

Research Article

A Corpus-Based Study of “V + Dào” Constructions as Temporal Contouring Events in Mandarin

Lin Yu* , Xuehan Jiang

School of Foreign Languages, Henan University, Kaifeng, China

Abstract

The temporal contouring event is a hot topic in Talmy's linguistic typology, and the “V + Dào” construction is one of the prototypes of Chinese compliments with its typological disputes, which lie in its event integration patterns. According to the corpus-based and correlational analysis of “V + Dào” constructions as temporal contouring events in Mandarin, this paper aims to explore their event integration patterns and reveal their event integration degrees in terms of event semantics, and syntactic properties. The research results are found that: 1) IEI_V can conflate 2 conceptual primitives; 2) IEI_D consists of two conceptual primitives; 3) EEI_VD contains 2 combinations of IEI_V and IEI_D, which can be formularized as “2+2”; 4) the value of EEI_Type refers to the verb-phase construction (VPha); 5) the hierarchy of correlated variables in IEI_V and IEI_D is ranked as “(ActiPro > AssoFun) > (SynType_VD > SynTyp_X) > (FigEnt_Anim)”; 6) Chin_VD is only weakly correlated with SynType_VD and SynTyp_X. This study can provide insights to reveal the lexicalization and grammaticalization processes of “V + Dào” construction or even the verb complement construction in Mandarin.

Keywords

“V + Dào” Construction, Temporal Contouring Event, Event Integration, Corpus-Based Method, Correlational Analysis

1. Introduction

Talmy (2000)'s typological dichotomy is rooted in his macro-event theory with its five different semantic classifications (motion event, temporal contouring event, action correcting event, state change event, realization event), according to the previous research, it can be found that one of the systemic errors in Talmyan research is that only motion events have been excessively concerned while other types of events are not [8, 9]. Due to this reason, this paper concentrates on the temporal contouring event, which refers to the temporal or aspectual type of event, as represented by the “on” and “continue” in “They talked on. / They continued talking.” The temporal contouring event typology belongs to

the macro-event typology, that is, satellite-framed language or verb-framed language.

As the macro-event with its event integration process is typically indicated within a single clause, with many instances discussed in Chinese verb complements, we choose the “V + Dào” construction as a focal point for this study. This choice is motivated by two factors. On the one hand, the “V + Dào” construction exhibits distinct linguistic characteristics and has been a subject of contention in traditional Chinese linguistics regarding its classification as a directional complement [2, 6, 10-14, 20, 21], resultative complement [3-5, 12, 22-24], or phase complement [1, 7, 15, 18, 19]. On

*Corresponding author: yulin@vip.henu.edu.cn (Lin Yu)

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the other hand, among verb complements, the "V + D ㄅ" construction stands out as it often conveys a sense of completion or culmination in event individualization.

This paper seeks to clarify the processes of event integration within temporal contouring events by addressing two primary inquiries: (1) What are the distinctive characteristics of event integration patterns observed in the "V + D ㄅ" construction as the temporal contouring event in Mandarin? (2) How do the event integration patterns of the "V + D ㄅ" construction correlate with its semantic and syntactic properties, and to what extent? After the introduction in Section 1, Section 2 establishes an event integration model for temporal contouring events grounded in the motion event. Section 3 outlines the corpus-based methodology utilized in this research, alongside the corresponding results and discussions presented from Sections 4 to 6. Finally, Section 7 summarizes the conclusions drawn from this investigation.

2. An Event Integration Model of Temporal Contouring Events

Talmy (2000) proposes that a macro-event consists of two fundamental components: a framing event and a co-event, where the latter is connected to the former through a supportive relationship. The framing event functions as an abstract event schema derived from various event types, including motion events, temporal contouring events, state change events, action correlation events, and realization events [16, 17]. We will examine the core elements within the framing event and the supportive link of the co-event as schematic conceptual primitives. Furthermore, we will regard the realization of these schematic conceptual primitives across different event types as instantiated conceptual primitives. These schematic conceptual primitives within the framing event are illustrated in Figure 1.

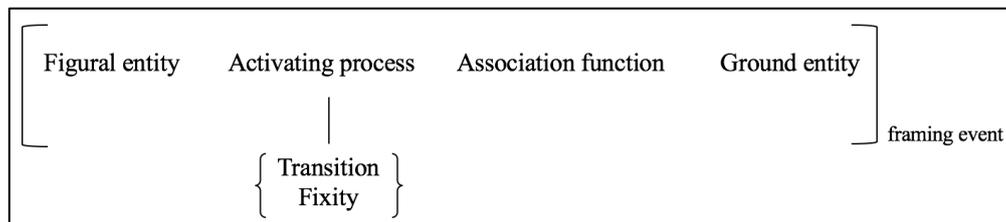


Figure 1. Talmy (2000)'s schematic conceptual primitives in the framing event.

In Figure 1, Talmy (2000: 218) presents four foundational schematic conceptual primitives integrated within the framing event. Initially, the figural entity, the primary focus, delineates the central object or subject of attention. Next, the ground entity acts as the backdrop or reference point, contrasting with the figural entity. Thirdly, the activation process injects dynamism into the event, primarily characterized by transition and fixity, encapsulating concepts like motion versus stationariness or change versus stasis. Finally, the association function establishes the relationship between the figural and ground entities. These conceptual primitives are adaptable across diverse event types, facilitating instantiation and reification.

In the context of a motion event (Talmy 2000: 226-227), the figural entity typically represents a physical object, serving as the central focus or Figure within the event, with potential agentive or non-agentive roles. Conversely, the ground entity functions as a secondary physical object, acting as a reference point or Ground. The activation process

manifests as a transition between the Figure and Ground, with modes such as motion or stationariness. The association function correlates with the activation process, specifying the path or site occupied by the Figure during the motion event.

