

# The grammaticalization of impossibility

## The emergence of the Mandarin modal auxiliary *wufa*

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This study, based on the analysis of historical corpus data, investigates the diachronic development of the Mandarin modal auxiliary *wufa* and establishes implications both for the grammaticalization of modals and for grammaticalization theory in general. Specifically, our study shows the following results: (1) The grammaticalization of *wufa* is characterized by coalescence, paradigmaticization, obligatorification, fixation, desemanticization, decategorialization and divergence. (2) Underlying mechanisms at work are structural reanalysis, later followed by syntactic expansion and host-class expansion. (3) The grammaticalization of *wufa* on the one hand confirms the diachronic path proposed in previous studies, viz., from root possibility to epistemic possibility; within the development of root possibility, however, it demonstrates a distinct path—from participant-external possibility to participant-internal possibility; it is suggested that an important driving force behind this peculiar development path is the Chinese cultural preference for collectivism. (4) The lexical source of modal *wufa* is a verb-complement sequence (rather than a single full verb).

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### 1. Introduction

Modality is an important grammatical category of human languages which has been studied extensively, both cross-linguistically and in single languages (witness the recent publication of *The Oxford handbook of modality and mood*). In Chinese, modality is not reflected in the morphology of the verb, but it is expressed by modal adverbs, including negation markers, and by modal auxiliary verbs.

Despite its importance, not many comprehensive studies are as yet available for Chinese. Synchronically, there are studies on modal adverbs and modal auxiliaries in Modern Chinese, such as Alleton (1977; 1984), Li (2004), Lin (2012) and Sparvoli (2015), while for Literary Chinese, the modal auxiliary verbs of possibility and of volition have been discussed by Peyraube (1999; 2001), Liu (2000) and Meisterernst (2008a; 2008b). Diachronically, some studies (e.g., Li 2004) proffer a brief history of canonical Mandarin modal verbs (*neng* ‘can’, *hui* ‘can’, *yao* ‘should, must’, *ying* ‘should’, *de* ‘have to’); others focus on the diachronic development of specific modal verbs, such as modal verbs of obligation—*dang* ‘should’ and *ying* ‘should’ (Meisterernst 2011; 2020), *bixu* ‘must/have to’ (Zhu 2005) and *yao* ‘should, must’ (Ma 2002), and modal verbs of volition—*gan* ‘dare to’ *ken* ‘willing, can’ and *yuan* ‘willing’ (Peyraube & Li 2012).

In these studies, little attention has been paid to the emergence of *new* members in the category of modal auxiliaries. Methodologically, previous diachronic studies are all qualitative analyses; that is, they do not comprise quantitative empirical evidence from corpus analysis. In the present paper, then, we present a corpus-based study of the diachronic development of a new member of Mandarin modal auxiliaries—*wufa*. This study will be situated within a grammaticalization approach to language change. Specifically, this involves uncovering the grammaticalization features and mechanisms involved in the development of *wufa*. More generally, the study will bear on grammaticalization theory in general and the grammaticalization of modal verbs in particular.

This paper is structured as follows. In § 2, we give a brief introduction to the theoretical context (the notions of modality and grammaticalization). § 3 discusses the status of *wufa* as a modal auxiliary in Modern Chinese and delineates its characteristics in current usage, which is followed by an introduction to the data and methodology in § 4. § 5 presents a corpus-based investigation of the diachronic development of *wufa*. In § 6, we first summarize the grammaticalization path of *wufa* and then analyze the mechanisms and features involved in each stage of grammaticalization. § 7 reflects on the implications of this case study and also details the peculiarities of the grammaticalization of *wufa*. § 8 summarizes the findings.

## 2. Theoretical context

Before getting down to the development of *wufa* as a modal auxiliary, we shall briefly address the (notional) modal categories employed in this paper as well as defining the approach to *grammaticalization* we adopt in this paper. The characteristics of modal auxiliaries in Chinese will be dealt with in § 3.

## 2.1 Modality

In his seminal study on mood and modality, Palmer (2001: 1) points out that, in notional terms, *modality* is closely related to *aspect* and *tense* in that “all three are ... concerned with the event ... that is reported by [an] utterance”. While tense is concerned with the time of an event and aspect with its “internal temporal constituency” (Comrie 1976:3), modality is concerned with the status (fact or non-fact) of the proposition that describes the event. While there is agreement on this general definition of modality, there is less agreement on the semantic types/categories of modality: some scholars distinguish between the types deontic, epistemic, and ability/capacity (Palmer 2001; Traugott & Dasher 2002); others between root and epistemic modality (Declerck 1991). Van der Auwera & Plungian (1998) propose a semantic map of modality, which distinguishes two broad semantic types: possibility and necessity (see also Bech 1951; Hansen & Heltoft 2011). In this paper, we shall follow this semantic map approach. Within each category, three further types of modality are differentiated—participant-internal modality, participant-external modality and epistemic modality, with the first two types pertaining to non-epistemic or root modality. Participant external modality is taken to encompass two subtypes, deontic and non-deontic. Deontic modality comprises permission and obligation. These types of modality are shown in Table 1.

**Table 1.** Types of modality (after van der Auwera & Plungian 1998: 82)

		Possibility	Necessity
Participant-internal		Ability	Need
Participant-external	Non-deontic	Non-deontic possibility	Non-deontic necessity
	Deontic	Permission	Obligation
Epistemic		Uncertainty	Probability

## 2.2 Grammaticalization

Underlying our view of grammaticalization is Hopper & Traugott’s (2003: 1) well-known definition, which goes as follows:

[G]rammaticalization refers to that part of the study of language change that is concerned with such questions as how lexical items and constructions come in certain linguistic contexts to serve grammatical functions or how grammatical items develop new grammatical functions.

This non-formal, functionalist view is also present in such seminal studies of grammaticalization as Heine et al. (1991) and Bybee et al. (1994). As in other studies taking this approach, we shall also examine what grammaticalization criteria (such as proposed by Lehmann 1985; Hopper 1991 and Himmelmann 2004) and mechanisms (e.g., reanalysis) are at play in the development of *wufa*. In the concluding sections, we shall briefly address how the development described resonates with a more formal, generative approach to grammaticalization (as proposed, for instance, by Meisterernst 2020).

### 3. *Wufa* in Modern Chinese

This section presents the characteristics of *wufa* as a modal auxiliary in current usage, beginning with its morphosyntactic aspects and then turning to its semantic aspects.

Although *wufa* has not been listed as a modal in prescriptive grammar books, it can be said to meet the morphosyntactic criteria of auxiliary verbs in modern Chinese. Consider in this respect, Li & Thompson's (1981: 173–174) six criterial properties distinguishing modal auxiliaries from lexical verbs:

- i. An auxiliary verb must co-occur with a verb (or an *understood* verb);
- ii. An auxiliary verb does not take aspect markers;
- iii. An auxiliary verb cannot be modified by intensifiers, such as *hen* 'very' or *geng* 'even more';
- iv. An auxiliary verb cannot be nominalized;
- v. An auxiliary verb cannot occur before the subject;
- vi. An auxiliary verb cannot take a direct object.

*Wufa* meets all these criteria except (iii).<sup>1</sup> It should be pointed out, though, that criterion (iii) is actually infelicitous because its application would also exclude the canonical Mandarin modal auxiliary *neng* 'can'. For instance, in Examples (1)<sup>2</sup> and (2), the modal auxiliary *neng* is modified by the intensifiers *hen* 'very' and *geng* 'even more', respectively. Actually, Chao (1968: 732) puts forward a syntactic criterion for Chinese auxiliaries that is just contrary to criterion (iii), i.e., most auxiliary verbs can be modified by *hen* 'very'. Li (2004: 131) notes that criterion (iii) proposed by Li & Thompson is invalid and that modals that indicate possibility

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1. We retrieved 288 instances of *geng wufa+VP* from the Center for Chinese Linguistics Corpus (CCL, Peking University), of which the normalized frequency is 0.495 counts per 1,000,000 characters.

