun immediately before or after *ruò* is the subject of the *ruò*-marked protasis, most instances of such protases are modal-like in being null-subject (4,244 instances) or post-subject (349). This means that in null-subject contexts, a modal may resemble a pre-subject or post-subject

[5] The criteria are for Modern Mandarin. As far as I am aware, no detailed distributional criteria independent of particular syntactic theories have been proposed for modals in pre-Modern Mandarin. Nevertheless, because some of the constructions in (5) are absent in older stages of Chinese (e.g. the polar question and *le* constructions), these criteria are likely more stringent than any criteria that might be proposed for Modal in older stages of Chinese. It follows that if such stringent criteria cannot consistently tease apart Modal and Conditional in Modern Mandarin, any ones proposed for pre-Modern Mandarin will not.

conditional, and a conditional a modal; (6) illustrates this possibility by describing Modal and Conditional (represented by IF) word orders.

- (6) (a) (SUBJECT) MODAL...  
 (b) IF (SUBJECT)...  
 (c) (SUBJECT) IF...

Some have argued that the criteria in (5) are too stringent (Tang 1988: 228–235; Li 2004: Ch. 4; Peng 2007: Ch. 2). Others have relaxed (5h) by defining Modal as possibly pre-subject (Tsao 1996), which blurs the distinction between Modal and Conditional even further. Nevertheless, the criteria in (5) are assumed here to show that even stringent criteria cannot reliably distinguish between Modal and Conditional.

Eifring (1995: 54–55) proposes three distributional properties for Conditional and some (non-modal) adverbs, but they are not effective at distinguishing between Modal and Conditional. According to him, a conditional may immediately precede *ne* (a pause-marking particle similar to *um*), *shuō* ‘say’, and *shì* ‘be’. *Shì* may even be a bound component of a conditional (Yu 1998; Hsu et al. 2015; Zhan 2017). However, a modal can take *shuō* and *shì* as its complements and collocation between *ne* and conditionals is rare. *Ne* is not attested in the corpora until Early Mandarin, where no conditional precedes *ne* immediately. In Modern Mandarin, only one instance does: *rúguǒ ne* ‘if um’, whose mutual information value of –1.84 (calculated by the corpus’ built-in function) suggests that *rúguǒ* and *ne* do not tend to co-occur.

Finally, a modalized protasis, which is marked by a modal and a conditional simultaneously, distinguishes between the two, e.g. (SUBJECT) IF MODAL and IF (SUBJECT) MODAL. Nevertheless, such occurrences are rare panchronically. A simple collexeme analysis (Stefanowitsch & Gries 2003) shows that throughout the history of Chinese, only possibility modals *néng* and *nénggòu* ‘be able to; can’ are significantly attracted to protases (i.e. they occur statistically more frequently than expected in protases), while the other modals are not. Tables 1 and 2 summarize the results of the analysis, by dividing modals into two kinds: whether they are attracted to or repelled from protases marked by *ruò* in Old Chinese (eighth–first centuries

Attracted		Repelled	
Modal ( <i>n</i> )	CS	Modal ( <i>n</i> )	CS
能 <i>néng</i> ‘can’ (33)	5.34	可 <i>kě</i> ‘can’ (10)	1.76
獲 <i>huò</i> ‘get/can’ (1)	1.31	必 <i>bì</i> ‘must’ (9)	1.24
克 <i>kè</i> ‘can’ (2)	1.20	當 <i>dāng</i> ‘should’ (1)	0.18
得 <i>dé</i> ‘get/can’ (8)	0.76	可以 <i>kěyǐ</i> ‘can’ (0)	
		難 <i>nán</i> ‘cannot’ (0)	
		足 <i>zú</i> ‘can; suffice’ (0)	

Table 1  
Collostructional strength (CS) between modals and *ruò* in Old Chinese.



Attracted		Repelled	
Modal ( <i>n</i> )	CS	Modal ( <i>n</i> )	CS
能 <i>néng</i> ‘can’ (421)	96.05	會 <i>huì</i> ‘will’ (21)	77.52
能夠 <i>nénggòu</i> ‘can’ (138)	62.71	可以 <i>kěyǐ</i> ‘can’ (76)	10.69
肯 <i>kěn</i> ‘be willing to’ (6)	0.70	必須 <i>bìxū</i> ‘must’ (14)	8.89
		該 <i>gāi</i> ‘should’ (1)	6.40
		得 <i>děi</i> ‘should’ (5)	4.33
		必要 <i>bìyào</i> ‘must’ (3)	1.05
		敢 <i>gǎn</i> ‘dare’ (9)	0.97
		應當 <i>yīngdāng</i> ‘should’ (0)	
		應該 <i>yīnggāi</i> ‘should’ (0)	
		必得 <i>bìděi</i> ‘must’ (0)	

Table 2

Collostructional strength (CS) between modals and *rúguǒ* in Modern Mandarin.

BCE) and *rúguǒ* in Modern Mandarin, both of which are the most frequent conditionals in their respective periods. Attraction (or repulsion) indicates that they occur more (or less) frequently than expected. Collostructional strength > 1.30, a log-transformed number here, indicates  $p < .05$  (Fisher’s exact test), i.e. attraction or repulsion is significant. ‘*n*’ is the raw frequency of a modal in protases’

Tables 1 and 2 suggest that *néng* and *nénggòu* are overwhelmingly represented in protases throughout the history of Chinese, but most modals are not significantly attracted. Therefore, although modals and conditionals have distinct distributions in modalized protases, such sequences are generally rare.<sup>6</sup>

In sum, Chinese Modal and Conditional share distributional properties. One may be distinguished from the other in some distributional contexts (e.g. [IF SUBJECT MODAL...]), but neither is uniquely associated with such contexts or occurs there consistently.

### 2.3.2 Functional similarities between Modal and Conditional

Both modals and conditionals represent propositions as non-factual (Narrog 2012), share similar types of readings (Sweetser 1990), and have speech act uses (Akatsuka 1992; Akatsuka & Clancy 1993). These similarities are shared between most modals and conditionals, unlike English Noun and Adjective, where shared similarities such as referentiality and gradability are more lexically specific. One formal semantic tradition especially highlights the interconnection between modals and conditionals. Kratzer (2012), building her analysis of conditionals on that of

[6] Modern Mandarin modals are assumed to be those identified by Li & Thompson (1981) and Old Chinese ones are those identified as canonical modals by Li (2016: 174) and Wu (2018). The precise meanings of the modals are irrelevant here, as the purpose is to show that they are statistically infrequent in protases. However, note that the meanings of *néng* and *nénggòu*, the only highly attracted ones, are mostly dynamic (Kuo 2022b), while the modal meaning of the tricausal construction is teleological.

modals, proposes that conditionals function like modals: they restrict modal meanings by specifying what would otherwise be left inferred by modals. Kratzer (2012: 108) thus remarks: ‘There is no two-place *if... then* connective in the logical forms for natural languages. *If*-clauses are devices for restricting the domains of operators’. See Condoravdi & Lauer (2016) for a review.

Speech acts are central to Radical Construction Grammar: what speakers intend to do linguistically is the building block of grammar such that the three basic cross-linguistic categories, Noun, Verb, and Adjective, are hypothesized to originate from the communicative acts of referring, predicating, and modifying, respectively (Croft 2001: 66). Following Radical Construction Grammar and on the basis of the dataset considered here, the most prominent functional similarity between Modal and Conditional is their speech act uses (i.e. performativity): both can be the heads of constructions that perform similar speech acts. That is, they are ‘performatively equivalent’. For example, (7a, b) are responses to the addressees’ questions about what to read. Both responses can be understood as directives, which, by Searle’s (1979: viii) definition, ‘get [people] to do things’; or specifically, as a speech act of *advice* (Searle 1979: 13), in that they advise on what course of action to take.

- (7) (a) 須先看大學  
 Xū xiān kàn dàxué  
 must first read Dàxué  
 ‘You must read *Dàxué* first.’
- (b) 非讀不可  
 Fēi dú bù kě  
 unless read not possible  
 ‘Unless you read them, it is not good (i.e. you must read them).’ (1270; *Yǔlèi*)

Given that a modal utterance like (7a) and a conditional one like (7b) can be understood directive, an utterance without any morphosyntax specific to Modal or Conditional may thus sometimes be interpreted modally or conditionally in performative contexts. This is illustrated in the performative context of (8a), where *xū* can be understood as either a modal or a conditional; (8a) is where the pre-subject, conditional use of *xū* in (8b) originated (Kuo 2022a).

- (8) (a) 汝須禮拜始得  
 Rǔ xū lǐbài shǐ dé  
 you must/only.if worship only.then possible  
 ‘You must worship; only then is it possible.’ (tenth century; *Zǔtángjǐ*)  
 or ‘only if you worship is it possible.’
- (b) 須你逐一去看, 理會過方可  
 Xū nǐ zhúyī qù kàn lǐhuì guò fāng kě  
 only.if you one.by.one go look understand PFV only.then can  
 ‘Only if you have looked at it one by one and understood it is it possible.’  
 (1270; *Yǔlèi*)

Performative uses of modal and conditional constructions are well known (e.g. Akatsuka 1992; Akatsuka & Clancy 1993; Verstraete 2001; Kaltenböck 2016). Such uses are typically labelled as indirect, in that they are less direct ways of performing speech acts. Performative verbs (*I request that you do it*) and imperatives (*do it!*) may perform more direct acts. Performative equivalence between two expressions does not necessarily suggest that there is no functional distinction between them, as there are multiple ways of performing the same act, each of which likely has its own functional motivations. The distinction between directive and indirective acts also reflects the idea that the same act can be performed differently. For issues regarding variation and (in)direct acts, see Frajzyngier & Jirsa (2006) and Mauri & Sansó (2011).