Similarly, within a temporal contouring event (Talmy 2000: 230-232), two approaches can illustrate its dynamics. Initially, the figural entity denotes the degree of event manifestation, varying from full to none or partial manifestation. Meanwhile, the ground entity signifies a fixed situation with specific time points or periods. Alternatively, the figural entity may represent the affected object, while the ground entity symbolizes the temporal contour itself. Here, the activation process unfolds as the affected object progresses through time, symbolized as MOVE, while the association function indicates the directionality of the affected object concerning the temporal contour, such as "taking it on" or "letting it go".

To summarize, the schematic and instantiated conceptual primitives of macro-events in these two distinct event types can be initially presented in Table 1.

Table 1. *The conceptual primitives in Talmy's (2000) macro-event types.*

Conceptual Primitives Macro-event Types	Framing Event				Co-Event
	Figural Entity	Ground Entity	Activating Process	Association Function	Support Relation
Motion Event	a physical object	a second physical object as a reference point in space	motion or stationariness	path or site	Precursion; Enablement; Cause; Manner; Subsequence; Constitutedness
Temporal Contouring Event	the degree of event manifestation or the affected object	a fixed time point or a time stretch	analogical motion or stationariness	direction	

Table 1 illustrates the macro-event or the amalgamation process of event integration, which primarily comprises five schematic conceptual primitives: Figural Entity, Ground Entity, Activating Process, Association Function within the framing event, and Support Relation within the co-event. These schematic conceptual primitives are akin to variables, with their respective instantiations serving as values across various macro-event types. Table 2 encapsulates these variables and values, providing a summary of the temporal contouring event encoding process within the event integration model.

Table 2. *The variables and their values in the temporal contouring event coding.*

Variables	Values
Figural Entity	[±agentive]; [±animate]
Ground Entity	[temporal contour of time]
Activating Process	[motion]; [stationariness]
Association Function	[direction (of time)]
Support Relation	[precursion]; [enablement]; [cause]; [manner]; [subsequence]; [constitutedness]

Table 2 provides a comprehensive elucidation of the variables (i.e., schematic conceptual primitives) and their corresponding values (i.e., instantiated conceptual primitives), as follows: (1) Figural Entity: This encompasses variables that can span from agentive to non-agentive, animate to inanimate. (2) Ground Entity: The variables here can be represented by the spatial reference point in motion events and the temporal contour in temporal contouring events. (3) Activating Process: This can be categorized into two values: transition or fixity. However, their specific variables can manifest as motion or stationariness in both motion events and temporal contouring events. (4) Association Function: In motion events, this function is realized through the concepts of path or site, while in temporal contouring events, it pertains to the direction of time. (5) Support Relation: This variable encompasses values such as "precursion," "enablement," "cause," "manner," "concomitance," "purpose," and "constitutedness."

In essence, the event integration model of the temporal contouring event is established with its variables and values,

furnishing a theoretical framework for subsequent corpus-based methodologies and data encoding.

3. A Corpus-Based Methodology

Temporal contouring events can be perceived as an extension, either analogically or metaphorically, of motion through space, wherein temporal contouring constitutes a linguistic facet conceptualized as an independent event (Talmy 2000: 231). As each verb inherently embodies its aspect, the characterization of temporal contouring events is delineated by the ground entity, typically denoted by specific points or periods bearing explicit temporal markings.

Moreover, the data collection of the "V + *Dào*" construction includes three steps: Firstly, a representative corpus¹ is chosen in this study; secondly, "*Dào*" is taken as the keyword to search, and all of its concordances can be obtained;

¹ A corpus is a collection of texts of written or spoken language presented in electronic form.

thirdly, the obtained data are filtered sentence by sentence, and only those in accordance with the “V + Dào” construction are selected.

The initial phase involves the selection of data, with three specific criteria to be met: (1) The data should exhibit a colloquial style, avoiding literary or stilted language. (2) It should be characterized by frequent usage in speech, rather than being sporadic or occasional. (3) The data should be pervasive, encompassing a wide array of semantic notions, as opposed to being limited in scope (Talmy 1985: 62; 2000: 27).

Following these requirements, we opt for "Spoken Language" sourced from the corpus of the Center for Chinese Linguistics at Peking University (CCL). The "Spoken Language" corpus comprises transcripts from the "Beijing Dialect Survey Data in 1982," twenty-one dialogues across var-

ious mediums, and five TV interviews such as "Dating with Lu Yu."

In the succeeding step, our focus shifts to utilizing the Chinese character “Dào” as the primary keyword for retrieval. Consequently, we procure a total of 180 instances of “Dào” within the temporal contouring events. Notably, during this process, we identify several instances of duplicated transcriptions. However, recognizing the necessity of retaining the original data for the benefit of the audience, we opt to preserve all duplicates.

Subsequently, in the subsequent phase, it becomes apparent that not all expressions related to “Dào” strictly adhere to the “V + Dào” construction. Therefore, a manual sorting process is initiated to extract the relevant 180 sentences from the dataset.

Table 3. The tagging scheme of the “V + Dào” construction.

Three Levels	Variables	Values	
	Figural Entity (FigEnt)	Agentive (Agen) Animate (Anim)	[True]; [False] [True]; [False]
	Event Semantics	Ground Entity (GroEnt)	temporal contour [time]
Activating Process (ActiPro)		[motion]; [stationariness]	
Association Function (AssoFun)		direction of time [direction]	
Support Relation (SuppRel)		[precursion]; [enablement]; [cause]; [manner]; [subsequence]; [constitutedness]	
Syntactic Properties	Syntactic Types of “V + Dào” (SynType_VD)	Free Complements (FC); Forward Bound Complements (FBC); Backward Bound Complements (BBC); Bound Complements (BC)	
	Syntactic Types of the Following Component “X” (SynType_X)	temporal nouns (TempN); locative nouns (LocaN); patient nouns (PtienN); stimulus nouns (StimuN); degree nouns (DgreN); temporal clauses (TempC); stimulus clauses (StimuC); degree clauses (DgreC); patient clauses (PtienC); temporal adjectives (TempA); degree adjectives (DgreA); stimulus adjectives (StimuA); non-texts (NoT)	
Event Integration Patterns	Internal Event Integration (IEI)	“V” (IEI_V)	[Activating Process] + [Support Relation] (such as “[motion] + [cause]”)
		“Dào” (IEI_D)	[Activating Process] + [Association Function] (such as “[motion] + [path]”)
Event Integration Patterns	“V+Dào” (EEI_VD) ²	temporal contouring event (TempConEvt);	
	External Event Integration (EEI)	The Types of Verb-complement Construction (EEI_Type)	Verb-Directional construction (VDir); Verb-Resultative construction (VRes); Verb-Phase construction (VPha)

Thus, the distribution of “V + Dào” constructions as temporal contouring events is summarized in Figure 2 with all the variables.