2. All the examples in this paper are taken from CCL.

and willingness such as *neng* ‘can’, *keneng* ‘may’, *keyi* ‘may’ can generally be modified by intensifiers *hen* ‘very’ or *geng* ‘even more’. Furthermore, after examining all the criterial properties proposed by previous Chinese linguists which distinguish modal auxiliaries from verbs and adverbs, Li (2004: 130) lists the following four criteria as the most important and distinguishing ones: “A. Occurrence with full verbs; B. Negation with *bu* ‘not’; C. Reduplication not allowed; D. Aspect/phase markers not taken.” Again, *wufa* meets each of these four criteria.

- (1) 但 兩隊 之間 的 對抗 使得 比賽 氣氛  
*Dan liangdui zhijian de duikang shide bisai qifen*  
 However two.team between GEN confrontation make competition atmosphere  
 高潮 迭起， 很能 調動 選手 及 觀眾 的  
*gaochao dieqi, hen neng diaodong xuanshou ji guanzhong de*  
 climax one.after.another, very can warm.up players and audience GEN  
 情緒。  
*qingxu.*  
 mood.  
 ‘However, the confrontation between the two teams brought the competition to one climax after another, which was, to a great extent, able to warm up the players and the audience.’ [CCL, 20th century]

- (2) 一 個 心理學 研究 表明， 具有 積極 情緒 的 人 比  
*Yi ge xinlixue yanjiu biao ming, juyou jiji qingxu de ren bi*  
 One CLF psychology study show, have positive emotion GEN people than  
 一般 人 更能 忍受 痛苦。  
*yiban ren geng neng renshou tongku.*  
 ordinary people more can tolerate pain.  
 ‘A psychological study has shown that people with positive emotions are more able to tolerate pain than the average person.’ [CCL, 20th century]

Let us now turn to the semantic features of *wufa*. In Modern Chinese, *wufa* generally denotes the impossibility to do something and hence it pertains to the modality of possibility, as does the canonical modal *neng* ‘can’. To some extent, we could say that the modal meaning of *wufa* is akin to the negation of *neng* ‘can’—*bu neng* ‘cannot’.<sup>3</sup>

The modal meanings of *wufa*, then, can be classified into two major types—root possibility and epistemic possibility, with root possibility comprising

3. The predominant usage of *wufa*, however, is to denote participant-external modality though it has developed participant-internal modal meaning (see the following paragraph for its specific modal meanings), while that of *bu neng* is participant-internal modality. *Wufa* and *bu neng* also differ formally: the former results from the coalescence of two lexical items (*wa* and *fa*) into a grammatical formative and the latter is merely the negative form of *neng* ‘can’.

participant-internal possibility – ability, participant-external non deontic possibility, participant-external deontic necessity – obligation, participant-external deontic possibility – permission, and participant-external non-deontic necessity. For instance, in (3), *wufa* conveys the internal disability of the children, thus expressing participant-internal possibility. In (4), it is made clear that the possibility for a company to raise funds is hindered by the fact that information is seriously asymmetrical and the risk of default is huge; these are external circumstances impeding the situation expressed by the matrix verb, and thus *wufa* here expresses participant-external possibility. In (5), *wufa* is followed by the negation marker *bu*, forming a doubly negated construction *wufa bu*; it thus codes strong participant-external deontic necessity, i.e., a strong obligation ‘must’. That is, faced with the teacher’s meticulousness and conscientious work, students are morally obliged to work hard. By contrast, in (6), the doubly negated construction *wufa bu* codes strong participant-external non-deontic necessity, i.e., a circumstantial necessity ‘have to’. In (7), it is made clear that ethics does not permit “him” to ask the doctor to end his father’s life though his father may wish him to do so; that is, ethical principles or social norms make it impossible for “him” to do so. Hence, *wufa* here denotes participant-external deontic impossibility, i.e., non-permission or prohibition. In (8), *wufa* expresses epistemic possibility; in particular, it expresses the speaker’s assessment of the truth of the proposition: the proposition cannot be true.

- (3) 若 幼兒 有 語言 障礙，就 無法 與 他人 進行  
*Ruo you'er you yuyan zhangai, jiu wufa yu taren jinxing*  
 If child have language barrier, then WUFA with others conduct  
 正常 的 交流。  
*zhengchang de jiaoliu.*  
 normal GEN communication  
 ‘If a child has a language barrier, s/he cannot communicate with others normally.’ [CCL, 20th century]
- (4) 當 信息 不 對稱 問題 非常 嚴重、 違約  
*Dang xinxi bu duicheng wenti feichang yanzhong, weiyue*  
 When information not asymmetry problem very serious, default  
 風險 巨大 時，企業 無法 籌集 長期 債務 資金。  
*fengxian juda shi, qiye wufa chouji changqi zaiwu zijin.*  
 risk huge, time, company WUFA raise long-term debt fund.  
 ‘When the problem of information asymmetry is very serious and the risk of default is huge, companies cannot raise long-term debt funds.’ [CCL, 20th century]

- (5) 學生們 面對 老師 的 一絲不苟， 兢兢業業，  
*Xueshengmen miandui laoshi de yisibugou, jingjingyeye,*  
 Students face teacher GEN meticulousness, conscientiousness,  
 常常 感到 負疚， 他們 無法 不 努力， 不 認真。  
*changchang gandao fujiu, tamen wufa bu nuli, bu renzhen.*  
 often feel guilty, they WUFA not work.hard, not serious.  
 ‘The students often feel guilty when faced with the teacher’s meticulousness  
 and conscientious work. They have to work hard and be serious about their  
 study.’ [CCL, 20th century]
- (6) 畢竟 我們 是 生活 在 一個 作為 整體 的 世界 上，  
*Bijing women shi shenghuo zai yi ge zuowei zhengti de shijie shang,*  
 After.all we are live on a CLF as whole GEN world LOC,  
 人們 無法 不 關心 自己 周圍 的 事情。  
*renmen wufa bu guanxin ziji zhouwei de shiqing.*  
 people WUFA not care own surrounding GEN things  
 ‘After all, we live in a world as a whole, and people have to care about the  
 things around them.’ [CCL, 20th century]
- (7) 要求 醫生 結束 父親 的 生命， 但 囿於 倫理 觀念 他  
*Yaoqiu yisheng jieshu fuqin de shengming, dan youyu lunli guannian ta*  
 Ask doctor end father GEN life, but because.of ethics notion he  
無法 開口。  
*wufa kaikou.*  
 WUFA open.mouth  
 ‘(He wanted to) ask the doctor to end his father’s life, but was unable to say so  
 because of ethics.’ [CCL, 20th century]
- (8) 不 愛 看 翻譯 後 的 外國 作品， 總 覺得 翻譯 得  
*Bu ai kan fanyi hou de waiguo zuopin, zong juede fanyi de*  
 Not like read translate after GEN foreign works, always feel translate DCM  
 再 好 也 無法 體現 原 語言 的 精髓。  
*zai hao ye wufa tixian yuan yuyan de jingsui.*  
 again good still WUFA reflect original language GEN essence  
 ‘(I) don’t like to read translated foreign works. I always feel that no matter how  
 good the translation is, it cannot reflect the essence of the original language.’  
 [CCL, 20th century]

#### 4. Data and methodology

In order to track the usage history of *wufa*, the Center for Chinese Linguistics Corpus (henceforth CCL, Peking University) (Zhan et al. 2003) is exploited. CCL

spans about 3,000 years (1000 BC to 2013 AD), beginning with one of the earliest dynasties recorded in Chinese history, viz., the Zhou Dynasty, and ending in 2013. It subsumes two major sub-corpora: the Literary Chinese corpus (henceforth LC) with 163,662,943 characters and the Modern Chinese corpus (henceforth MC) with 509,913,589 characters. The CCL-LC corpus covers the period from the Zhou Dynasty to the early years of the Republican era (1911–1920s); the CCL-MC corpus is composed of two sections—the Modern Chinese section (1930s–1949) and the Contemporary Chinese section (1949–2013). Texts in both corpora are from various genres, including political essays, fiction, drama, libretti, biography, history, news coverage, religious texts (Buddhist and Taoist), miscellanies, notes, dictionaries, academic articles, poetry and Chinese translations of works originally written in other languages.