Performative equivalence, in combination with distributional similarities, enables Modal and Conditional to be vague. A slot is vague between Modal and Conditional if it may be assigned both modal and conditional statuses and yet no difference in distribution or performativity suggests one status over the other. Other non-performative functional similarities may play a role, but, as far as the tricausal construction is concerned, performativity will be shown to be the most prominent function that provides the shared background against which its MODAL slot may be understood as morphosyntactically vague.

### 3. THE TRICLAUSAL CONSTRUCTION

Section 3.1 introduces the tricausal construction. Sections 3.2–3.4 describe THEN  $P_2$ , MODAL  $Q$ , and IF WANTS  $P_1$ , respectively. The MODAL slot and items in it will be shown to be morphosyntactically vague. Section 3.5 discusses the distribution of the construction and its constructional status. Section 3.6 summarizes.

The Early Mandarin Corpus was queried for words that typically function as connectives, modals, and verbs of desire. The results were manually examined to identify instances of the tricausal construction. A particularly thorough examination of (*Zhūzī*) *Yùlèi*, a collection of *Zhūzī*'s (1130–1200) conversations compiled in 1270, was undertaken, for the following reasons. First, the colloquial nature and the size of *Yùlèi* make it a crucial source of Early Mandarin (Sun 1996: 4–8). Second, the construction is particularly frequent in *Yùlèi*.<sup>7</sup> Third, as will be shown in Section 4, *Yùlèi* is the transitional period for the bidirectional developments of two items in the construction.

[7] The corpora were queried for the most frequent verbs of desire: *yù* in Old Chinese, *yù* and *yào* in Early Mandarin, and *yào* and *xiǎngyào* in Modern Mandarin. The results were manually examined to estimate the relative frequencies of the tricausal pattern. It is the least frequent in Modern Mandarin (7 instances; 1 per 2.51 million characters), followed by Old Chinese (4 instances; 1 per 1.41 million). No size information about *Yùlèi* is available, but the Early Mandarin Corpus contains 36,159,860 characters (Chen 2017: 74) and *Yùlèi* alone contains 32 instances, suggesting a frequency higher than 1 per 1.16 million characters in *Yùlèi*.

## 3.1 Introduction

In the following, (1), reproduced as (9), is a snapshot of the construction.

- (9) IF WANTS  $P_1$  MODAL  $Q$  THEN  $P_2$   
 ‘If you want  $P_1$  you must  $Q$ ; then  $P_2$ .’

$P_1$  is some goal that the speaker assumes someone (typically the addressee) wants to achieve.  $Q$  is modalized as the necessary means to achieve  $P_1$ . MODAL is a teleological modal, which marks a proposition as necessary with respect to some goal (Narrog 2012: 8). THEN anaphorically refers to  $Q$ , signaling that  $P_2$  temporally follows or conditionally depends on  $Q$ ;  $Q$  THEN  $P_2$  may be paraphrased as ‘after/if  $Q$ ,  $P_2$ ’. This polysemy between temporality and conditionality is a general property of Chinese connectives (Li & Thompson 1981: Ch. 23; Eifring 1995: Ch. 4) and typologically widespread (Traugott 1985).  $P_2$  describes the result of  $Q$  and anaphorically refers to the goal described by  $P_1$ , by containing one or more lexical items from  $P_1$  and/or a modal expressing the possibility of  $P_1$ .  $P_2$  can be paraphrased as ‘ $P_1$  is possible’ and understood as referring to the same goal as  $P_1$  does. For example, in (10),  $P_2$  *kě dǎ dé* ‘can succeed in attacking’ contains *kě* ‘can’ and resembles  $P_1$  *dǎ qīngzhōu* ‘attack *Qīngzhōu*’.

- (10) 若要打青州, 須用大隊軍馬方可打得  
**Ruò yào** dǎ qīngzhōu xū yòng dà duì jūn mǎ  
 if want attack *Qīngzhōu* must use great troop army horse  
**fāng** kě dǎ dé  
 only.then can attack obtain  
 ‘If you want to attack *Qīngzhōu*, you must use a great many troops; only then can you succeed in attacking.’ (fourteenth century; *Shuǐhúzhùàn*)

The construction functions as a directive. First, it assumes the addressee’s goal (IF WANTS  $P_1$  ‘if you want  $P_1$ ’); second, it indicates to the addressee what is to be done (MODAL  $Q$  ‘one must  $Q$ ’), if  $P_1$  is the goal; and third, it expresses what happens after/ if  $Q$  is achieved (THEN  $P_2$ ), which anaphorically refers to  $P_1$ . It is more specifically an indirect directive: it does not categorically direct the addressee to do  $Q$  but phrases it as contingent on one’s desire to achieve  $P_1$ .

The construction is a special type of the anankastic conditional construction (Condoravdi & Lauer 2016), which has a desire predicate within its protasis (IF WANTS  $P$ ) and an apodosis modalized by a teleological modal (MODAL  $Q$ ). The modal expresses the necessary precondition and means through which  $P$  comes true. The anankastic conditional construction, as in (11), typically directs the addressee to do  $Q$ , if they want  $P$ . A typical anankastic conditional construction is represented as [IF WANTS  $P$  MODAL  $Q$ ].

- (11) If you want to go to Harlem, you have to take the A train. (Condoravdi & Lauer 2016: 2)

The form IF WANTS  $P$  MODAL  $Q$  does not always have the anankastic conditional function. Consider (12), where  $Q$  is not the necessary means for  $P$  and the speaker does not direct the addressee to achieve  $P$ .

- (12) If you want to eat chocolate, you should try thinking about something else. (Condoravdi & Lauer 2016: 2)

The tricausal construction resembles the anankastic conditional construction: IF WANTS  $P_1$  presupposes the addressee's desire and MODAL  $Q$  expresses how to achieve  $P_1$ . Unlike the anankastic conditional construction, the tricausal construction has THEN  $P_2$ , which refers anaphorically to  $P_1$ .

### 3.2 THEN $P_2$

THEN is typically filled by connectives meaning 'only then' (He et al. 1985: 150, 501), e.g. *shǐ* in (3) and *fāng* in (2) and (10). Connectives meaning 'then' are also found, e.g. *ránhòu* in (13) and *zé* in (14). THEN is rarely unfilled, cf. (16).

- (13) 若要可行, 須是酌古之制, 去其重複, 使之簡易, 然後可  
**Ruò yào kě xíng xūshì zhuó gǔ zhī zhì qù**  
 if want can work must consider antiquity poss rule remove  
**qí chóngfù shǐ zhī jiǎnyì ránhòu kě**  
 its repetition make it simple then can  
 'If you want it to work you must consider the rules from antiquity and simplify them; then it can (work).' (1270; *Yùlèi*)
- (14) 要習, 須常令工夫接續則得  
**Yào xí xū cháng lìng gōngfū jiēxù zé dé**  
 want practice must often make work continue then obtain/possible  
 'If you want to practice it, you must do the work often; then you can (do it).' (1270; *Yùlèi*)

Connectives in THEN anaphorically refer to the condition or time established by  $Q$ . Apodosis connectives alone may signal temporal or conditional relations without protasis connectives, so  $Q$  THEN  $P_2$  may mean '(only) after/if  $Q$ ,  $P_2$ '.

The connection between  $P_1$  and  $P_2$  is worth noting. Consider (15), (16), and (17):

- (15) 若要去時, 須早去始得  
**Ruò yào qù shí xū zǎo qù shǐ dé**  
 if want go when must early go only.then obtain/possible  
 'If you want to go, you must go early; only then is it possible (to go).' (1270; *Yùlèi*)

- (16) 欲破陣時，須用鉤鎌鎗可破  
**Yù pò zhèn shí xū yòng gōulián qiāng kě pò**  
 want break formation when must use Gōulián spear can break  
 ‘When you want to break up the enemy’s tactical formation, you must use *Gōulián* spears; then one can break it up.’ (fourteenth century; *Shuihǔzhuàn*)
- (17) 若要辨明，須到雷音寺釋迦如來那裏，方得明白  
**Ruò yào biàn míng xū dào léiyīn sì shìjiārúlái**  
 if want recognize clearly must go Léiyīn temple Buddha  
 nǎlǐ fāng dé míngbái  
 there only.then obtain clarity  
 ‘If you want to distinguish one from the other, one must go to the Buddha of *Léiyīn* Temple; only then can you do so.’ (sixteenth century; *Xīyóuji*)

In (15),  $P_2$  contains one word, *dé* ‘possible’ and is marked by the apodosis connective *shǐ* ‘only then’.  $P_2$  anaphorically refers to  $P_1$  in that the possibility it expresses pertains to  $P_1$ , i.e.  $P_2$  means  $P_1$  ‘to go’ is possible. *Shǐ*  $P_2$  therefore can be interpreted as ‘(only after/if  $Q$ ) is  $P_1$  possible’ within the context of the construction. In (16)–(17),  $P_2$  contains a possibility modal and/or a lexical item recycled from  $P_1$ . In (16),  $P_1$  is *pò zhèn* ‘break up a tactical formation’ and  $P_2$  is *kě pò* ‘can break it up’. In (17),  $P_2$  *dé míngbái* ‘obtain clarity’ contains no possibility modal, but resembles  $P_1$  *biàn míng* ‘recognize clearly’.