² This is the semantic representation of each external macro-event type in general. In detail, “EEI_VD” = “IEI_V” + “IEI_D”

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> str(EEI_VD_TempConEvt)
'data.frame': 180 obs. of 13 variables:
 $ Chin_VD : Factor w/ 72 levels "亮到","休养到",...: 49 3 4 62 11 60 7 41 41 41 ...
 $ FigEnt_Agen: logi FALSE FALSE FALSE FALSE FALSE FALSE ...
 $ FigEnt_Anim: logi FALSE FALSE FALSE FALSE FALSE FALSE ...
 $ GroEnt : Factor w/ 1 level "time": 1 1 1 1 1 1 1 1 1 1 ...
 $ ActiPro : Factor w/ 2 levels "motion","stationariness": 1 1 1 1 1 1 1 2 2 2 ...
 $ AssoFun : Factor w/ 2 levels "motion+direction",...: 1 1 1 1 1 1 1 2 2 2 ...
 $ SuppRel : Factor w/ 1 level "constitutedness": 1 1 1 1 1 1 1 1 1 1 ...
 $ SynType_VD : Factor w/ 4 levels "BBC","BC","FBC",...: 1 1 1 1 1 1 1 1 1 1 ...
 $ SynType_X : Factor w/ 3 levels "TempA","TempC",...: 3 3 3 3 3 2 3 3 3 3 ...
 $ IEI_V : Factor w/ 2 levels "motion+constitutedness",...: 1 1 1 1 1 1 1 1 2 2 ...
 $ IEI_D : Factor w/ 2 levels "motion+direction",...: 1 1 1 1 1 1 1 2 2 2 ...
 $ EEI_VD : Factor w/ 1 level "TempConEvt": 1 1 1 1 1 1 1 1 1 1 ...
 $ EEI_Type : Factor w/ 1 level "VPha": 1 1 1 1 1 1 1 1 1 1 ...
> summary(EEI_VD_TempConEvt)
Chin_VD FigEnt_Agen FigEnt_Anim GroEnt ActiPro
等到 :29 Mode :logical Mode :logical time:180 motion :106
活到 :16 FALSE:180 FALSE:172 stationariness: 74
走到 :16 TRUE :8
干到 : 7
撑到 : 7
演到 : 7
(Other):98

AssoFun SuppRel SynType_VD SynType_X
motion+direction :106 constitutedness:180 BBC:105 TempA: 2
stationariness+direction: 74 BC : 2 TempC: 32
FBC: 8 TempN:146
FC : 65

IEI_V IEI_D EEI_VD EEI_Type
motion+constitutedness :106 motion+direction :106 TempConEvt:180 VPha:180
stationariness+constitutedness: 74 stationariness+direction: 74

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Figure 2. The structure and summary of “V + Dào” constructions in temporal contouring events.

Compared with motion events in Figure 1, the variables in Figure 2 get much simpler. The “V + Dào” constructions of temporal contouring events include 180 observations with 13 variables in total. Chin_VD has 72 levels or instances of the “V + Dào” construction, as is visualized in Figure 3 below. All the values in the agency of the figure (FigEnt_Agen) are false values, and the false value accounts for the highest frequency in the animacy of the figure (FigEnt_Anim). The ground entity (GroEnt) of temporal contouring events pertains to “time”, and the activating process (ActiPro) is the same as that in motion events – “motion” or “stationariness”. The variable of the association function (AssoFun) has 2 values, one is “motion+direction” and the other is “stationariness+direction”. The variable of the support relation (SuppRel) only includes the value of “constitutedness”. The syntactic types of the “V + Dào” construction (SynType_VD) consist of 4 values – backward bound complements (BBC), bound complements (BC), forward bound complements (FBC) and free complements (FC). The variable of Syn-

Type_X can be a temporal noun (TempN), a temporal clause (TempC) or a temporal adjective (TempA). The internal event integration of the verb (IEI_V) contains only two values, one is “motion + constitutedness” and the other is “stationariness + constitutedness”. In the internal event integration of “Dào” (IEI_D), its values keep in line with the variable of AssoFun – one is “motion+direction” and the other is “stationariness+direction”. EEI_VD belongs to the temporal contouring event, and EEI_Type is a verb-phase construction (VPha). Since the correlation analysis cannot calculate the variable that contains only one value in the temporal contouring event, we only take the variables of FigEnt_Anim, ActiPro, AssoFun, SynType_VD, SynType_X, IEI_V and IEI_D into consideration.

In line with the structure and summary of the data in Figure 2, Figure 3 provides us with 72 instances of “V + Dào” constructions in temporal contouring events. In other words, it also indicates the distribution of frequencies and proportions in the variable of “Chin_VD”.