Given the wide temporal span of the data, periodization is methodologically desirable to the analysis of diachronic data if we wish to identify larger developmental trends. In this paper, we follow Jing-Schmidt & Peng (2016), who divide the Chinese language history into five periods:<sup>4</sup> Archaic Chinese (1100 BC–25 AD), Medieval Chinese (25–907), Early Mandarin (907–1644), Early Modern Chinese (1644–1920s) and Modern Chinese (1930s–present). However, preliminary inspection of the data revealed that the tokens of *wufa* increased much more rapidly from the early years of the twentieth century onwards, compared to the preceding periods. Hence, to clearly capture the diachronic trajectory of the modal auxiliary, we further divided the Early Modern Chinese period into two sub-periods, i.e., the Qing Dynasty period (1644–1911) and the Republican Era period (1911–1920s), and we divided the Modern Chinese period into Modern Chinese (1930s–1949) and Contemporary Chinese (1949–present).

As the corpora are not tokenized, automated extraction and manual inspection of the data were combined in retrieving and classifying all occurrences of *wufa/wu fa*. In particular, data collection proceeded as follows. The periodized sub-corpora were searched to extract all relevant linear strings of *wu+fa*;<sup>5</sup> they

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4. We prefer this periodization to Peyraube's (1996) periodization (suggested by one of the reviewers), as the latter is a bit too fine-grained for our purpose. As can be observed from Table 2, the raw frequency of *wufa/wu fa* is relatively low before the Early Modern Chinese period, i.e., before 1644: for instance, the raw frequency of *wufa/wu fa* in Archaic Chinese (1100 BC–25 AD) is only 36 instances. If we followed Peyraube's (1996) periodization, dividing the Archaic Chinese period into three sub-periods—Pre-Archaic, Early Archaic and Late Archaic periods, the raw frequency of *wufa/wu fa* in some of these periods might have been zero.

5. In Chinese, *wu* and *fa* are always two characters, no matter whether they are two lexical words or whether they have coalesced into one grammatical unit. Moreover, only when *wu* and *fa* are directly adjacent to each other is the string *wu fa* relevant to the grammaticalization of

were then checked manually to separate tokens of *wufa/wu fa* from the bulk of other constructions in which *wu* and *fa* co-occur. For instance, we filtered out noise such as *mu wu faji* ‘have no law or rules in one’s mind’, *wu fadu* ‘have no laws and orders’, *wu fazhi* ‘have no laws’, *wu fashu* ‘have no spells’, *wu faling* ‘have no laws and decrees’ and *wufa wutian* ‘being unruly’. Only the strings *wufa/wu fa*,<sup>6</sup> *wufa/wu fa ke V* and *wufa/wu fa VP* were retained to make up our database.

## 5. The diachronic development of the modal auxiliary *wufa*

To capture the trajectory of the development of the modal auxiliary *wufa*, Table 2 presents an overview of the raw frequency counts and the normalized frequencies of *wufa/wu fa* and the relevant strings it occurs in (i.e., lexical *wu fa*, *wu fa ke V*, and *wu fa VP* as well as grammatical *wufa ke V* and *wufa VP*) in six sub-corpora of CCL. In Archaic Chinese, the normalized frequency of the syntagm is 15.10 counts per 1,000,000 characters, whereas in the following period, i.e., in Medieval Chinese, the number drops to only 4.49. Nevertheless, from the Medieval Chinese period onwards, *wufa/wu fa*’s normalized frequency is steadily rising. Especially in the Contemporary Chinese period, the figure is over six times bigger than that in the Archaic Chinese period, which suggests that it has gained great popularity in Contemporary Chinese.

**Table 2.** Frequency distribution of *wufa/wu fa* across the sub-corpora of CCL

	N	N per 1,000,000 characters
Archaic Chinese (1100 BCE–25 CE)	36	15.10
Medieval Chinese (25–907)	39	4.49
Early Mandarin (907–1644)	185	6.34
Early Modern Chinese (1644–1920s)	1567	37.54
Modern Chinese (1930s–1949)	316	41.44
Contemporary Chinese (1949–present)	53750	93.08

*wufa*. Accordingly, only the query *wu fa* was used to extract the concordances, with no specification of the characters before or after the string *wu fa*.

6. Here, we refer to *wufa/wu fa* that is not followed by other items, viz., it marks the end of a clause. Note that we also retained a few instances whereby *wu fa* is followed by a nominalizer *zhe* (which turns the phrase *wu fa zhe* into a nominal) and a few occurrences in which *wu fa* is followed by a sentence final particle such as *ye* without actual meaning.

### 5.1 *Wu fa* as a lexical string

The earliest attestation of *wu fa* dates from the Spring and Autumn period (771 BC–476 BC), whereby *wu fa* constitutes a sequence of a predicate plus a nominal complement. That is, *wu* is an existential verb (Pulleyblank 1995:30), denoting the meaning of non-existence, and *fa* is a noun which means ‘laws or rules’, as in (9). The raw frequency of this sequence is 36 in Archaic Chinese, as shown in Table 2.

- (9) 故 治國 無法 則 亂， 守法 而 弗 變 則  
*Gu zhi guo wu fa ze luan, shou fa er fu bian ze*  
 Therefore govern.country WU FA then chaos, keep law but not change then  
 悖， 悖 亂 不 可以 持 國。  
*bei, bei luan bu keyi chi guo.*

make.mistakes, make.mistakes chaos not can maintain country

‘If a country is governed without laws (lit. not having laws), it is bound to get into chaos; if the governor keeps the laws without changing them, he is also making mistakes. In either case, the country cannot be maintained.’

[*Lvshi Chunqiu* ‘*Lv’s Commentaries of History*’, 3rd century BC]

### 5.2 The emergence of *wufa/wu fa ke V*

In Medieval Chinese, *wu fa* first appears in the syntactic structure *wu fa ke V*.<sup>8</sup> In this structure, exemplified in (10), *fa* is the nominal complement of the predicate *wu*, and the string *ke V* – the monosyllabic verb *V* in combination with the modal verb of possibility *ke* (Meisterernst 2008a; 2008b) – serves as the predicate of the proposed noun *fa*. Importantly, as previous studies (Meisterernst 2008a; 2020) show, the modal verb *ke* in Late Archaic and Early Medieval Chinese usually requires a passivized *V*, whose internal argument (or logical object) also serves as the subject of *ke V* (and is preposed to *ke V*).<sup>9</sup> This means that in the structure *wu fa ke V*, it is *fa*, the nominal complement of *V*, that serves as the internal argument (logical object) of *V* and as the subject of *ke V*.<sup>10</sup> *Wu*, in this syntagm, is still an

7. From here on, we focus on the development of *wufa* as a grammatical marker, which is a coalesced form.

8. The *ke V* structure had been around since Archaic Chinese, but *wu fa* had not been attested in this structure before.

9. Although this constraint on *ke V* had begun to become less strict in Early Medieval Chinese (see Meisterernst 2020), in our data of Medieval Chinese, this constraint is still at work; that is, it applies to all of our data in that period.

10. The semantic and structural relationship between *fa* and its governing verb can be seen from collocations such as *jianfa* ‘see the truth/doctrine’ in (10).

existential verb as in Archaic Chinese. *Fa* in (10) does not refer to laws or rules, but rather doctrines, truth, or good deeds in Buddhism. Syntactically, the whole structure can still be parsed as the predicate *wu* complemented by the string *fa ke V*. Note that this syntactic structure was far from being prevalent in this period, with only 4 occurrences attested in CCL.

- (10) 慧眼 無 見，亦 無法 可見。  
*Huiyan wu jian, yi wu fa ke jian.*

intelligent. eye have. no see, namely WU FA can see.

‘If a sage who can perceive both past and future cannot see it, there are no truth or principles to be seen (lit. that are possible to be seen).’