$P_2$  is discourse-old, as it refers to  $P_1$ . It may reiterate one or more lexical items from  $P_1$  and a possibility modal that implies  $P_1$  is possible, e.g. (2), (10), (13), (16), and (17). Or it may contain such a possibility modal but no similarity to  $P_1$ , e.g. (3), (14), and (15). The discourse-oldness of (18) is interestingly tautological:  $P_1$  *qù suǒzài* ‘go where it is’,  $Q$  *qù dào* ‘get there’, and  $P_2$  *dé* ‘it is possible’; so is that of (19):  $P_1$ , *dé nèndì* ‘get so’ and  $P_2$ , *néng nèndì* ‘can (do) so’.

- (18) 要去所在，須是去到，方得  
**Yào qù suǒzài xūshì qù dào fāng dé**  
 want go where.it.is must go arrive only.then obtain/possible  
 ‘If you want to go where it is, one must get there; only then is it possible (to go there).’ (1270; *Yǔlèi*)
- (19) 要得恁地，須是平日莊敬工夫到此，方能恁地  
**Yào dé nèndì xū shì píngrì zhuāngjìng gōngfū**  
 want get so must be habitual respect kungfu  
 dào cǐ fāng néng nèndì  
 arrive this only.then can so  
 ‘If you want to get it, it must be the case that your daily *zhuāngjìng kungfu* (the way one conducts oneself) has reached a certain level; only then can you get it.’ (1270; *Yǔlèi*)

As  $P_2$  refers to  $P_1$  without exception and THEN pertains to the condition or time established by  $Q$ , the function of THEN  $P_2$  is likely to emphasize  $Q$  as being the precondition and the necessary means to achieve  $P_1/P_2$ . The connection between  $P_1$  and  $P_2$  is non-predictable and qualifies the tricausal construction as a construction in the sense of Goldberg (1995) and Hilpert (2014); see Section 3.5 for more discussion.

### 3.3 MODAL $Q$

MODAL marks  $Q$  as teleologically necessary with respect to the realization of  $P_1$ ; (13)–(18) show that  $xū$  and  $xūshì$  occur in MODAL.  $Bì$  ‘must’ is another but rarer possibility. He et al. (1985: 639) note that the strength of  $xū$  varies between  $bì$  ‘must’ and  $yīng$  ‘should’ and presumably so does its derivative  $xūshì$ . For consistency,  $xū(shì)$  is translated into ‘must’.

The status of  $xū + shì$  in (2), (13), (18), and (19) deserves particular attention. Etymologically  $shì$  is a copula. Depending on the context,  $xū + shì$  may be interpreted as a disyllabic modal ( $xūshì$ ) or a sequence where  $xū$  modalizes the focus-marking copula  $shì$  that introduces a focalized element.<sup>8</sup> For example, following a subject and preceding a predicate,  $xū + shì$  is  $xūshì$  ‘must’, e.g. (20). Preceding a subject,  $xū + shì$  is  $xū shì$  ‘must be (the case that)’. Because no modal is assumed to be pre-subject, the subject suggests that  $shì$  is not part of a modal, e.g. (19).

- (20) 學者須是學顏子  
 Xuézhě **xūshì** xué yánzǐ  
 scholar must learn Yánzǐ  
 ‘A scholar must learn from Yánzǐ.’ (1270; *Yùlèi*)

In null-subject contexts, the distinction between  $xū shì$  and  $xūshì$  is less clear, e.g. (2), (13), and (18); (21) illustrates the possible distinction in the tricausal construction when null-subject. Translation (21a) assumes  $xūshì$ . (21b) assumes  $xū shì$ , where  $xū$  fills in MODAL,  $shì qù qǐng...$  fills in  $Q$  ‘(it) is (the case that) you go...; lit. be go ask’ and MODAL  $Q$  means ‘it must be the case that you go...’.

- (21) 若要拿此妖魔，須是去請觀音菩薩纔好  
**Ruò yào** ná cǐ yāomó **xūshì** qù qǐng guānyīn  
 if want take this demon must(.be) go ask Guānyīn  
 púsà **cái** hǎo  
 Bodhisattva only.then good/possible  
 (a) ‘If you want to capture this demon, you **must** go and ask *Guānyīn* Bodhisattva; only then is it possible.’  
 (b) ‘If... **it must be the case that** you go and ask...’ (sixteenth century; *Xīyóujì*)

[8] The focalized element required nominalization originally, which has become optional by *Yùlèi* (Zhan & Traugott 2015: 477).

$Xū + shì$  in MODAL  $Q$ , when not pre-subject, exhibits item-level vagueness. Using subscripts to indicate the types of filled slots,  $xū + shì$  can be assigned a modal analysis, IF...  $xūshì_{MODAL} Q$ , as in (21a); or a modalized copula one, IF...  $xū_{MODAL} shì..._Q$ , as in (21b). Yet no morphosyntax suggests which one is to be preferred and whichever it is does not alter the intended message: the whole construction constitutes a directive that advises ‘going and asking...’ (=  $Q$ ), if one wants to ‘capture this demon’ (=  $P_1$ ). Both translations can perform this directive. Similarly, the intended speech acts in (2), (13), and (18) do not require a precise analysis of  $xū + shì$ ; they essentially mean ‘Do  $Q$ , if you want  $P_1/P_2$ ’. Readings of  $xū + shì$  in MODAL  $Q$  are thus performatively equivalent and their morphosyntactic statuses are vague, if no subject follows.<sup>9</sup>

Furthermore, *chúfēi*, typically a conditional ‘only if’, also occurs in MODAL; (22) exemplifies a conditional construction [IF  $Q$  THEN  $P$ ] ‘only if  $Q$ ,  $P$ ’ with *chúfēi* in the IF slot. The order of  $P$  and  $Q$  is reversed to highlight similarities to the corresponding tricausal slots (see Section 4.1 for more details).

(22) 除非聽受法花經，如此災殃方得出

**Chúfēi** tīngshòu fāhuā jīng rúcǐ zāiyāng  
 only.if obey.by.listening Fāhuā scripture this.way disaster  
**fāng** dé chū  
 only.then can exit

‘Only if you follow the *Fāhuā* scripture can you avoid disasters.’ (seventh–tenth centuries; *Dūnhuáng biànwén*)

Reproduced from (3), (23) illustrates the earliest instance of *chúfēi* in MODAL; (24)–(25) are later attestations. Translations (a) are modal readings of *chúfēi* analogically based on modals in the slot. Translations (b) are conditional readings modeled on *chúfēi* in the IF slot of [IF  $Q$  THEN  $P$ ], where the sequence IF WANT  $P_1$  MODAL  $Q$  THEN  $P_2$  is interpreted as IF WANT  $P_1$  *chúfēi*<sub>IF</sub>  $Q$  THEN  $P_2$  ‘if you want  $P_1$  only if  $Q$  then  $P_2$ ’.

(23) **Ruò yào** zuò jiàn jī ér jiàn **chúfēi** jiù  
 if want take see chance and remonstrate only.if to  
 běn wén tiān yī liǎng zì **shǐ** dé  
 original text add one two word only.then possible

(a) ‘If you want to take it to mean ‘remonstrate when there is a chance’, you **must** add one or two words to the original text; only then is it possible.’

(b) ‘If... **only if** you... is it possible.’ (1270; *Yǔlèi*)

[9] Wu (2004: 71) also remarks that it is not easy to distinguish between *xūshì* ‘must’ and *xū shì* ‘must be’ in *Yǔlèi*.