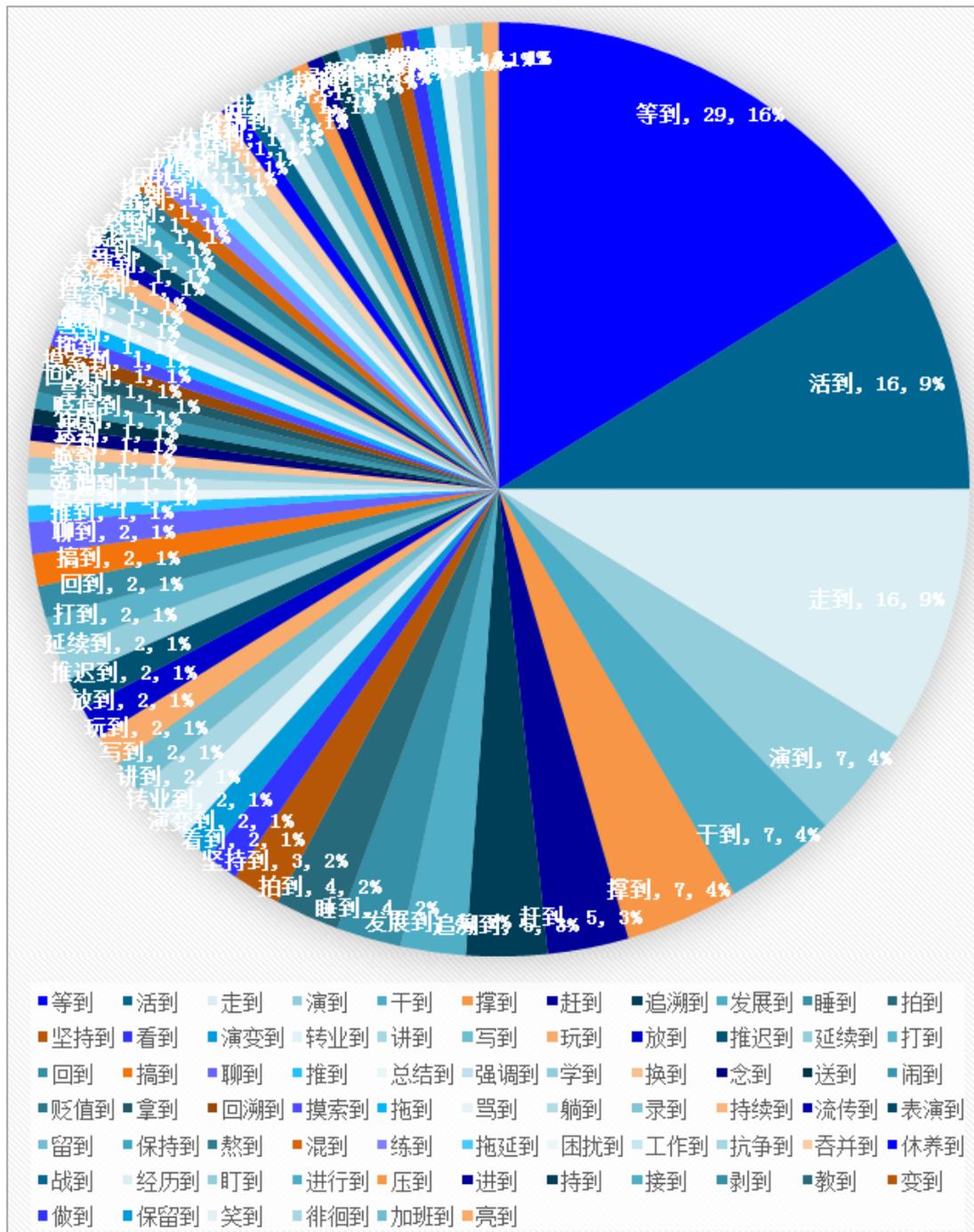


Figure 3. The pie chart of Chin_VD in temporal contouring events.

In Figure 3, the whole distribution of Chin_VD is visualized in terms of temporal contouring event. The top ten frequent values in the variable of Chin_VD can be listed as follows, “等到 (wait until, frequency = 29)”, “活到 (live until, frequency = 16)”, “走到 (develop/become until, frequency = 16)”, “演到 (perform until, frequency = 7)”, “干到 (do, frequency = 7)”, “撑到 (hold on until, frequency = 7)”, “赶到 (keep pace with, frequency = 5)”, “追溯到 (trace back to, frequency = 5)”, “发展到 (develop to, frequency = 4)”, “睡到 (sleep until, frequency = 4)”, and “拍到 (shoot until,

frequency = 4)”. We find that some “V + Dào” constructions, such as “走 (walk/develop, frequency = 16)”, are also distributed in motion events or state change events. The difference among them lies in the ground entity which can be held as the criterion for the classification of macro-event types.

Aligned with the research inquiries of this investigation, we will delve into and scrutinize “V + Dào” constructions pertaining to temporal contouring events. Specifically, we will examine and analyze these constructions in terms of their event semantics, syntactic properties, and event integration patterns.

4. Event Semantics of “V + Dào” Constructions as Temporal Contouring Events

Since the variables of FigEnt_Agen, GroEnt and SuppRel contains only one value, these variables cannot be calculated in the correlation analysis. On this account, we only discuss the variables of FigEnt_Anim (together with FigEnt_Agen), ActiPro and AssoFun in terms of the event semantics of temporal contouring events.

The temporal contouring events involve two circumstances. The first type can express the meaning of “starting”, “stopping”, “continuing”, “remaining unmanifested”, “iterating”, “intensifying”, and “tapering off”. The figural entity of this type is about the degree of manifestation of an event; the second type expresses the meaning of “finishing” in the temporal contouring event, and the figural entity of this type is the affected object itself. As the degree of manifestation of an event or the affected object, the variable of FigEnt_Agen has only one value, which means all the figural entities in temporal contouring events are non-agentive. As the affected object in the figural entity can be animate or inanimate, the variable of FigEnt_Anim can have 2 values, one is animate, and the other is inanimate. Since FigEnt_Agen is combined together with the variable of FigEnt_Anim in the figural entity, we will consider them together in our analysis. Table 4 shows us the relationship between FigEnt_Agen and FigEnt_Anim in temporal contouring events.

Table 4. Agency and animacy features of figure entities in temporal contouring events.

FigEnt_Anim FigEnt_Agen	FALSE	TRUE	Total
FALSE	172	8	180 (100%)
TRUE	0	0	0 (0%)
Total	172 (96%)	8 (4%)	180 (100%)

As Table 4 indicates, the most frequent value in FigEnt_Anim is the false value. The two combinations between FigEnt_Agen and FigEnt_Anim are illustrated in the following examples.