[*Quan Liang Wen*, ca. 3rd–5th century]

In Early Mandarin (907–1644), the meaning of *fa* in the string *wu fa ke V* was generalized to refer to ‘ways or methods (to do something)’, as in (11). What differentiates the usage of *wu fa ke V* from that in the preceding period is that constituents other than *fa* could serve as the logical object of *V*. As is seen in (11), the logical object of the verb *chu* ‘get rid of’ actually refers to the event denoted by the preceding clause—*gong ren zuobi* ‘people in the palace cheat’. In cases such as these, *fa* is no longer bound to *ke V*. We can also say that *fa* is released from the semantic unit *fa ke V*, such that *wu fa* and *ke V* each form a new semantic unit. Accordingly, it could be argued that *wu [fa ke V]* was reanalyzed as *wu fa [ke V]*. This is a pivotal step in the development of *wu fa*. As shown in Table 3, the frequency of *wu fa ke V* in this period increased to 33 instances, taking up 18% of all the *wu fa* and *wu fa* tokens.

- (11) 王 曰：「宮人 作弊，無法 可除」。

*Wang yue: "Gongren zuobi, wu fa ke chu".*

King say: “Palace.people cheat, WUFA can get.rid.of”.

‘The king said: “Some people in the palace cheat and I do not have ways to get rid of it (lit. and I do not have ways that make it possible to get rid of it).”’

[*Fengshen Yanyi*, 16th–17th century]

Following Meisterernst (2020: 210), we would like to attribute the emergence of structures such as (11) to a release of constraints, from early Medieval Chinese onwards, on *ke V* such that *V* is no longer necessarily passivized, and the internal argument of *V* no longer has to take up the subject position preceding the string *ke V*.<sup>11</sup>

11. As Meisterernst (2020: 209–210) points out, when *V* is no longer passivized, *V* allows an external subject argument.

Once *wufa* has been established as a unit, meaning ‘having no ways (to do something)’, it starts assuming modal meaning, i.e., non-deontic participant-external possibility—although at first still incipiently. As we shall argue in § 6, the mechanism that is responsible for this modal meaning is invited inferencing: if a speaker/writer says that someone has, or there is, no way of doing something, the interlocutor is prone to draw the inference that it is impossible for the agent concerned to do that thing.

### 5.3 The emergence of *wufa/wu fa VP*

In Early Mandarin, a new syntactic structure emerged, i.e., *wufa/wu fa VP*. This construction does not emerge all at once, but rather comes into being gradually, which is evident from Table 3. Table 3 provides an overview of the diachronic development of the relatively older construction (*wufa/wu fa ke V*) and this new one (*wufa/wu fa VP*). The table juxtaposes the token frequencies of *wufa/wu fa ke V* and *wufa/wu fa VP* in the six sub-corpora of CCL, and it also gives the relative frequencies of these forms compared to the total number of tokens of *wufa/wu fa* in each sub-corpus.

When we compare Examples (12) and (13), both of which are attested in novels of the same period—the Ming Dynasty, we observe that the verbs that follow *wufa* are the same, that is, they designate almost the same proposition. In (13), however, *ke* is deleted, giving rise to the new construction—*wufa/wu fa VP*, in which *wufa* and *VP* form the complex predicate of a clause, meaning ‘having no way to conduct the activity denoted by *VP*’. In this example, *wufa* is directly followed by a *VP*, thus meeting the formal criterion of modal auxiliaries. As (13) is an early example of the structure *wufa VP*, the auxiliariation of *wufa* can be said to have started in the period of 16th–17th century.<sup>12</sup>

- (12) 雲霄 娘娘 聽 罷， 沉吟 半晌， 無法 可 處。  
*Yunxiao niangniang ting ba, chenyin banxiang, wufa ke chu.*  
 Yunxiao HON hear finish, think.about a.while, WUFA can deal.with  
 ‘After hearing it, Yunxiao thought about it for a while, but had no ways to deal with it (lit. that makes it possible for it to be dealt with).’  
 [Fengshen Yanyi, 16th–17th century]

12. The fact that in (13), an early instance of the construction *wufa VP*, *wufa* is followed by a *V* only does not necessarily mean that there are no early *V+O* examples; see, e.g., Example (20), which occurs in the same novel as Example (12).

**Table 3.** The raw frequency of *wufa/wu fa ke V* and *wufa/wu fa VP* in the sub-corpora of CCL

	<i>Wufa/wu fa ke V</i>		<i>Wufa/wu fa VP</i>	
	N	% of tokens of <i>wufa/wu fa</i>	N	% of tokens of <i>wufa/wu fa</i>
Medieval Chinese (25–907)	4	10	0	0
Early Mandarin (907–1644) <sup>a</sup>	33	18	21	11
The Qing Dynasty (1644–1911)	108	16	93	14
The Republican Era (1911–1920s)	212	25	351	41
Modern Chinese (1930s–1949)	12	3.8	304	96
Contemporary Chinese (1949–present)	383	0.7	53364	99
<b>Total</b>	<b>752</b>		<b>54134</b>	

a. Note that the frequency counts of *wufa/wu fa ke V* and *wufa/wu fa VP* in this period include 12 instances of *wu fa ke V* and 10 instances of *wu fa VP*. That is, in these instances, *wu* and *fa* are still lexical items with *wu* denoting ‘non-existence’ and *fa* ‘doctrines or principle in Buddhism’, such as Example (14). Nonetheless, for the other periods in this table, there are no attested instances of lexical usage of *wu fa* in which *fa* denoting ‘doctrines or principles in Buddhism’.

- (13) 燕王 聽 了， 也 無 法 處， 只 得 緩 攻。  
*Yanwang ting le, ye wufa chu, zhide huan gong.*  
 Yan.king hear PFV, also WUFA deal.with, only slow.down attack.  
 ‘After hearing it, the king of the Yan kingdom had no ways to deal with it, but  
 slowed down the attack.’ [Xu Yinglie *Zhuan*, 16th–17th century]

How can the development from *wufa ke V* to *wufa VP* be accounted for? As Example (11) has shown, *wufa* can express ‘having no way/method (that makes it possible for something to be done)’. It thus conveys – though incipiently – the modal notion of ‘impossibility’. We argue that *wufa*’s cooccurrence with the modal verb of possibility *ke* may have paved the way for *wufa*’s own use as a grammatical marker of possibility, in that *ke* (in the structure *ke V*) transferred its modal meaning onto *wufa*, thus strengthening the latter’s incipient meaning of ‘impossibility’. This relocation of meaning may have led to redundancy between *wufa* and *ke*,

eventually leading to the loss of *ke* and the emergence of the *wufa VP* structure.<sup>13</sup> A similar relocation of meaning is argued by Narrog (2012: 204) to have occurred in the acquisition of the modal meaning of *de* ‘must’ in Mandarin Chinese. In particular, Narrog (2012: 204) states that “It is possible ... that the cooccurrence with the modal *ke* paved the way for *de*’s own modal use”. Additional evidence may come from the observation in Traugott (1989: 42) (also mentioned in Traugott & Dasher’s 2002: 135) that, in Late Middle English, the occurrence of the modal adverb *nedes* ‘necessarily’ with *must* must have contributed to the development of the epistemic meaning of *must*.<sup>14</sup> On top of this argument based on relocation and redundancy of meaning, it can, of course, not be excluded that the occurrence of the structure *wufa VP* in Early Mandarin has benefited from the presence of a structurally similar syntagm in this period as exemplified in (14). What distinguishes (14) from (13) is that *wu* and *fa* are lexical units (the latter meaning ‘doctrines or principles in Buddhism’) in (14).

- (14) 問 祖 傳 法 付 與 何 人。 師 云。 無  
 Wen zu chuan fa fu yu he ren. Shi yun, wu  
 Ask ancestor pass.down doctrine give to who people. Master say, not.have  
 法 與 人。  
 fa yu ren.  
 doctrine give people  
 ‘(He) asked who the doctrine passed down from the ancestors had been given.  
 The master told him that there was no doctrine to give people.’  
 [Gu Zunsu Yulu, 13th century]

In (15), we can observe a further expansion of the syntactic context of the modal use of *wufa*: not only do *wufa* and its subject appear in the same clause, but also the verb combining with *wufa* is followed by its object.