- (24) 要破此法, 只除非快教人去薊州尋取公孫勝請來, 便可破得  
**Yào pò cǐ fǎ zhǐ chūfēi kuài jiào rén qù jìzhōu**  
 want break this spell only only.if quickly ask person go Jìzhōu  
**xúnqǔ gōngsūnshèng qǐng lái biàn kě pò dé**  
 search Gōngsūnshèng ask come then can break obtain  
 (a) ‘If you want to break this spell, you **must** only (i.e. have absolutely no choice but to) quickly ask someone to go to *Jìzhōu* to search for *Gōngsūnshèng* and ask him to come over; then you can break it.’  
 (b) ‘If... **only if** you... can you...’ (fourteenth century; *Shuǐhǔzhuàn*)
- (25) 若要斷得清楚, 揲著也不大明白, 除非用大六壬才斷得準  
**Ruò yào duàn dé qīngchǔ diéshī yě bù dà míngbái**  
 if want ascertain can clear Diéshī also not greatly understand  
**chūfēi yòng dàliùrén cái duàn dé zhǔn**  
 only.if use Dàliùrén **only.then** ascertain can accurate  
 (a) ‘If you want to interpret what this sign means and do not understand *Diéshī* (a method of divination), you **must** use *Dàliùrén* (another method of divination); only then can you accurately interpret it.’  
 (b) ‘If... **only if** you... can you...’ (1791; *Hónglómèng*)

While Translations (b) are the most plausible original interpretations, *chūfēi* in this context is vague. It can be assigned a modal status, as an item in the MODAL slot in the tricausal construction (IF... *chūfēi*<sub>MODAL</sub> *Q*...) or a conditional status, as an item in the IF slot in the conditional construction [IF *Q* THEN *P*] preceded by another protasis (IF...*chūfēi*<sub>IF</sub> *Q*...). No morphosyntax specific to Modal or Conditional indicates which analysis to select and whichever construction it is, there is no significant difference in the speech act being performed. The speaker (or the addressee) presumably does not need to choose an analysis to perform (or understand) the intended directive that they must do *Q*, if they want *P*<sub>1</sub>/*P*<sub>2</sub>.

In sum, *xū + shì* exhibits item-level vagueness between *xū shì* ‘must be (the case that)’ and *xūshì* ‘must’; and *chūfēi*, between ‘only if’ and ‘must’. One interpretation is performatively equivalent to the other and no category-specific morphosyntax suggests one over the other. Only when *xū + shì* in MODAL *Q* is pre-subject is it not vague, in which case it is *xū shì*. This non-vagueness is at the level of *xū*<sub>MODAL</sub> *shì*...*Q*. On the whole, the MODAL slot is morphosyntactically vague: both modal and conditional analyses are allowed and neither is enforced, due to distributional and functional similarities to Modal and Conditional. Crucially, the very first use of *chūfēi* in MODAL, (23), may be hypothesized as the source of subsequent modal uses. Furthermore, as *chūfēi* is vague between a modal and a conditional, in principle non-pre-subject *xū + shì* in the same slot may be vague, too. This will be explored in Section 4.

## 3.4 IF WANTS

Some examples lack an explicit IF. Clauses without any connective in Chinese may signal conditional or temporal relationships between clauses, the first one of which typically expresses the precondition or the temporally earlier event (e.g. Li & Thompson 1981; Eifring 1995). WANTS  $P_1$  is also found in a clause marked by a temporal connective like *shí* ‘when’ alone, as in (16), or by both temporal and conditional connectives, e.g. (15). All cases but one contain WANTS. *Yào* consistently means ‘want’ in WANTS, but may be a modal ‘will/have to’ or a conditional ‘if’ elsewhere (Yu 1998; Hsu et al. 2015).

## 3.5 Distribution and non-predictability of the construction

Table 3 describes the distribution of IF, WANTS, MODAL, THEN, and whether  $P_2$  contains lexical similarity to  $P_1$  or no similarity but a possibility modal in *Yǔlèi*. Lexical similarity is defined as identity of form between parts or all of  $P_1$  and  $P_2$ . *Shí* under IF is an instance of *shí* ‘when’ without *rú* or *ruò*. *Ránhòu* under THEN includes the only one instance where multiple connectives mark  $P_2$ .

Rather than a construction with its own form and function, the tricausal construction could be a sequence of two independent constructions: an anankastic conditional construction [IF WANTS  $P_1$  MODAL  $Q$ ] and [THEN  $P_2$ ]; or an ‘in subordinate’ protasis [IF WANTS  $P_1$ ] (i.e. a protasis used as a main clause) and a typical conditional [IF  $Q$  THEN  $P_2$ ]. If true, two consequences follow. First, any tricausal sequence would result from the interaction of the two constructions, which supposedly could be predicted from elsewhere (e.g. general pragmatic principles). Second, possible multiple analyses of the MODAL slot would arise from the possibility that the sequence might be [IF WANTS  $P_1$  MODAL  $Q$ ] and [THEN  $P_2$ ] or [IF WANTS  $P_1$ ] and [IF  $Q$  THEN  $P_2$ ]. However, the independent constructional status of the construction will be argued for.

Functionally, THEN  $P_2$  emphasizes  $Q$  as being the precondition and necessary means to achieve  $P_1/P_2$  (Section 3.2). By hypothesis, lexical similarity between  $P_1$  and  $P_2$ , in addition to the possibility modal, is instrumental in this emphatic function, as it explicitly creates coherence between  $P_1$  and  $P_2$ . Such similarity is an aspect of the distributional preferences of the slots, which, if non-predictable, suggests the independent status of the construction.

Corpus work was undertaken to compare lexical similarity between  $P_1$  and  $P_2$  with a similar sequence from which lexical similarity presumably could be predicted, WANTS  $P_x$  MODAL  $Q_y$  THEN  $P_z$ . If the difference in likelihood of similarity was significant, similarity between  $P_1$  and  $P_2$  was assumed to be non-predictable. Instances of MODAL (*xū*, *xū + shì*, *bì*, and *chúfēi*) were examined if one of the ten preceding words was WANTS (*yào* or *yù*); ten is the limit of the filter function. The remaining 210 instances were then manually examined. An instance was

IF					
zero-coded	<i>rú</i>		<i>ruò</i>		<i>shí</i>
15	8		8		1
WANTS					
<i>yào</i>	<i>yù</i>			zero-coded	
25	6			1	
MODAL					
<i>xū</i>	<i>xū + shì</i>		<i>bì</i>		<i>chúfěi</i>
15	14		2		1
THEN					
'only then'			'then'		
<i>fāng</i>	<i>shǐ</i>	<i>nǎi</i>	<i>ránhòu</i>	<i>zé</i>	<i>biàn</i>
16	5	2	4	3	2
$P_2$					
similarity				no similarity but possibility modal	
17				15	

Table 3  
Distribution of the tricausal construction in *Yùlèi*.

counted as WANTS  $P_x$  MODAL  $Q_y$  THEN  $P_z$  if it was not the tricausal construction and if THEN referred to  $Q_y$  (to delimit the search range between MODAL and THEN; otherwise, any number of words could intervene); 16 were identified, out of which only two showed lexical similarity, e.g. (26)–(27). Compare 17 out of 32 in Table 3.<sup>10</sup>

- (26) 若只要皮膚, 便有差錯, 須深沉方有得  
 Ruò zhǐ **yào** pífu biàn yǒu chācuò **xū** shēnchén **fāng**  
 If only want skin then have error must deep(en) only.then  
 yǒu dé  
 have gain  
 ‘If you only want a superficial reading, you will be wrong. You must go deep;  
 only then will you gain anything.’

[10] Unlike the tricausal construction,  $P_x$  in (26) does not refer to the same goal as  $P_z$  and contains an apodosis; (27) is not performative and WANTS is negated.

- (27) 李先生不要人強行, 須有見得處方行  
 Lǐ xiānshēng bú yào rén qiáng xíng xū yǒu jiàndé  
 Lǐ mister not want people forcefully do must have obvious  
 chù fāng xíng  
 place only.then do  
 ‘Mr. Li does not want people to rush; (he thinks) one must be sure; only then will one do it.’

Lexical similarity between  $P_1$  and  $P_2$  is significantly more likely than between  $P_x$  and  $P_y$  ( $p = .011$ ,  $\phi = 0.392$ , using Fisher’s exact test), suggesting that it is non-predictable and construction-specific. A similar procedure was used to compare WANTS  $P_x$  (...) THEN  $P_z$ . 73 out of 287 showed similarity. Lexical similarity between  $P_1$  and  $P_2$  is again significantly more likely ( $p = .002$ ,  $\phi = 0.185$ , using Fisher’s exact test).

### 3.6 Summary

The components of the tricausal construction are summarized in (28)–(30).

- (28) IF WANTS  $P_1$
- (a) It specifies that the following clauses are about the desire to achieve  $P_1$ .
  - (b)  $P_1$  refers to some goal that the speaker assumes the addressee wants to achieve.
- (29) MODAL  $Q$
- (a) It expresses what must be done, given WANTS  $P_1$ .
  - (b)  $Q$  refers to the means through which the goal  $P_1$  is to be achieved.
  - (c) MODAL is teleological, as it marks  $Q$  as necessary with respect to the achievement of  $P_1$ .
  - (d) MODAL is filled by *bì*, *xū*, *xūshì* or *chūfēi*, typically a connective.
- (30) THEN  $P_2$
- (a) It refers to the temporal and/or conditional consequence of  $Q$ , reiterates the goal,  $P_1$  and emphasizes  $Q$  as the means to achieve  $P_1/P_2$ .
  - (b)  $P_2$  refers to  $P_1$  through lexical similarity to  $P_1$  and/or a modal implying the possibility of  $P_1$ .

The construction is an indirect directive: it frames the illocutionary act as contingent on the addressee’s desire. The directive function and the absence of morphosyntax specific to Modal or Conditional around the MODAL slot provide the background against which the slot is vague: it may be modal or conditional, the determination of which is not at issue, as both analyses are performatively equivalent. One communicative explanation for the vagueness is that the slot need not be specified, as the construction already specifies the relevant function: directivity.