- (1) 这个话我们放到以后再说。
zhè gè huà wǒ men fàng dào yǐ hòu zài shuō
this topic, we put arrive later again talk
This topic, we put it later to talk.
- (2) 当一个公司成长到一定规模的时候。
dāng yī gè gōng sī chéng zhǎng dào yī dìng guī mó de shí hòu
when a company develop arrive a certain size time
When a company develops to a certain size.
- (3) 如果你活到今天。

- rú guǒ nǐ huó dào jīn tiān
if you live arrive today
If you live until today.
- (4) (她)然后睡到十一点。
(tā) rán hòu shuì dào shí yī diǎn
(she) then sleep arrive eleven o'clock
Then (she) slept until eleven o'clock.

All the sentences from (1) to (4) belong to the first type of temporal contouring events, and the figural entities denote the degree of manifestation of the event, which are not in accordance with the subjects in the sentences. In example (1), the figural entity represents the degree of “talking about the topic”, for this event can be talked earlier or later at any time, and it bears the “unmanifested” meaning in the ground entity of “time”. Moreover, this unmanifested figural entity is “the topic” discussed by “us”, thus it is non-agentive and inanimate. In example (2), the figural entity represents the degree of “the development of the company”, which expresses the “intensifying” meaning in the temporal contouring event. As the company should be developed by people, the figural entity is non-agentive and inanimate. Both example (3) and (4) indicate the “continuing” meaning in the ground entity of “time”. The figural entity in (3) represents the degree of how the person’s life is continued, and in (4) it stands for the degree of “continuing sleeping”. Since these events are respectively performed by “you” and “she”, the figural entities are non-agentive and inanimate. All the ground entities in examples from (1) to (4) relate to the particular points of time. However, in another type of temporal contouring events, the ground entities can also pertain to the periods of time. See example (5) and (6).

- (5) 你可能也活不到半年。
nǐ kě nǎng yě huó bú dào bàn nián
you maybe also live no arrive half a year
Maybe you can live less than half a year.
- (6) (我)平均一天只睡到两个多小时。
(wǒ) pǔn gūn yī tiān zhǐ shuì dào liǎng gè duō xiǎo shí
(I) average one day only sleep arrive a little more than two hours
(I) only sleep for a little more than two hours a day.

These instances above belong to the second type of temporal contouring event, in which the figural entity is “the affected object itself” (Talmy 2000b: 231). In this sense, the figural entity in each type of the temporal contouring event is non-agentive. For instance, the figural entity in (5) is “you” who is affected by the event that “cannot live for half a year”, in (6) it is “I” who is affected by the event of “only sleeping for a little more than two hours a day”. Therefore, these figural entities are non-agentive but animate. The figural entity in (5) expresses the “finishing” meaning in a negative way, that is, “I cannot finish the task of living more than half a year”. Similarly, in (6), the figural entity means that the event is finished by “sleeping for a little more than two hours a day”.

When calculating the correlation coefficient between the FigEnt_Anim and the distribution of “V + Dào” construc-

tions in temporal contouring events, the distribution of “V + Dào” constructions does not share the correlation with FigEnt_Anim ($t=-0.05, p>0.05$).

The variable of ActiPro has the same values as those in motion events. Table 5 shows us the distribution of the activating process in temporal contouring events. The conceptual primitive “motion” still has a higher frequency than “stationariness” in temporal contouring events.

Table 5. The distribution of activating processes in temporal contouring events.

ActiPro	Motion	Stationariness	total
Frequency	106	74	180
Percentage	59%	41%	100%

From example (1) to (6), both “放到 (put to)” and “成长到(develop to)” express the value of the motion in ActiPro, “活到 (live until/for)” and “睡到 (sleep until/for)” signify the value of the stationariness in ActiPro. When the variable of ActiPro is calculated by means of correlation analysis, the result shows that it bears no relationship with the variable of Chin_VD ($t=0.02, p>0.05$).

5. Syntactic Properties of “V + Dào” Constructions as Temporal Contouring Events

In this Section, two variables of SynType_VD and SynType_X are taken into consideration. The values of SynType_X are more complicated than those in motion events, which include 6 values. Their distribution is summarized in Table 6 and visualized in Figure 4.

Table 6. The distribution of syntactic properties in temporal contouring events.

SynType_X SynType_VD	TempN	TempC	TempA	Total
BBC	95	7	2	105
FC	40	26	0	65
FBC	7	1	0	8
BC	2	0	0	2
Total	144	33	2	180

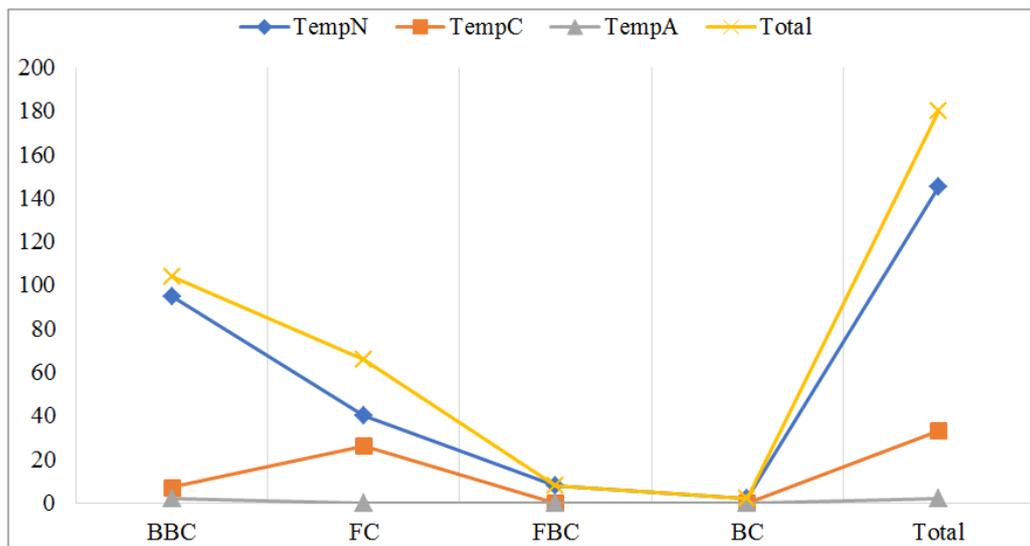


Figure 4. The line chart of syntactic properties in temporal contouring events.