- (15) ..... 一 眾 村 人 無 法 處 此 .....  
 ..... Yizhong cun ren wufa chu ci .....  
 ... a group village people WUFA deal.with it ...  
 ‘... a group of villagers can not deal with it...’ [Xiu Yun Ge, 19th century]

13. Within a constructionist framework, it may be argued that in the construction *wufa/wu fa ke V*, the modal meaning of ‘possibility’ is not mainly confined to the item *ke*, but that it is carried by the entire construction. In other words, the constructional meaning ‘having no way that makes it possible to do something’, as in (11) and (12), expresses impossibility in its entirety. If that is the case, *wufa* can be reanalyzed as the carrier of that modal sense, and the item *ke* can be felt to be redundant, precipitating its loss. (Many thanks to one of the reviewers for pointing to the relevance of the constructionist framework.)

14. Relocation of meaning has also been argued to have occurred in the diffusion of the *to*-infinitive (see De Smet 2013: 37–38).

11 occurrences of *wufa VP* are attested, taking up 52% of all *wufa/wu fa VP* tokens, and 5.9% of all *wufa* and *wu fa* tokens in Early Mandarin.

#### 5.4 The decline of *wufa/wu fa ke V* and the rise of *wufa/wu fa VP*

Notwithstanding the emergence of the new construction *wufa/wu fa VP*, the old construction *wufa/wu fa ke V* did not disappear at once, but competed for some time with the newcomer.

The competition between *wufa/wu fa ke V* and *wufa/wu fa VP* persisted into the twenty-first century, as is observable in Table 3. In the Qing Dynasty (1644–1911), both constructions increased in frequency, but *wufa ke V* still exceeded *wufa VP*. Nevertheless, a chi-square test shows that there is no statistically significant difference ( $\chi^2 = 0.253$ ,  $p = 0.6147$ ) between the raw frequencies of the two constructions across the two periods, i.e., the Early Mandarin period and the Qing Dynasty. However, a quite different picture is observed for the period of the Republic Era (1911–1920s), with the frequency of *wufa VP* significantly exceeding that of *wufa ke V* ( $\chi^2 = 15.526$ ,  $p < 0.0001$ ). The relative frequencies (the ratio of the construction concerned to the total tokens of *wufa/wu fa*) of these two constructions across the different historical periods are shown in Figure 1.

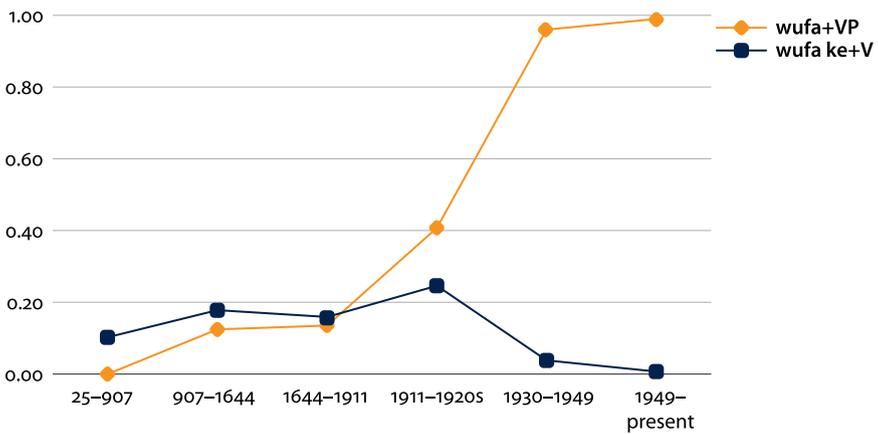


Figure 1. Relative frequencies of *wufa/wu fa ke V* and *wufa/wu fa VP* over time

As can be gleaned from Figure 1, from the 1920s, the usage rate of *wufa VP* experienced a very steep increase at the expense of *wufa ke V*. In Contemporary Chinese (1949–present), the construction *wufa VP* accounts for the overwhelming majority of the total number of *wufa* tokens while *wufa ke V* has dropped to a very limited amount, viz., 0.7%, which suggests that *wufa ke V* is disappearing. This

argument can be corroborated by the change of its type/token ratio, as shown in Figure 2. The type/token ratio is an indicator of productivity (Bybee 2010; De Smet 2020). The type/token ratio of the construction has been declining from Medieval Chinese (25–907) and in Modern Chinese it is very low, which indicates that it is no longer productive.

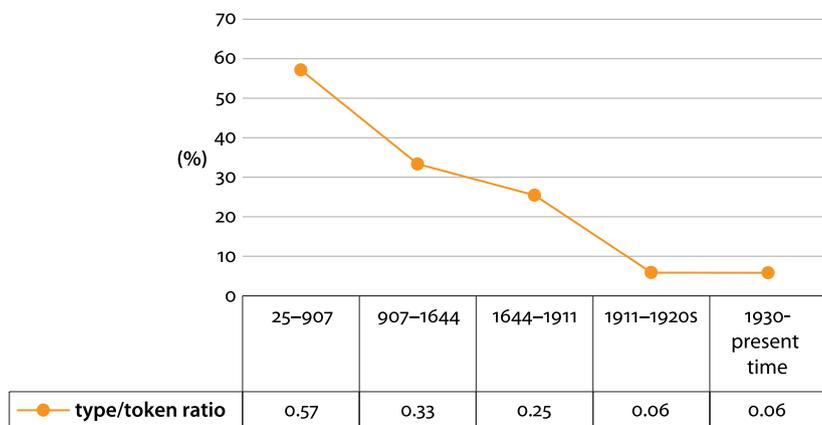


Figure 2. Type/token ratio of *wufa/wu fa ke V*

### 5.5 The semantic development of *wufa*

It should be noted that the earliest attested modal meaning of *wufa* in cases such as (11), (12) and (13) is participant-external possibility, that is, it designates external circumstantial enabling conditions to do something. The impossibility for a person to do something can further imply that this person does not have the ability to do it. *Wufa* thus extends its modal meaning from participant-external possibility to participant-internal possibility. The earliest attested instances expressing participant-internal possibility occurred in the Ming Dynasty (1368–1644), as in (16). Although, in this example, the context specifies the external situation that the Taoist is facing, which seems to make it impossible for him to win, fighting at that time and in the context specified by this sentence mainly involves personal strength, which is a kind of physical ability; we as interlocutors are therefore invited to infer that the Taoist does not have the physical ability to defeat the five enemies. That is, *wufa* here is interpreted as denoting participant-internal possibility—the physical ability of the Taoist.

- (16) 這 道人 仗 著 他 四 個 弟兄， 勢力 惡 狠 狠， 這 關 無法  
*Zhe daoren zhang zhe ta si ge dixiong, shili ehenhen, zhe guan wufa*  
 This Taoist rely.on DUR he four CLF brother force vicious this stage WUFA  
 打得過，……  
*dadeguo, ...*  
 defeat  
 ‘Relying on his four brothers, the Taoist was vicious. [He] was unable to defeat  
 them in this stage, ……’ [Dongdu Ji, ca. 16th century]

Afterwards, in the Qing Dynasty (1644–1911), *wufa* was attested to denote deontic modal meaning—obligation or necessity, as in (17). In this example, *wufa* collocates with the negation marker *bu*, forming a doubly negated construction. The literal meaning of the construction is ‘it was not possible that his father would not set off for the public office’; from it, the strongly positive, deontic reading ‘it was necessary that his father set off for the public office’ can be inferred. Note that this deontic meaning does not reside in *wufa* itself, but that it is the result of the ‘impossibility’ modal *wufa* collocating with a negation marker. In (18), *wufa* is not followed by any negation markers, but it codes the deontic modality of permission. Specifically, Shi Changqing, the subject, was morally compelled to withdraw what he had planned to say because he found it improper to do so after hearing what the shopkeeper said, which suggests that he was subject to a morality-related social inhibition. In other words, he was not morally permitted to say what he had intended to say. In addition, the deontic modal *yinggai* ‘should’ and *youli* ‘reasonable’ in the preceding clauses indicate that social value is applied to assess the matter, which also corroborates the deontic interpretation of *wufa*. In sum, moral and social appropriateness appear to be central to *wufa*’s coding in (18).