4. BIDIRECTIONALITY BETWEEN MODAL AND CONDITIONAL: *chúfēi* AND *xūshì*

Sections 4.1–4.2 examine the histories of *chúfēi* and *xūshì* to illustrate bidirectionality between Modal and Conditional. The vague morphosyntactic status of the tricausal MODAL slot is proposed as an enabling factor, as it allows one category to become the other. Since morphosyntactic vagueness highlights distributional and functional similarities, the analysis draws on analogy-based accounts (e.g. Fischer 2008; Noël 2017). Change is hypothesized to proceed ‘on the basis of similarity relations between environments’ that trigger ‘analogically induced recategorization’ (De Smet 2012: 601–604). Section 4.3 considers coercion as an alternative explanation. Section 4.4 discusses similar cases.

4.1 *Chúfēi: from Conditional to Modal*

Section 4.1.1 introduces construction types involving *chúfēi* and Eifring’s (1995) analysis of *chúfēi* as a non-conditional connective. Section 4.1.2 proposes that the pattern that motivates Eifring’s analysis is an anankastic conditional construction where *chúfēi* is a teleological modal. Section 4.1.3 proposes a diachronic account of modal *chúfēi*.

4.1.1 *Construction types involving chúfēi*

*Chúfēi* means ‘only if’ or ‘unless’. Following Yang (2007), these meanings are construction-dependent, as summarized in Table 4.

In Type 1, ‘only if *Q*, *P*’, the apodosis connective is typically *cái* ‘only then’ or one of its near-synonyms. This is the type that (22) instantiates. In Type 2, ‘unless *Q*, *P*’, the apodosis connective is *fǒuzé* ‘or; otherwise’, or one of its near-synonyms. Both types are illustrated in (31a, b).

- (31) (a) **Chúfēi** nǐ qù wǒ **cái** qù  
*chúfēi* you go I only.then go  
 ‘Only if you go will I go.’
- (b) **Chúfēi** nǐ qù **fǒuzé** tā bù qù  
*chúfēi* you go otherwise he not go  
 ‘Unless you go, he will not go.’ (based on Lü 1999: 215)

	form	meaning
Type 1 construction	[ <i>chúfēi</i> <sub>IF</sub> <i>Q</i> THEN <i>P</i> ]	Only if <i>Q</i> , <i>P</i>
Type 2 construction	[ <i>chúfēi</i> <sub>IF</sub> <i>Q</i> OR <i>P</i> ]	Unless <i>Q</i> , <i>P</i>

Table 4  
 Construction types involving *chúfēi*.

*Chúfēi* occurs in more patterns than Table 4 suggests; for example, the *chúfēi*-marked protasis may be post-posed (Wang et al. 2014). Despite its incompleteness, Table 4 captures the primary focuses of the literature on *chúfēi*: the meanings of ‘only if’ and ‘unless’ and its protasis-marking function.

A construction where *chúfēi* neither means ‘only if; unless’ nor marks the protasis is [IF WANTS *P chúfēi Q*], as in (32), where WANTS is filled by verbs of desire (Eifring 1995).

- (32) **Ruò yào** rén bù zhī **chúfēi** jǐ mò wèi  
 if want people not know *chúfēi* self not do  
 ‘If (you) do not want people to know your wrongdoing, you yourself should not do it.’ (Wang et al. 2014: 42)

Because *chúfēi* heads the apodosis in this construction, it is problematic for accounts treating it as exclusively a conditional. In the literature, this construction is either neglected or downplayed (Yang 2007; Wang et al. 2014), likely due to its low frequency in Modern Mandarin. According to Wang et al. (2014: 46), 1.9% of *chúfēi* in Spoken Chinese and 0.5% in Written Chinese are [IF WANTS *P chúfēi Q*]. But it is more frequent in Early Mandarin: in texts between the fourteenth and eighteenth centuries in the corpus (from *Shūhǔzhùàn* to *Qílùdēng*), 32.9% (26/79) of *chúfēi* appears in [IF WANTS *P chúfēi Q*].

To propose one function and one morphosyntactic label for *chúfēi* across the whole gamut of patterns, Eifring (1995) proposes that *chúfēi* is a ‘necessity clause connective’ that marks its clausal complement as necessary (but not conditional) and any conditional meaning associated with *chúfēi*-marked patterns is attributed to the neighboring connective. Therefore, (31a, b) mean literally that *Q* is necessary (‘that you go is necessary’) and the conditionality originates from THEN and OR (respectively, ‘only then will I go’ and ‘otherwise he will not go’). For Eifring, this analysis is not the same as analyzing *chúfēi* as a modal or a conditional protasis connective. First, *chúfēi* cannot be a modal, as it can be pre-subject, e.g. (31a, b). Second, *chúfēi* does not mark protases because IF already does so in [IF WANTS *P chúfēi Q*], e.g. (32). Because under Eifring’s analysis *chúfēi* is not a conditional protasis connective, (32) is not problematic. Instead, it means ‘if you do not want people to know, that you do not do it yourself is necessary’.

In sum, Eifring assumes *chúfēi* as functionally and morphosyntactically invariant across distributional contexts, which is a ‘no redundancy in representation’ linguistic analysis (Croft 2001: 121). This leads to the conclusion that *chúfēi* is a necessity clause connective, not a modal or a conditional protasis connective.

4.1.2 *Chúfēi as a teleological modal*

Eifring’s analysis is problematic. No study seems to have uncovered any comparable non-conditional necessity clause type cross-linguistically. The analysis is thus ad hoc, positing a novel category based on a specific distributional pattern with no cross-linguistic near-equivalent. Furthermore, from a usage-based perspective, a non-redundancy analysis is not necessarily preferable or psychologically real (Croft 2001: Ch. 3). Although *chúfēi* does not mark the protasis or mean ‘only if; unless’ in [IF WANTS *P chúfēi Q*], it does not mean that it does not do so elsewhere; cf. Yang’s (2007) constructional approach to *chúfēi*.

To explain [IF WANTS *P chúfēi Q*], it is necessary to consider the anankastic conditional construction, [IF WANTS *P MODAL Q*]. All instances of [IF WANTS *P chúfēi Q*] cited in the literature are anankastic conditional constructions: they direct someone to do *Q* if they want *P* and *chúfēi* marks *Q* as teleologically necessary for *P*. Lü (1999: 125) describes [IF WANTS *P chúfēi Q*] as ‘(if) one wants to obtain a certain result ([i.e. result = *P*]), one must do so ([i.e. do so = *Q*]). Wang et al. (2014: 42) note that (32) is a common saying and translate *chúfēi* into ‘should’; (33) is another example.

- (33) 若要知他端的, 除非問他莊客  
**Ruò** yào zhī tā duāndì      **chúfēi** wèn tā zhuāngkè  
**If** want know his intelligence **must** ask his tenant  
 ‘If you want to gather intelligence on him, you must ask his tenants.’  
 (fourteenth century; *Shuǐhǔzhuàn*)

Assuming modals as strictly post-subject, *chúfēi* in this construction, when pre-subject, is not a prototypical modal but a modal-conditional hybrid. Its pre-subject syntax suggests a conditional status; yet, by analogy with the anankastic conditional construction [IF WANTS *P MODAL Q*], it resembles modals and expresses teleological modality. Analyzing something as a modal or conditional may be important in some theories, but presumably a user would only need to know that any instance of [IF WANTS *P chúfēi<sub>MODAL</sub> Q*] constitutes a directive where *Q* is the teleologically necessary means to achieve *P*. A precise analysis of *chúfēi* is not necessary. Furthermore, *chúfēi* in [IF WANTS *P chúfēi<sub>MODAL</sub> Q*] is not consistently pre-subject: only 34.6% (9/26) of the time is it so, based on texts between the fourteenth and eighteenth centuries. This means that most of the time, by analogy with [IF WANTS *P MODAL Q*], *chúfēi* is a modal.

In sum, *chúfēi* is a teleological modal when in the MODAL position of the anankastic conditional construction, i.e. [IF WANTS *P chúfēi<sub>MODAL</sub> Q*]. This analysis is more desirable. First, it proposes no ad hoc clause type but draws on the anankastic conditional construction. Second, unlike Eifring’s analysis, it upholds the established analysis of *chúfēi* as a conditional in constructions described in Table 4. Only *chúfēi* in [IF WANTS *P chúfēi<sub>MODAL</sub> Q*] is a teleological modal.

4.1.3 *The morphosyntactic history of chǔfēi*

Teleological modal *chǔfēi* likely develops from its use in the tricausal construction, [IF WANTS  $P_1$  MODAL  $Q$  THEN  $P_2$ ], which ultimately originates from its use in the Type 1 construction [IF  $Q$  THEN  $P$ ] ‘only if  $Q, P$ ’, described in Table 4. It is hypothesized as a series of analogy-based changes, as instances of *chǔfēi* in the following constructions are formally similar and performatively equivalent (the slots that *chǔfēi* occurs in are in bold): [IF  $Q$  THEN  $P$ ], [IF WANTS  $P_1$  MODAL  $Q$  THEN  $P_2$ ] and [IF WANTS  $P$  MODAL  $Q$ ].