In Table 6 and Figure 4, we find that there are 8 combinations between SynType_VD and SynType_X in total. The most frequent value of SynType_VD is BBC, the most frequent value of SynType_X is TempN, and their most frequent combination is “BBC+TempN”.

When the values of SynType_X are realized by temporal nouns (TempN), there are four combinations between Syn-

Type_VD and SynType_X. ① BBC+TempN. In example (2), (3) and (4), the temporal nouns are represented by “一定规模的时候(the time of being a certain size)”, “今天(today)” and “十一点(eleven o'clock)”. The SynType_VD in example (2), (3) and (4) are all BBC, for we can only say “到一定规模的时候(to the time of being a certain size)”, “到今天

(until today)”, and “到十一点(until eleven o’clock)”, but not “*成长到一定规模的时候(*develop the time of being a certain size)”, “*活到今天(*live today)”, and “*睡到十一点(*slept eleven o’clock)”. ② FC+TempN. In example (1), the SynType_VD is FC, for we can both express “放以后再说(put later to talk)” and “到以后再说(till later to talk)”. ③ FBC+TempN. In example (5) and (6), we can only accept “活不了半年(cannot live half a year)” and “睡两个多小时(sleep for a little more than two hours a day)”, but not “*到半年(*arrive half a year)” and “*到两个多小时(*arrive a little more than two hours a day)”. The reason is that these verbs in example (5) and (6) are durable for the period time, but “到(Dào)” is not durable, signifying a particular point of time. ④ BC+TempN. In example (7), the value of SynType_VD is BC, for we can accept neither “*我给看两岁半(*I take care two and a half years old)” nor “*我给到两岁半(*I arrive two and a half years old)”.

(7) 小孙女儿三岁多了, 我给看到两岁半。

xiǎo sūn nǚ ǎ sān su ǐduō le, wǒ gěi k àn d ào liǎng su ǐb àn
the little granddaughter three years old more Asp, I GEI
take care arrive two and a half years

My little granddaughter is more than three years old, and I take care (her until she is) two and a half years old.

When the value of SynType_X is a temporal clause (TempC), there are two combinations between SynType_VD and SynType_X. ⑤ FC+TempC. In example (8), the value of SynType_VD is FC, for we can say “等你小孩 18 (waiting until your child is 18 years old)” or “到你小孩 18 (until your child is 18 years old)”. ⑥ FBC+TempC. In example (9), the value of SynType_VD is FBC, for we can only say “到咱们孩子毕业了(until/when our child graduated)” but not “*赶上咱们孩子毕业了(*catching up with our child graduated)”.

(8) 等到你小孩 18 岁。

děng d ào nǐ xiǎo h ái 18 su ì
wait arrive your child 18 years old

Waiting until your child is 18 years old.

(9) 赶到咱们孩子毕业了。

gǎn d ào z á n men h á i zǐ b ì le y è
catch up arrive our child graduate Asp

Catching up with (the time that when) our child graduated.

When the value of SynType_X is a temporal adjective (TempA), there is only one combination between SynType_VD and SynType_X, that is, ⑦BBC+TempA. In example (10), the value of SynType_VD is BBC, we can use the “question-answer” method to test its acceptability. When we ask “你觉得赵薇能够到啥时候(how old will you think about that Zhao Wei can act)”, we can say “我觉得她能够到很老(I think until she is very old)”, but not “*我觉得她能够演很老(*I think she can act very old)”.

(10) 我觉得赵薇能够演到很老。

wǒ ju é d é Zhao Wei n éng g ò u yǎn d ào h ěn lǎo
I think Zhao Wei can act very old

I think Zhao Wei can act (until she is) very old.

According to the correlation analysis, the variables of SynType_VD and SynType_X are moderately correlated with each other ($t = -0.33, p < 0.01$). Moreover, both SynType_VD ($t = 0.13, p < 0.05$) and the SynType_X ($t = -0.20, p < 0.01$) bear a weak correlation with Chin_VD.

6. Event Integration Patterns of “V + Dào” Constructions as Temporal Contouring Events

In this Section, we will discuss the variables of IEI_V, IEI_D, EEI_VD and EEI_Type in the event integration patterns of temporal contouring events.

Firstly, as indicated in Table 7, the variable of IEI_V only contains two values, one is “motion+constitutedness” (frequency = 106) and the other is “stationariness+constitutedness” (frequency = 74). See Table 7.

Table 7. The format and the distribution of IEI_V and IEI_D in temporal contouring events.

Format	IEI_V	IEI_D	Frequency	Examples
2 (Two conceptual primitives are conflated in IEI_V and IEI_D)	motion+constitutedness	motion+direction	106 (60%)	我觉得赵薇能够演到很老。(I think Zhao Wei can act (until she is) very old.)
	stationariness+constitutedness	stationariness+direction	74 (40%)	我平均一天只睡到两个多小时。(I only sleep for a little more than two hours a day.)
Total			180 (100%)	

Secondly, in Table 7, the variable of IEI_D is corresponded to IEI_V. IEI_D also includes two values, one is “motion+direction”, and the other is “stationariness+direction”.

The value of “direction” means that the figural entity is unfolded during the ground entity of “time”.

Thirdly, in the external event integration, the variable of

EEI_VD belongs to the temporal contouring event in general, and it is realized by the combination of IEI_V and IEI_D. The

external event integration patterns of “V + Dào” constructions as temporal contouring events can be exhibited in Table 8.

Table 8. The format and the distribution of EEI_VD in temporal contouring events.

Format	EEI_VD	Frequency	Total
2+2	(motion+constitutedness)+(motion+direction)	106	106 (60%)
	(stationariness+constitutedness)+(stationariness+direction)	74	74 (40%)
Total	2	180	180 (100%)

The frequencies in Table 7 and Table 8 are the same. The variables of IEI_V and IEI_D are fully correlated with each other ($t=1$, $p<0.01$), but both of them almost bear no correlations with the variable of the “V + Dào” construction in temporal contouring events ($t=0.02$, $p>0.05$).