- (17) 那 公子 在 一 旁， 正 因 父 親 無法 不 起 身 赴  
*Na gongzi zai yipang, zheng yin fuqin wufa bu qishen fu*  
 That man on one.side, just because father WUFA not set.off go.to  
 官， 自 己 無法 不 留 家 鄉 試，  
*guan, ziji wufa bu liu jia xiangshi,*  
 public.office himself WUFA not remain home hometown.examination,  
 父 子 的 一 番 離 別， 心 裡 十 分 難 過。  
*fuzi de yi fan libie, xin li shifen nanguo.*  
 father.son GEN one CLF parting heart LOC very sad.  
 ‘The son was by the side. Just because his father had to set off for the public  
 office, and he himself had to stay in his hometown and take an examination.  
 The parting between him and his father made him very sad.’  
 [Xiannv Qiyuan, ca. 16th–17th century]

- (18) 時長青 聞言 口 塞， 這 椿 事情 算  
*Shi Changqing wen yan kou sai, zhe zhuang shiqing suan*  
 Shi Changqing hear words mouth stuffed, this CLF matter consider  
 應該， 掌櫃 所 說 全 有理， 也 就 無法 把 口  
*yinggai, zhanggui suo shuo quan youli, ye jiu wufa ba kou*  
 should, shop.keeper what say all reasonable, also then WUFA BA mouth  
 開， 無奈 只 可 話 回 挽， .....  
*kai, wunai zhi ke hua huiwan, ...*  
 open, have.no.choice only can words take.back...  
 ‘When Shi Changqing heard the words, he could not say anything. This matter  
 should be as it was. What the shopkeeper said was reasonable, and so he  
 couldn’t say what he had planned to say, but had to take it back.’  
 [Xiao Ba Yi, ca. 16th–17th century]

In Modern Chinese, *wufa* has also come to express epistemic modality. When a speaker/writer states that it is impossible to do something, she/he may identify with, or endorse, this assessment. For instance, in (19), the direct speech in quotation marks is the comment of the western intelligence officer, in which the use of the modal auxiliary *wufa* suggests that the officer has identified with the assessment of the situation. To be precise, the modal auxiliary indicates that the officer him-/herself thinks it is impossible for non-Jewish immigrants like André to prove their loyalty (for the relation between epistemicity and subjectification, see § 6).

- (19) 一位 西方 情報 人員 後來 評論 說， 「在 以色列，  
*Yi wei xifang qingbao ren yuan hou lai ping lun shuo, "Zai yiselle,*  
 A CLF west intelligence person later comment say, “In Israel,  
 像 安德列 這樣 的 非 猶太 移民 要想 在 核  
*xiang Andelie zheyang de fei youtai yimin yaoxiang zai he*  
 like Andre this.kind GEN not Jewish immigrants want in nuclear  
 研究 單位 找 一 份 工 作 根 本 不 可 能」， 因 為 「他  
*yan jiu dan wei zhao yi fen gong zuo gen ben bu keneng, yin wei "ta*  
 research institute find a CLF job utterly not possible”, because “he  
 無法 證 實 他 的 忠 誠」。  
*wufa zhengshi ta de zhongcheng”.*  
 WUFA prove he GEN loyalty”.

‘A Western intelligence officer later commented that “In Israel, it may be impossible for non-Jewish immigrants like André to find a job in a nuclear research institute” because “he may not be able to prove his loyalty”’

[Fujian Daily, 1992]

## 5.6 Summarizing the development of *wufa*

By way of summary, Figure 3 visualizes the diachronic development of the form and meaning of *wufa*. In the earliest records of Chinese, *wu fa* is a predicate—nominal complement string, with *wu* meaning ‘not having’ and *fa* denoting ‘laws/rules’. From Medieval Chinese onwards, *wu fa* occurs in a more complex construction *wu (fa ke V)*; the meaning of *fa* as well has been broadened to ‘doctrines/truth in Buddhism’. Importantly, in this string, *ke* requires a passivized *V*, whose internal argument (or logical object) also serves as the subject of *ke V* (and is preposed to *ke V*).

Stage	Form	Meaning	Examples	Time
I	<i>wu fa</i>	having no laws or rules	(9)	Archaic Chinese
	↓	↓		
II	<i>wu (fa ke V)</i>	having no laws, rules or doctrines that can be V-ed	(10)	Medieval Chinese
	↓	↓		
III	<i>wufa (ke V)</i>	having no ways to do sth.	(11)	Early Mandarin
	↓	↓		
IV	<i>wufa VP</i>	having no ways to do sth.	(13)	Early Mandarin
	↓	↓		
V	<i>wufa VP</i>	it is impossible to do sth. sb. is unable to do sth.	(4) (3)	Modern Chinese

Figure 3. Syntactic and semantic development of *wufa*

From Early Mandarin onwards (stage III), the construction *wu (fa ke V)* develops, through reanalysis, into *wufa (ke V)*. At this stage, the semantic restriction characteristic of *wu (fa ke V)* is lifted: the verb *V* following *ke* no longer needs to be passivized and its internal argument (logical object) no longer has to take up the subject position preceding the string *ke V*; that is, *V* can take constituents preceding the construction *wufa ke V* as its logical (but not expressed) object. The meaning of *fa* is broadened again, indicating ways or approaches (for things to be done); the expression *wufa* ‘having no ways (for things to be done)’, though still partly lexical in nature, incipiently conveys participant-external non-deontic possibility.

In the development from stage III (*wufa ke V*) to stage IV (*wufa VP*), the monosyllabic verb in the former is extended to a VP in the latter. That is, it can take its own complement and adjuncts as well. This can be seen as a case of syntactic context expansion (Himmelman 2004). Specifically, in the Ming Dynasty, the verb was expanded to take a complement and a directional adverbial, as in (20) and (21) respectively. At this stage, *wufa* meets the formal criterion of auxiliaries in that it is directly followed by a VP (see § 3); it conveys the modality of ‘impossibility’ as a grammatical marker (and not as a string of a partly lexical nature, as in stage III). Subsequently, in the Republican Era, *wufa VP* could take a dative as in (22). In Contemporary Chinese, where *wufa* has fully grammaticalized into a modal auxiliary, it can collocate with all kinds of VPs, such as a verb plus degree adverbials in (23), and a verb with a locational adverbial in (24).

- (20) 子牙被 困，無法 退 兵。  
*Ziya bei kun, wufa tui pin.*  
 Ziya PASS trap, WUFA retreat troops.  
 ‘Ziya was trapped and unable to retreat.’ [Fengshen Yanyi, 16th–17th century]
- (21) 東廊 僧 一發 驚惶， 卻 又 無法 上 得 來，  
*Donglang seng yifa jinghuang, que you wufa shang de lai,*  
 East.corridor monk once panic, but again WUFA up able come,  
 莫知 所 措。  
*mozhi suo cuo.*  
 not.know what do.  
 ‘The monk in the east corridor was panicked, but could not get up, not knowing what to do.’ [Chuke Pai’an Jingqi, 17th century]
- (22) 洞庭 離 這裡 也 不 知 有 多 遠？ …… 也 無法 給  
*Dongting li zheli ye bu zhi you duo yuan? ... ye wufa gei*  
 Dongting from here also not know have how far.away? ... also WUFA to  
 我 父母 帶 個 信……  
*wo fumu dai ge xin...*  
 my parents take CLF message.  
 ‘I did not know how far Dongting is from here? ... I could not send a message to my parents, either.’ [Gujin Qinghai, 20th century]