First, *chǔfēi* in [IF  $Q$  THEN  $P$ ] is attested earlier than the other two uses. There are 5 such instances of *chǔfēi* that are earlier than or contemporaneous with the earliest tricausal use of *chǔfēi*, i.e. (23). All 5 are used directly, as in (22) and (34), where the speaker directs the addressee to do  $Q$  by saying that  $Q$  is the teleologically necessary precondition for the addressee’s goal, referred to by  $P$ .

## (34) 除非首尾熟背得方得

**Chǔfēi** shǒu wěi shú bèi dé fāng dé  
 chǔfēi head tail familiar memorize can only.then get  
 ‘Only if you can commit to memory the whole thing from start to finish can you get it (you must commit it to memory to get it).’ (1270; *Yǔlèi*)

*Chǔfēi* in [IF  $Q$  THEN  $P$ ] up to and including *Yǔlèi* thus resembles the last two clauses in the tricausal construction (i.e. [...MODAL  $Q$  THEN  $P_2$ ]), formally and functionally. This resemblance reflects the item-level vagueness of *chǔfēi* in the tricausal construction (Section 3.3): a sequence like IF WANTS  $P_1$  *chǔfēi*  $Q$  THEN  $P_2$  can be interpreted as the tricausal construction (IF... *chǔfēi*<sub>MODAL</sub>  $Q$ ...) or a protasis and *chǔfēi*<sub>IF</sub>  $Q$  THEN  $P$  (IF... *chǔfēi*<sub>IF</sub>  $Q$ ...).

Second, *chǔfēi* is attested in the tricausal construction earlier than in the anankastic conditional construction [IF WANTS  $P$  MODAL  $Q$ ], cf. (23) and (33). Because the first two clauses of the tricausal construction constitute the anankastic conditional construction, the occurrences of *chǔfēi* in the latter are likely to have been motivated analogically by the former. Moreover, the MODAL positions in both constructions are teleological, so it is not unexpected that *chǔfēi* started behaving like a modal after occurring in the tricausal construction, as in analogy ‘An item’s new syntactic behavior can be modeled on its behavior under a different syntactic status’ (De Smet 2012: 604).

Finally, whereas neither pre-*Yǔlèi* texts nor *Yǔlèi* contains *chǔfēi* in the anankastic conditional construction, in post-*Yǔlèi* texts between the fourteenth and eighteenth centuries, 32.9% (26/79) of *chǔfēi* occur in the anankastic conditional construction. This suggests *chǔfēi* to have become more clearly modal after its occurrences in the tricausal construction.

The formal similarities between the constructions that *chǔfēi* occurs in are visualized in (35). In (36)–(38), their semantics are summarized in (a), directive meanings in (b), and earliest attestations in (c).



- (35) (a) conditional  $chúfēi_{IF} Q$  THEN  $P$   
 (b) tricausal IF WANTS  $P_1$   $chúfēi$   $Q$  THEN  $P_2$   
 (c) anankastic conditional IF WANTS  $P$   $chúfēi_{MODAL}$   $Q$
- (36)  $chúfēi_{IF} Q$  THEN  $P$  (a) ‘ $Q$  is teleologically necessary for  $P$ .’  
 e.g. (22) and (34) (b) ‘Do  $Q$  to achieve  $P$ .’  
 (c) Pre-*Yǔlèi*
- (37) IF WANTS  $P_1$   $chúfēi$   $Q$  THEN  $P_2$  (a) ‘ $Q$  is teleologically necessary for  $P_1/P_2$ .’  
 e.g. (23)–(25) (b) ‘Do  $Q$  to achieve  $P_1/P_2$  if you want  $P_1/P_2$ .’  
 (c) *Yǔlèi*
- (38) IF WANTS  $P$   $chúfēi_{MODAL} Q$  (a) ‘ $Q$  is teleologically necessary for  $P$ .’  
 e.g. (32)–(33) (b) ‘Do  $Q$  to achieve  $P$  if you want  $P$ .’  
 (c) Post-*Yǔlèi*

In sum, a series of ‘analogically induced recategorization’ has likely led *chúfēi* to become a teleological modal. This change is likely enabled by the underdetermined morphosyntactic status of the tricausal MODAL slot, because *chúfēi* in the slot may be assigned a conditional status, in keeping with its origin, or a modal one, by analogy with other modals, which then gives rise to the teleological modal use.

#### 4.2 *Xūshì*: from modal to conditional

Section 4.2.1 describes the history of *xūshì*. Section 4.2.2 summarizes the histories of *xūshì* and *chúfēi* and considers relevant details.

##### 4.2.1 The morphosyntactic history of *xūshì*

*Xū + shì* originates from *xū shì* ‘must be’, e.g. (39) (Wu 2004). Before *Yǔlèi*, *xū + shì* may be *xū shì* ‘must be’, *xūshì* ‘must’ or focus-marking *xū shì* ‘must be (the case that)’. It may be vague between the latter two, e.g. (40). These uses persist into *Yǔlèi*, e.g. (19), (20), and (41); (40)–(41) are anankastic conditional constructions.

- (39) 須是文殊  
 Xū shì wénshū  
 must be Wénshū  
 ‘It must be Wénshū.’ (seventh–tenth centuries; *Dānhuáng biànwén*)
- (40) 欲得世上榮，須是今生修福  
 Yù dé shìshàng róng xūshì jīn sheng xiūfú  
 want get worldly glory must(.be) this life do.good  
 (a) ‘If you want to obtain worldly glory, you **must** do good this lifetime.’  
 (b) ‘If... it **must be the case that** you ...’ (seventh–tenth centuries; *Dānhuáng biànwén*)

- (41) 若欲行之, 須是行井田  
 Ruò yù xíng zhī xūshì xíng jǐngtián  
 If want practice it must(.be) practice Jǐngtián  
 (a) ‘If you want to practice it, you **must** practice *Jǐngtián* (a feudal system).’  
 (b) ‘If... it **must be the case that** you...’ (1270; *Yǔlèi*)

Furthermore, in *Yǔlèi xū + shì* occurs in the triclausal MODAL slot for the first time and is vague in a way similar to (41), if not pre-subject (Section 3.3). As suggested at the end of Section 3.3, *xūshì* ‘only if’ is another possible interpretation, for which there are two supporting arguments. The primary one is that both *xū + shì* and *chúfēi* occur in MODAL. Therefore, if *chúfēi* may be analyzed as a modal or conditional, e.g. (23), so may *xū + shì*. The secondary one is that, although collocation with *shì* is not specific to Modal or Conditional, *shì* may be a bound component of a conditional (Section 2.3.1), which may nudge the status of the otherwise vague *xū + shì* towards that of a conditional. Reproduced from (18), (42) considers the possible interpretations of *xū + shì*: *xū shì* ‘must be (the case that)’, *xūshì* ‘must’ and *xūshì* ‘only if’.

- (42) Yào qù suǒzài xūshì qù dào fāng dé  
 want go where.it.is must(.be)/only.if go arrive only.then obtain/possible  
 (a) ‘If you want to go where it is, **it must be the case that** you get to that place; only then is it possible (to go there).’  
 (b) ‘If... you **must** ... is it possible.’  
 (c) ‘If... **only if** you... is it possible.’ (1270; *Yǔlèi*)

In terms of performativity, not much seems to depend on the analysis of *xū + shì*. To understand (42), the addressee presumably would only need to know that the speaker intends to direct them to realize *Q*. The multiple analyses are also enabled by lack of category-specific morphosyntax (except if regarding *shì* as part of a conditional). One of the earliest instances of *xū + shì* as potentially *xūshì* ‘only if’ is (42); so are (2) and (13), all contemporaneous with the earliest vague instance of *chúfēi*, e.g. (23). Note that pre-subject *xū + shì* in the triclausal construction, e.g. (19), is not considered vague here, as such instances are *xū shì* ‘must be (the case that)’, assuming that no modal is pre-subject. If assuming otherwise, this means that the triclausal MODAL slot can be pre-subject and more cases of *xū + shì* will be vague between *xūshì* ‘must’ and *xūshì* ‘only if’.<sup>11</sup>

After *Yǔlèi*, *xū + shì* occurs in more conditional constructions, likely by analogy with *chúfēi*. *Chúfēi* in [IF *Q* THEN *P*] is exemplified in (43)–(44); (45)–(46) are

[11] *Xū* may be a conditional (Kuo 2022a), but less frequently; see (8). If so, (42) may be vague between *xū shì* ‘must be’, *xūshì* ‘must’, *xūshì* ‘only if’, and *xū shì* ‘only if be’. The last possibility does not have an impact on the analysis; if it is considered, the MODAL slot would still be vague. Nevertheless, *xū shì* ‘only if be’ suggests an additional pathway for *xūshì* ‘only if’; see Hsu et al. (2015) and Zhan (2017) for the history of *shì* fusing with conditionals.

instances of *xūshì* in [IF *Q* THEN *P*] that parallel *chúfēi* in (43)–(44). *Xūshì* in (45)–(46) is pre-subject, suggesting a clear conditional status. *Xūshì*<sub>IF</sub> and *chúfēi*<sub>IF</sub> are not as pragmatically specialized as pre-*Yǔlèi chúfēi*<sub>IF</sub>, i.e. (34), as shown in (44)–(45). In (44), *P* is not the speaker’s assumption of the addressee’s goal; (45) does not direct the addressee.