The internal event integration occurs both in IEI_V and in IEI_D. The internal event integration patterns in IEI_V and IEI_D can be formatted as “2” in temporal contouring events. Since the variable of EEI_VD equals IEI_V and IEI_D, it can be formatted as “2+2”. EEI_VD is simply formatted as “2+2”, however, it is the conceptual mapping and conceptual overlap that combine IEI_V and IEI_D together as a unitary event of EEI_VD. Taking “等到 (wait until)” as an example, the shared conceptual primitive of “stationariness” is mapped between “等 (wait)” and “到 (till/until)”. In addition, the verb “等 (wait)” provides a conceptual slot of the “direction” in time, which is filled and realized by the verb “到 (till/until)”. Alternatively, the verb “到 (till/until)” also provides a conceptual slot of “constitutedness” for the verb “等 (wait)”. Therefore, both “等 (wait)” and “到 (till/until)” are overlapped with each other and fused as a unitary event.

Finally, as for the last variable of EEI_Type, it has only one value. That is, “V + Dào” constructions are all verb-phase constructions (VPha) in temporal contouring events.

7. Conclusion

This paper examines “V + Dào” constructions within temporal contouring events from three perspectives: event

semantics, syntactic properties, and event integration patterns. In response to the research inquiries, our primary findings are presented in two aspects.

(1) Regarding the event integration patterns of “V + Dào” constructions in temporal contouring events, our analysis reveals the following:

①Internal event integration patterns of IEI_V are characterized by “motion+constitutedness” and “stationariness+constitutedness,” with conceptual primitives consolidated in IEI_V formatted as “2.”

②Internal event integration patterns of IEI_D manifest as “motion+direction” and “stationariness+direction,” with conceptual primitives fused in IEI_D also formatted as “2.”

③External event integration involves the variable of EEI_VD, encompassing two external event integration patterns formatted as “2+2” or “3+2.” Here, IEI_V and IEI_D can merge through shared conceptual primitives of motion or stationariness, offering conceptual slots for each other.

④All “V + Dào” constructions are categorized as verb-phase constructions (VPha).

(2) The second aspect pertains to the correlations between event integration patterns of “V + Dào” constructions and their semantic/syntactic properties within temporal contouring events. Given that variables like EEI_VD and EEI_Type have only one value, IEI_V and IEI_D variables are computed with other variables in internal event integration, while VD_Chin is considered solely in external event integration calculations.

Table 9 presents all correlation coefficients among the variables of “V + Dào” constructions in temporal contouring events.

Table 9. The correlation coefficients among the variables in temporal contouring event.

IEI_TempConE vt	VD_Chin	Fi- gEnt_Agen	Fi- gEnt_Anim	Acti- Pro	Asso- Fun	Sup- pRel	Syn- Type_VD	Syn- Type_X	IEI_V	IEI_D	EEI_Type
VD_Chin	1	NA	*-0.05	*0.02	*0.02	NA	0.13	-0.20	*0.02	*0.02	NA
FigEnt_Agen	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FigEnt_Anim	*-0.05	NA	1	0.2	0.2	NA	*0.09	*0.10	0.2	0.2	NA

IEI_TempConE	VD_Chin	Fi-gEnt_Agen	Fi-gEnt_Anim	Acti-Pro	Asso-Fun	Supp-Rel	Syn-Type_VD	Syn-Type_X	IEI_V	IEI_D	EEI_Type
ActiPro	*0.02	NA	0.2	1	1	NA	0.47	-0.34	1	1	NA
AssoFun	*0.02	NA	0.2	1	1	NA	0.47	-0.34	1	1	NA
SuppRel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SynType_VD	0.13	NA	*0.09	0.47	0.47	NA	1	-0.33	0.47	0.47	NA
SynType_X	-0.20	NA	*0.10	-0.214	-0.34	NA	-0.33	1	-0.34	-0.34	NA
IEI_V	*0.02	NA	0.2	-0.34	1	NA	0.47	-0.34	1	1	NA
IEI_D	*0.02	NA	0.2	1	1	NA	0.47	-0.34	1	1	NA
EEI_Type	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

In Table 9, the correlation coefficients in IEI_V are the same as those in IEI_D, thus, both of them are fully correlated with each other ($t=1, p<0.05$).

In the internal event integration, both the variables of IEI_V and IEI_D are strongly correlated to ActiPro and AssoFun in event semantics, moderately correlated to Syn-

Type_VD and SynType_X in syntactic properties, and weakly correlated to FigEnt_Anim. The degree of these influential variables can be ordered as “(ActiPro > AssoFun) > (SynType_VD > SynType_X) > (FigEnt_Anim)”, and their correlation coefficients are visualized in Figure 5.