- (23) 這樣 做 讓 張三 一 家 無法 盡最大 限度 地  
*Zheyang zuo rang Zhangsan yi jia wufa jin zuida xiandu di*  
 This.way do make Zhangsan one family WUFA to maximum extent ADV  
 發展……  
*fazhan*  
 develop  
 ‘In doing so, the Zhang Sans cannot develop to the maximum extent…’  
 [20th century]
- (24) 因 本 書 體例 的 限制，無法 在 行文 中 一一  
*Yin ben shu tili de xianzhi, wufa zai xingwen zhong yiyi*  
 Because this book style GEN limit, WUFA in write.article LOC all  
 列出 徵引 出處……  
*liechu zhengyin chuchu*  
 list.out citation source  
 ‘Due to the style restriction of this book, (I was) unable to list all of the sources  
 of citation in the text…’  
 [20th century]
- As far as the verb in the *wufa VP* construction is concerned, the construction has experienced host-class expansion (Himmelmann 2004). Whereas *wufa* initially combines only with dynamic verbs denoting activities, in the Qing Dynasty (1644–1911), the VP was expanded to stative verbs such as *zhan* ‘stand’ in (25) and abstract verbs such as *xingrong* ‘describe’ in (26).
- (25) 北面 上 站 著 的 金龍 也 無法 站 在 北面……  
*Beimian shang zhan zhe de Jinlong ye wufa zhan zai beimian……*  
 North LOC stand DUR GEN Jinlong also WUFA stand PREP north……  
 ‘Jinlong who had been standing on the north was unable to stand there any more.’  
 [Sanxia Jian, 20th century]
- (26) 他們 二 位 的 徒弟 蔣伯芳 與 法藍僧 二 人 的  
*Tamen er wei de tudi Jiang Bofang yu Fa Lanseng erren de*  
 They two CLF GEN apprentice Jiang Bofang and Fa Lanseng two people GEN  
 技藝，叫 說書 的 無法 形容……  
*jiyi, jiao shuoshu de wufa xingrong…*  
 skill, make storyteller NMLZ WUFA describe…  
 ‘The skill of their two apprentices—Jiang Bofang and Fa Lanseng, was so  
 superb that the storyteller was unable to describe…’ [Sanxia Jian, 20th century]

## 6. *Wufa* as a grammaticalized item

We now turn to the features involved in the grammaticalization of *wufa*. As regards the parameters proposed by Lehmann (1985), coalescence, paradigmaticization, obligatorification, fixation and desemanticization are clearly involved here. At first, in Archaic Chinese and Medieval Chinese, the sequence *wu fa* is fully compositional, as a predicate-complement structure comprising *wu* as a verb and *fa* as a noun, but in Modern Chinese, *wufa* has developed into a non-compositional modal auxiliary, that is, *wu* and *fa* lost the status of being a verb and a noun, respectively, and coalesced into a modal auxiliary. Arguably, this coalescence can be seen as the result of the loss of argument structure, which according to Meisterernst (2020: 217–218), is crucially involved in the grammaticalization of auxiliaries (see also below). Paradigmaticization applies in that *wufa* has shifted from a large, open class (or rather, a combination of the open classes of verb and noun) to the small, relatively closed class of auxiliaries with an abstract grammatical meaning. In this process, *wufa* has come to be confronted with opposing members of the same paradigm, such as *buneng* ‘cannot’—the negation of the canonical modal of possibility *neng* ‘can’. As an auxiliary, *wufa* is a member of the modal auxiliary category that is obligatory (i.e., does not show transparadigmatic variability; Lehmann 1985: 139) in the syntactic context \_\_VP. Fixation is also applicable here. In Early Mandarin and Early Modern Chinese, *wufa* is bonded to the structures *ke V* or *VP*; in Modern Chinese, *wufa* is almost exclusively fixed to a VP consisting of a verb (+ object).

With regard to semantic change in the grammaticalization of *wufa*, it is obvious that desemanticization has been involved. As noted above, *wufa* originally consists of two units with concrete semantics, viz., *wu* ‘not having’ and *fa* ‘laws, rules or ways’. In the process of grammaticalization, this meaning has become more and more abstract, resulting in the modal meaning of ‘impossibility’ (see also Figure 3). However, desemanticization arguably does not paint the whole picture of *wufa*’s semantic change, in that it is also pragmatically (or inference)-based. As we pointed out above (§ 5.2), if a speaker/writer says that someone has, or there is, no way of doing something, the interlocutor is prone to draw the inference that it is impossible for the agent concerned to do that thing. The resulting possibility is a root possibility, or participant-external possibility (to be precise), which “reports on general enabling conditions” (Bybee et al. 1994: 178), as in (20–24). The inferencing process taking place here can be seen as a type of conceptual metonymy, one of the two mechanisms of semantic change by inferencing<sup>15</sup> (Traugott & Dasher 2002: 27–34). In addition, as we pointed out in § 5.5,

15. The other one is metaphor.

the impossibility for a person to carry out an action can imply that this person does not have the ability to do it. *Wufa* thus extends its modal meaning from participant-external possibility to participant-internal possibility.

As the *wufa* VP construction is used increasingly frequently in Modern and Contemporary Chinese, these pragmatic inferences come to be strengthened and conventionalized. In this way, the metonymically invited inferences are semanticized as part of the meaning of the string *wufa*, i.e. indexing impossibility. In sum, this discussion has shown that both desemanticization and semanticization are involved in *wufa*'s semantic change.

Let us now turn to "subjectification". As Traugott (2010) has pointed out, subjectification is a type of semantic change that often accompanies grammaticalization. It is a process whereby "meanings become increasingly based in the speaker's subjective belief—state/attitude towards what the speaker is talking about" (Traugott 1989:35; 1995:31). Subjectification can be observed in the development of *wufa*, in that it also acquires epistemic modality, which involves the speaker/writer's subjective assessment of the situation denoted and belief toward the proposition (see the discussion in § 5.5).

With regard to Hopper's (1991) features of grammaticalization, divergence and decategorialization can be observed here. Divergence is at stake in that the original lexical form of *wu fa*, i.e., *wu fa* as a lexical verb-plus-noun syntagm, or as a predicate-complement string, lingers on into Contemporary Chinese, as exemplified in (27), in which *wu fa* means having no way/choice.

- (27) 有的糖廠 拒絕多收，農民 無法 只得將  
*Youde tangchang jujue duo shou, nongmin wu fa zhide jiang*  
 Some sugar.factory refuse more collect, farmer WU FA only use  
 甜菜 作 肥料 和 飼料。  
*tiancai zuo feiliao he siliao.*  
 sugar.beets make fertilizer and feed.  
 'Some sugar factories refuse to collect more sugar beets, and farmers have no  
 choice but to use sugar beets as fertilizer and feed.' [Renmin Daily, 1993]

Decategorialization is involved in that the Archaic Chinese verb *wu* and noun *fa* gradually coalesced into an auxiliary later on.

## 7. Discussion

In this section, we reflect on the results of our study of the grammaticalization of *wufa*. We discuss (i) how these results confirm, and at the same time differ from,

earlier results on the grammaticalization of modals, and (ii) how they bear on grammaticalization in general.

The grammaticalization of *wufa* is, on the one hand, in line with the diachronic path proposed for modals in earlier studies (e.g., Bybee et al. 1994: 240; van der Auwera & Plungian 1998; Traugott & Dasher 2002). Specifically, the development of *wufa* shows a shift from an agent-oriented to a speaker-oriented modality, and in particular from root possibility to epistemic possibility. It also supports the proposal that root possibility modals develop from the lexical layer, expressing dynamic circumstantial modality, to the deontic layer and from there to the epistemic layer: *wufa*'s development is thus in line with an approach to grammaticalization, espoused mainly in formal, generative grammar, as an upward movement on the functional spine (Cinque 1999; Robert & Roussou 2003; Meisterernst 2020: 223, 224). It also confirms the proposal in Meisterernst (2020: 218) that grammaticalization of auxiliaries involves a loss of argument structure: when *wu* as a lexical verb and *fa* as its complement noun coalesce into the modal auxiliary *wufa*, the original predicate-complement structure gets lost and especially *fa* as the complement of *wu* is totally lost. The resulting structure *wufa VP* can be said to be monoclausal (see Traugott 1989: 38).