- (43) 除非得這三個人，方纔完得這件事  
**Chúfēi** dé zhè sān gè rén **fāngcái** wán dé zhè  
 only.if get this three CLF person only.then complete can this  
 jiàn shì  
 CLF matter  
 ‘Only if we get these three people can we finish this task.’ (fourteenth century; *Shuǐhǔzhuàn*)
- (44) 除非少爺賞我個本錢，纔可以回家養活母親  
**Chúfēi** shàoyé shǎng wǒ gè běnqián **cái** kěyǐ huí jiā  
 only.if young.lord grant I CLF capital only.then can return home  
 yǎnghuó mǔqīn  
 provide.for mother  
 ‘Only if my lord gives me some money can I return home to provide for my mother.’ (1750; *Rúlín wàishì*)
- (45) 須是保正自來，方纔勸得這場鬧  
**Xūshì** bǎozhèng zì lái **fāngcái** quàn dé zhè  
 only.if Bǎozhèng self come only.then persuade can this  
 chǎng nào  
 CLF commotion  
 ‘Only if the *Bǎozhèng* official comes can he settle this dispute.’  
 (fourteenth century; *Shuǐhǔzhuàn*)
- (46) 須是我同到浙江去纔得明白  
**Xūshì** wǒ tóng dào zhèjiāng qù **cái** dé míngbái  
 only.if I together arrive Zhèjiāng go only.then get clear  
 ‘Only if I go to *Zhèjiāng* with you can we get to the bottom of it.’ (1750; *Rúlín wàishì*)

Whereas no *xū + shì* in pre-*Yǔlèi* texts is a conditional, *xūshì* ‘only if’ becomes comparatively more frequent between the fourteenth and eighteenth centuries; 29.9% (32/107) of *xū + shì* are in conditional constructions like (45)–(46), whereas 66.4% (71/107) are either *xū shì* ‘must be’ or *xūshì* ‘must’ and 3.7% (4/107) are tricausal.

In (47)–(49), mirroring (36)–(38), the history of *xūshì*, its semantics in (a), directive meaning in (b), and earliest attestations in (c), are summarized.

- (47) IF WANTS *P* *xūshì*<sub>MODAL</sub> *Q* (a) ‘*Q* is teleologically necessary for *P*.’  
 e.g. (41) (b) ‘Do *Q* to achieve *P* if you want *P*.’  
 (c) Pre-*Yǔlèi*

- (48) IF WANTS  $P_1$   $xūshì$   $Q$  THEN  $P_2$  (a) ‘ $Q$  is teleologically necessary for  $P_1/P_2$ .’  
 e.g. (42) (b) ‘Do  $Q$  to achieve  $P_1/P_2$  if you want  $P_1/P_2$ .’  
 (c) *Yǔlèi*
- (49)  $xūshì_{IF}$   $Q$  THEN  $P$  (a) ‘ $Q$  is the necessary precondition for  $P$ .’  
 e.g. (45) (b) (Variable)  
 (c) Post-*Yǔlèi*

Note that item-level vagueness is common between stages:  $xū_{MODAL}$   $shì_{COPULA}$ , and  $xūshì_{MODAL}$  in (41) and  $xū_{MODAL}$   $shì_{COPULA}$ ,  $xūshì_{MODAL}$ , and  $xūshì_{IF}$  in (42).

#### 4.2.2 Summary and other relevant aspects

Table 5 summarizes the slots that  $xūshì$  and  $chúfēi$  occur in diachronically in the Early Mandarin Corpus. ‘T.M.’ (for ‘teleological modal’) indicates the MODAL slot in the anankastic conditional construction [IF WANTS  $P$  MODAL  $Q$ ]; ‘triclausal’, the triclausal MODAL slot; and ‘conditional’, IF in [IF  $Q$  THEN  $P$ ].

After appearing in the triclausal MODAL slot,  $xūshì$  becomes a conditional and  $chúfēi$ , a modal. The slot is vague: lack of category-specific morphosyntax and performative equivalence (i.e. distributional and functional similarities) render it underdetermined morphosyntactically, which likely enables the changes. Because it is vague, only occurrences in non-vague contexts, such as the slots in bold in [IF WANTS  $P$  MODAL  $Q$ ] and [IF  $Q$  THEN  $P$ ], are unequivocal evidence that  $xūshì$  and  $chúfēi$  have changed. The analysis is limited by the relatively modest size of the Early Mandarin Corpus, where early instances of  $chúfēi$  are particularly scarce. Future research may gather more empirical evidence from a larger corpus to confirm or refute the analysis.

Finally, some relevant aspects of the changes are considered briefly. First,  $xūshì/xū shì$  ‘must (be)’ and  $chúfēi$  ‘only if’, being less frequent than other members of their categories, might be more susceptible to analogical change. Low-frequency items, compared with high-frequency ones, tend to be affected by analogy, due to weaker entrenchment in memory (Bybee 2010: Ch. 4). In *Yǔlèi*, the transitional period,  $xūshì/xū shì$  occurs 1,470 times ( $xū + shì$  is parsed as two words in the corpus), cf. *kě* ‘can’ (10,614) and *néng* ‘can’ (4,255);  $chúfēi$  occurs 7 times, cf. *ruò* ‘if’ (12,029) and *rú* ‘if’ (208). Second, the analysis is compatible with reanalysis-based approaches, e.g. invited inferencing (Traugott & Trousdale 2013) and context-induced reinterpretation (Heine 2002). Such approaches would propose

	<i>xūshì</i>	<i>chúfēi</i>
Pre- <i>Yǔlèi</i>	T.M.	Conditional
<i>Yǔlèi</i>	T.M. and triclausal	Conditional, triclausal
Post- <i>Yǔlèi</i>	T.M., triclausal and conditional	Conditional, triclausal and T.M.

Table 5  
Slots that  $xūshì$  and  $chúfēi$  occur in diachronically.

that inferences of conditionality (or modality) are invited in local contexts, particularly the tricausal MODAL slot. Third, pragmatic motivations likely underlie the changes. Directives are interactional and sensitive to interpersonal dynamics and vary in strength and other nuances; therefore, their origins are inherently pragmatic. For example, speakers may start using *chúfēi* in the tricausal construction and *xūshì* in the anankastic conditional construction to exploit their difference in illocutionary force (*xūshì* varies between ‘must’ and ‘should’; Section 3.3). For the emergence of directives across languages, see Mauri & Sansó (2011).

#### 4.3 Coercion as an alternative

Coercion, whereby ‘the meaning of the lexical item conforms to the meaning of the structure in which it is embedded’ (Michaelis 2004: 25) due to semantic incompatibility, may provide an alternative account. A conditional might be ‘coerced’ into having a modal meaning in the slot and by accommodating the conditional, the slot then became morphosyntactically vague. However, this assumes semantic incompatibility and an a priori morphosyntactic distinction that became vague only after coercion. This is problematic given, first, similarities between modality and conditionality (Section 2.3.2; especially Kratzer 2012); second, the panchronic lack of consistent distributional distinctions between the categories; and third, the absence of category-specific morphosyntax in the tricausal construction. Ziegeler (2007: 1023–2014) also remarks ‘the need to posit an *a priori* syntactic frame with which certain lexical items may be in conflict’ undermines the concept of coercion; see also Traugott & Trousdale (2013: 206–207).

#### 4.4 Similar changes

The occasional (34.6%) pre-subject position of *chúfēi* in the anankastic conditional construction (Section 4.1.2) is atypical of modals, which may cast doubt on bidirectionality between Modal and Conditional. The Early Mandarin Corpus also contains few pre-*Yùlèi* instances of *chúfēi*, which may call into question its diachrony, represented in Table 5. Nevertheless, examples of the morphosyntactic developments, CONDITIONAL > MODAL and MODAL > CONDITIONAL, occur within and beyond Chinese.

The history of *yào + shì* resembles that of *xū + shì*: *yào shì* ‘will/have to be’ > *yàoshì* ‘will/have to’ > *yàoshì* ‘if’ (Hsu et al. 2015: 59). *Yào* by itself has undergone ‘will/have to’ > ‘if’ (Traugott 1985: 291; Yu 1998: 168; Hsu et al. 2015: 57). Note, however, in all instances of the tricausal and anankastic conditional constructions, *yào* is consistently a verb of desire (Section 3.4). *Bì* has also undergone ‘must’ > ‘(only) if’ (Kuo 2022c). *Fēi* is originally ‘unless’ in [*fēi*<sub>IF</sub> *P bù kě*] ‘unless *P* it is not good/possible’, as in (50), reproduced from (7b). From directive contexts such as (50), it has developed into a modal in [*fēi*<sub>MODAL</sub> *P*] ‘must *p*’ in (51) (Kuo 2022a).<sup>12</sup>

[12] [*fēi*<sub>MODAL</sub> *P*] dates to the early twentieth century (Hong & Dong 2004: 259), much later than modal *chúfēi*.

- (50) 非讀不可  
 Fēi dú bù kě  
 unless read not good/possible  
 ‘Unless you read them, it is not good (i.e. you must read them).’ (1270; *Yǔlèi*)
- (51) 我非去  
 Wǒ fēi qù  
 I must go  
 ‘I must go.’ (Wang 2008:109)

MODAL > CONDITIONAL occurs in various languages, e.g. Dutch and English in (52).

- (52) Mocht ik ziek worden, zoek dan een vervanger  
 might I sick become search then a substitute  
 ‘Should I get sick, look then for a substitute.’ (van der Auwera & Plungian 1998: 93)

Japanese and Korean use conditionals to express modal meanings (Akatsuka & Clancy 1993), some types of which have turned into modals, especially in the spoken languages, exemplifying CONDITIONAL > MODAL.

- (53) Hayaku                                      ika-nai                                      to  
 quickly    go-not    if  
 ‘You must go quickly (lit. if you don’t go quickly).’ (Fujii 2004: 125)
- (54) Hayaku ik-ana.kereba (nar-anai)  
 quickly go-not.if (become-not)  
 ‘I have to go quickly (lit. if I don’t go quickly, it does not become; it is not good).’ (Narrog 2016: 254–256)

The development of (53) can be represented as [*P-nai-to, ikenai*] ‘if not *P*, it is bad > [*P-nai-to*] ‘must *P*’ (Fujii 2004), and that of (54), [*P-(a)nakereba, naranai*] ‘if not *P*, it is not good’ > [*P-(a)nakereba (naranai)*] ‘must *P*’ (Narrog 2016). Both resemble *fēi*: ‘unless *P* (it is not possible)’ > ‘must *P*’ and to a less extent, *chúfēi*: ‘(if you want *P*<sub>1</sub>) only if *P*<sub>2</sub> (is *P*<sub>1</sub> possible)’ > ‘(if you want *P*<sub>1</sub>) must *P*<sub>2</sub>’. Manchu and Turkic languages have similar expressions (Rentsch 2012: 866).

Most changes reviewed here have not been attributed to morphosyntactic vagueness, but they support the likelihood of bidirectionality, including the morphosyntactic development of *chúfēi*, CONDITIONAL > MODAL.<sup>13</sup>

## 5. IMPLICATIONS FOR (DE)GRAMMATICALIZATION

Under the unidirectionality hypothesis, the development of morphosyntactic categories as typically unidirectional would be expected (Kuteva et al. 2019).

[13] The morphosyntactic generalization is MODAL. Chinese teleological modals do not constitute a distinct morphosyntactic category (Kuo 2022c).

Therefore, one of the processes, MODAL > CONDITIONAL and CONDITIONAL > MODAL, should be grammaticalization and the other should not. Which one is it? The answer depends on how grammaticalization is defined.

First, UNIDIRECTIONALITY may be characterized as ‘a core property of grammaticalization’, as done in ‘most of the literature’ (Börjas & Vincent 2011: 164). Simplifying somewhat, what is not unidirectional may therefore be considered as degrammaticalization (Norde 2009). This proposal leads to the conclusion that MODAL > CONDITIONAL and CONDITIONAL > MODAL cannot be grammaticalization simultaneously; only one of them is and it should be more frequent than the other, because grammaticalization is typical and degrammaticalization is highly restricted (Trousdale & Norde 2013: 34). This proposal, a frequency-based heuristic, is described in (55).

- (55) Associate unidirectionality with cross-linguistic prevalence:  
The process that is cross-linguistically more prevalent is grammaticalization; the other could be degrammaticalization.

This proposal requires a balanced sample of languages, which is beyond the scope of this study.

Second, INCREASES IN GRAMMATICALITY may be assumed to define grammaticalization (i.e. something grammaticalizes if it becomes more grammatical). Specific frameworks may be used to define and compare degrees of grammaticality. As far as the dataset is concerned, this proposal is not unlike (55). Building either unidirectionality or increased grammaticality into the definition of grammaticalization leads to the same conclusion that both processes cannot be grammaticalization simultaneously. Compared with (55), this proposal, described in (56), is qualitative.

- (56) Associate one category with more grammaticality:  
The process leading to an increase in grammaticality is grammaticalization.

In hierarchical models of clause structure, conditionals may be more grammatical than modals, as the former is at clause periphery (e.g. Narrog 2012). Therefore, MODAL > CONDITIONAL may be grammaticalization. CONDITIONAL > MODAL may be degrammaticalization, or something else, such as insubordination (Evans 2007; Kaltenböck 2016), whereby a subordinate clause and its marker (e.g. IF *P*) become a main clause (e.g. MODAL *P*). Lehmann’s (1995) grammaticalization parameters and Norde’s (2009) degrammaticalization counterparts produced inconclusive results (Kuo 2020), partially because the parameters are biased towards grammatical affixes, which neither Modal nor Conditional is in Chinese. Fischer (2008: 356) also remarks ‘not all of Lehmann’s parameters seem to be at work’ in clause-combining.

Third, clause-combining or other processes could be assumed not to be grammaticalization because they are qualitatively different, as in (57).

- (57) Assume one of the processes is not grammaticalization.

For example, Norde (2009: 26), following Fischer (2008), thinks that ‘clause combining is too different from other types of grammaticalization to be subsumed under it’. MODAL > CONDITIONAL thus lies outside grammaticalization and CONDITIONAL > MODAL may or may not be (de)grammaticalization.

In (55)–(57), or in any similar proposals aiming to differentiate between the processes, such processes are presupposed as NON-EQUIVALENT; (55)–(56) also assume grammatical NON-EQUIVALENCE (or ‘asymmetry’; Börjas & Vincent 2011: 164) between the source and outcome. As far as changes enabled by morphosyntactic vagueness are considered, both processes and their sources and outcomes are mediated by EQUIVALENCE: the grammatical contrast between Modal and Conditional is not at stake due to shared properties in some contexts, where one analysis is as plausible as the other. An alternative proposal is to highlight their equivalence by disassociating grammaticalization from unidirectionality and increased grammaticality. This is not a radical idea. Even though they regard unidirectionality as an important aspect of grammaticalization elsewhere (2003: Ch. 5), Hopper & Traugott’s (2003: xv) definition of grammaticalization does not include unidirectionality or increased grammaticality: ‘the change whereby lexical items and constructions come in certain linguistic contexts to serve grammatical functions and, once grammaticalized, continue to develop new grammatical functions’. The second half of the definition applies to MODAL > CONDITIONAL and CONDITIONAL > MODAL. Company (2018), assuming a similar definition, also proposes that grammaticalization may be non-unidirectional and involve no change in grammatical status. Given a definition of grammaticalization free from unidirectionality and increased grammaticality, both MODAL > CONDITIONAL and CONDITIONAL > MODAL are grammaticalization because both modality-marking and clause-combining are grammatical functions; (58) then follows.

(58) Both processes as grammaticalization; grammaticalization can be bidirectional.

The histories of two grammatical categories in one language do not falsify but only slightly weaken the unidirectionality hypothesis. After all, it has been shown to be a tendency (Norde 2009). Therefore, bidirectionality between Modal and Conditional in Chinese (and potentially elsewhere) should only be considered as a regular exception to unidirectionality in grammaticalization, provided that both directions are enabled by morphosyntactic vagueness and grammaticalization is not defined in terms of non-equivalence. REGULAR is the operative word: bidirectional grammaticalization, although by definition an exception to unidirectionality, is not unconstrained or unprincipled. It is constrained: to change, it is necessary for an item to occur in specific contexts where morphosyntactic vagueness is at play. It is principled: morphosyntactic vagueness is tied to two specific conditions, distributional and functional similarities, neither of which is exceptional. The former is a distributional fact about Chinese and the latter is a cross-linguistic functional fact about modals and conditionals. This systematicity of vagueness-enabled



bidirectionality aligns it with how grammaticalization is typically conceptualized: a regular process (Kuteva et al. 2019).

In sum, if grammatical equivalence rather than non-equivalence defines grammaticalization, morphosyntactic vagueness may enable grammaticalization to be bidirectional.

## 6. CONCLUSION

This paper has described the tricausal construction and observed that its MODAL slot constitutes a context of morphosyntactic vagueness where a modal or a conditional protasis connective can occur and its precise analysis (as a conditional or a modal) is underdetermined, which enables bidirectional changes.

Changes enabled by morphosyntactic vagueness are characterized by grammatical equivalence, as by definition morphosyntactic vagueness pertains to neutralized grammatical contrast that is not at stake. Proposing one direction of change to be non-equivalent or distinct from the other therefore undermines morphosyntactic vagueness. Consequently, both directions of change are proposed as regular processes of grammaticalization, if defined as the development of grammatical categories, but not in terms of non-equivalence (i.e. unidirectionality or increased grammaticality). In other words, bidirectionality is a possible feature of grammaticalization, when enabled by morphosyntactic vagueness between minor morphosyntactic categories.

Even though only Chinese Modal and Conditional have been examined, if two minor morphosyntactic categories are morphosyntactically vague, bidirectionality is by hypothesis possible. As isolating languages may be particularly rich in morphosyntactic vagueness (or ‘soft boundaries’; Berg 2014: 521), due to lack of inflectional morphology, future research may concentrate on such languages to uncover more cases of morphosyntactic vagueness and bidirectionality and provide alternative accounts.

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