On the other hand, the grammaticalization of *wufa* demonstrates some distinguishing features. First, as noted in § 5, the original modal meaning that develops from *wufa* is participant-external possibility and it is from this modality that participant-internal possibility develops. This grammaticalization path runs counter to what has been found for that of the English modality of possibility (Bybee et al. 1994: 192; Traugott & Dasher 2002: 129–131). Nonetheless, a change from participant-external possibility to participant-internal possibility (ability) has in fact been documented for *acquisitive* modals (cf. van der Auwera et al. 2009), i.e., modal markers derived from verbs with a get-like meaning, and for modals derived from *emergence* verbs in languages such as Thai and Japanese (cf. Shinzato 2008). For instance, Takahashi (2008) reports an *emergence* verb (i.e., which has the original meaning of ‘emerge’ or ‘come into being’)—*dây* in Thai, which, combined with negation, initially expressed the modal meaning of participant-external “impossibility” and later developed into expressing participant-internal possibility (ability). Moreover, Meisterernst (2008a: 116) also observes a historical extension from participant-external to participant-internal possibility with two Medieval Chinese modal markers *ke* and *keyi* in the Han period.

Second, the cross-linguistically attested lexical sources of modal verbs are single full verbs (see Lightfoot 1979: 81; Hopper & Traugott 1993: 45–48; Traugott & Dasher 2002: 105–151), whereas the present case demonstrates how a verb-complement sequence develops into a modal verb, thus confirming Wiemer's

(2014: 453) observation that the inventory of lexical sources as input to grammaticalization “does not just consist of expressions with a very general meaning more or less irreducible notions important in human acts of experience”.

To seek an explanation for the fact that the initial modal meaning of *wufa*, namely, participant-external possibility, developed from the original lexical meaning of ‘not have laws or rules’, it might be plausible to take into consideration the cultural context in which linguistic changes take place, as the semantic category of modality is usually defined by making reference to culture-specific values and norms (Jing-Schmidt 2010: 85).

Hofstede (1984: 212) proposes four dimensions to distinguish different cultures: power distance, uncertainty avoidance, masculinity-femininity, and individualism-collectivism; he found that major western countries such as the United States, the United Kingdom and Germany scored the highest in individualism, while the Chinese culture scored toward the lower end indicating it is high in collectivism. This finding is corroborated by Triandis et al. (1990), who find that the Chinese culture scored higher on collectivism and lower on individualism. In a nutshell, it is generally acknowledged that the Chinese culture is characterized by collectivism. In a similar vein, Nisbett (2003) notes that in the Chinese culture, collectivism is highly valued and has become a latent code of conduct for Chinese people. That is, the Chinese, in general, are a collective society that strives for harmony and group belonging (Hofstede 1984); they are more willing to suppress their own feelings and needs for the good of the group (Triandis et al. 1990). More specifically, the Chinese tend to first take into account the social norm, regulations, and the circumstantial enabling conditions when they behave. If their behaviors or conducts are not permitted by laws/rules or even social norm, they are prone to see it impossible to carry out what they intend to do. This is so because “as a member of a collective, a Chinese individual is socialized to conform to values and norms shared within a social network to maintain harmony on which personal well-being is dependent” (Jing-Schmidt 2010: 85). This is especially the case in the period of Archaic Chinese and Medieval Chinese, during which China was a relatively closed society, viz., lacking communication with other cultures in the world and Chinese were deeply influenced and even constrained by Confucian mutual obligations which worked as a guide for their ethical conduct. Given this cultural context, it is plausible that in the grammaticalization of *wufa*, the original lexical meaning of ‘not have laws or rules’ shifted to the modal meaning of participant-external “impossibility”. This culture-based explication converges with Jing-Schmidt (2010), who also notes the important role of Chinese culture in the development of the Mandarin deontic *hao* constructions from participant-external constraints.

Finally, we would like to add a short note on how the development of *wufa* bears on the general tendency for Mandarin Chinese to drift from a more synthetic to a more analytic language, which started from Early Medieval Chinese onwards (see, e.g., Meisterernst 2020: 207).<sup>16</sup> While the shift from a bi-morphemic structure *wu fa* into the monomorphemic *wufa* at first sight hints at the replacement of an analytic structure by a synthetic one, *wufa* itself is disyllabic and has acquired the deontic modal meaning of permission as Example (18) shows; in that respect it is more analytic than an earlier use of *wu*—a monosyllabic morpheme, as a negative deontic marker (see Meisterernst 2008b). Another instance of analyticization is *wufa* developing deontic meaning of obligation in the (analytic) double negation context of *wufa* (which has negative meaning) + a negation marker (see § 5.5), i.e., *wufa bu* as in Example (17), which is obviously more analytical than other canonical monosyllabic deontic modals expressing obligation and necessity such as *dang*, *ying* and *bi* in Archaic Chinese and Medieval Chinese (see Meisterernst 2011; 2020). Finally, the development from *wufa ke V* to *wufa VP* may also be seen as an instance of analyticization: In *wufa ke V*, the object of a transitive V was implied (it referred to a constituent in the preceding context), whereas in *wufa VP*, the object of V could be made explicit, i.e., it usually directly follows V.

## 8. Conclusion

In conclusion, by analyzing historical corpus data, the present study has provided a detailed account of the grammaticalization of the Mandarin modal auxiliary *wufa*. As a modal auxiliary, *wufa* illustrates a good number of features of grammaticalization, such as paradigmaticization, decategorialization, coalescence, fixation, desemanticization, subjectification and divergence.

Aiming at explanations for the historical development and the present-day characteristics of *wufa*, this study has attempted to uncover the underlying mechanisms that propelled the gradual grammaticalization of *wufa* on the semantic and syntactic dimensions. It has been argued that, following up on the semantic generalization of *wu fa* from ‘having no laws/rules’ to ‘having no ways’, the structure *wu fa ke V* underwent reanalysis. The semantics of *wufa* then changed from ‘having no ways’ to participant-external non-deontic possibility through invited inferencing (a metonymic process). After *wufa ke V* gave rise to *wufa VP* (as a result of semantic relocation of the modal meaning of *ke* onto *wufa*), syntactic context expansion as well as host class expansion could be observed in the VP.

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16. Thanks to one of the reviewers for bringing up this issue.

The grammaticalization of *wufa* demonstrates that it is both similar and different to previous findings concerning the grammaticalization of modals of possibility. On the one hand, the grammaticalization of *wufa* is largely consistent with the diachronic pathway from agent-oriented to speaker-oriented modalities, and in particular from root possibility to epistemic possibility (e.g., Bybee et al. 1994: 240; van der Auwera & Plungian 1998; Traugott & Dasher 2002: 147). On the other hand, it demonstrates two distinguishing features. First, the modal meaning of *wufa* develops from participant-external possibility to participant-internal possibility, which is the exact opposite of the grammaticalization path of the English modality of possibility (Bybee et al. 1994: 192; Traugott & Dasher 2002: 129–131). Second, the lexical source of *wufa* is a verb-complement sequence instead of the cross-linguistically attested single full verb (see Lightfoot 1979: 81; Hopper & Traugott 1993: 45–48; Traugott & Dasher 2002: 105–151). These differences can be attributed to a major Chinese cultural characteristic—collectivism, which has become a collective subconsciousness in China, and has been guiding and regulating people's behavior for centuries. That is, collective well-being, social norm and regulations are regarded as more important than individuals' need. Such a cultural context fostered and resulted in the peculiar pathway of grammaticalization of *wufa*.

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## Abbreviations

ADV	adverbial marker	HON	honorific
BA	object marker	LOC	locative
CLF	classifier	NMLZ	nominalizer
DUR	durative aspect	PASS	passive marker
DCM	degree complement marker	PFV	perfective aspect
GEN	genitive	PREP	preposition

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