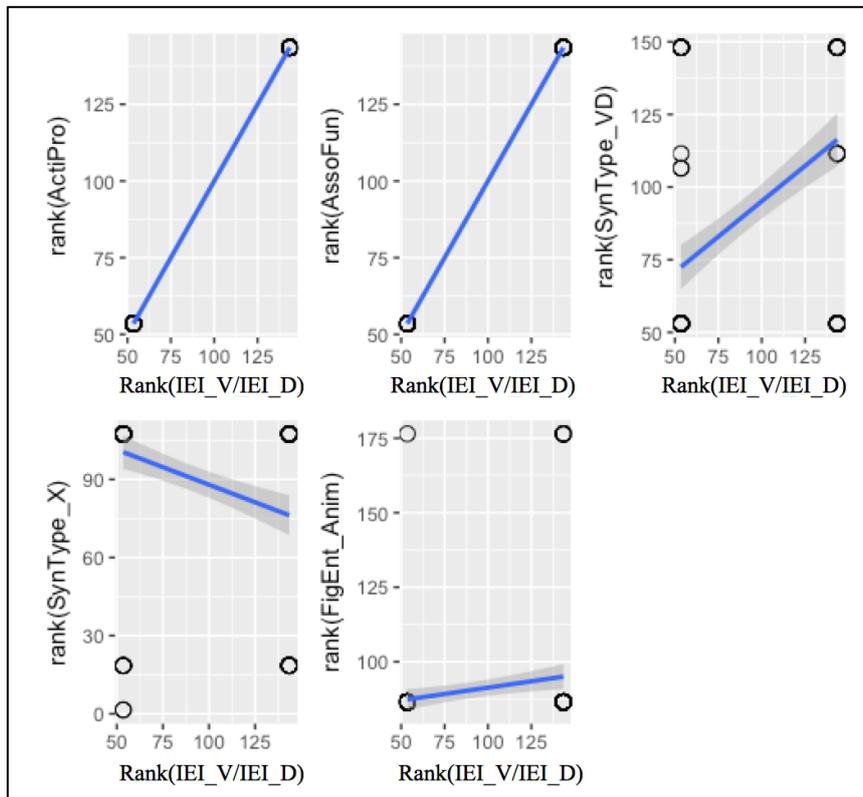


Figure 5. The visualization of the correlations between the variables and IEI_V/IEI_D in temporal contouring events.

In the external event integration related with the variable of Chin_VD, only the variables of SynType_VD and SynType_X bear some weak correlations with it, and the correlated order between them can be ranked as “SynType_VD > SynType_X”. See Figure 6.

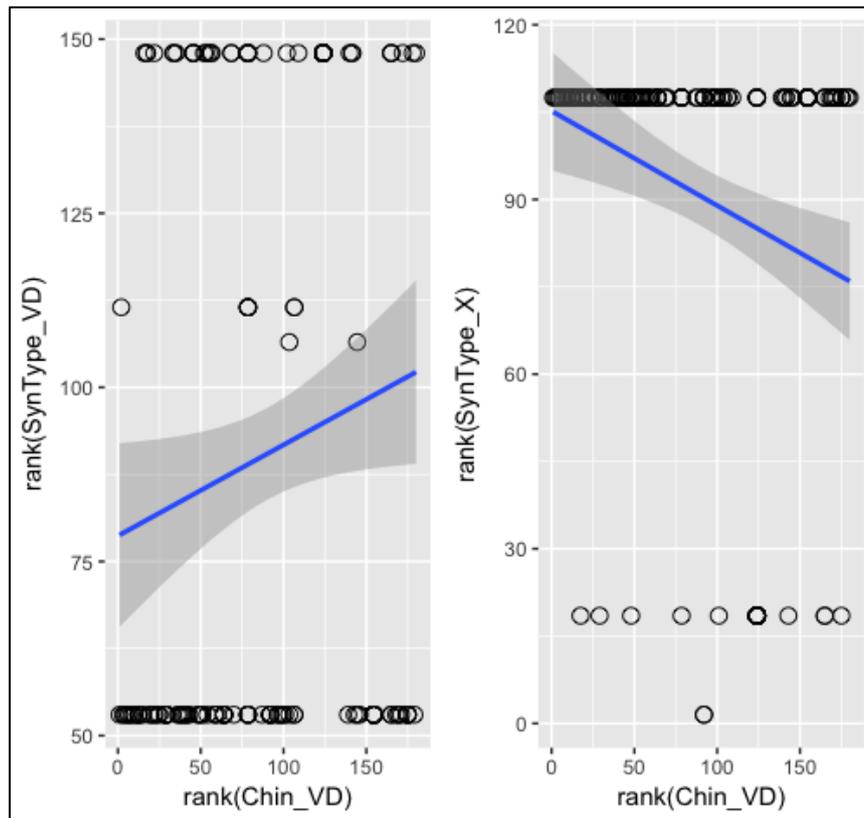


Figure 6. The visualization of the correlations between the variables and *Chin_VD* in temporal contouring events.

In Figures 5 and 6, based on our analysis, it can be deduced that both internal and external event integration patterns are somewhat responsive to the variables of *SynType_VD* and *SynTyp_X* within temporal contouring events. Consequently, in varying macro-event types, the arrangement of "V + Dào" constructions and their event integration patterns will display diverse sensitivities or correlations with semantic and syntactic variables.

From the findings of this study, it is evident that the distribution of event integration patterns among "V + Dào" constructions as temporal contouring events can be influenced by their syntactic and semantic characteristics. As "Dào" continues to encompass two conceptual primitives and retains its usage as a single preposition in Mandarin, it remains in a state of ongoing lexicalization or grammaticalization.

Abbreviations

ActCorEvt: Action Correlating Events
 ActiPro: Activating Process
 Agen: Agency
 Anim: Animacy
 Asp: The Marker of the Aspect
 AssoFun: Association Function
 BBC: Backward Bound Complements
 BC: Bound Complements
 Chin_VD: Chinese Instances of "V + Dào" Constructions

DgreA: Degree Adjectives
 DgreC: Degree Clauses
 DgreN: Degree Nouns
 EEI: External Event Integration
 EEI_Type: External Event Integration in the Verb-Complement Types of "V + Dào" Constructions
 EEI_VD: External Event Integration in "V + Dào" Constructions
 FBC: Forward Bound Complements
 FC: Free Complements
 FigEnt: Figural Entity
 FigEnt_Agen: The Agency in The figural Entity
 FigEnt_Anim: The Animacy in the Figural Entity
 GroEnt: Ground Entity
 IEI: Internal Event Integration
 IEI_D: Internal Event Integration of "Dào"
 IEI_V: Internal Event Integration of "V"
 NA: The Missing Value in R Language
 NoT: Non-Text
 PtienN: Patient Nouns
 PtienC: Patient Clauses
 StimuC: Stimulus Clauses
 StimuN: Stimulus Nouns
 SuppRel: Support Relations
 SynType_VD: The Syntactic Types of "V + Dào" Constructions
 SynType_X: The Syntactic types of "X" Postpositioning "V + Dào" Constructions

T & F: True and False Value
 TempC: Temporal Clauses
 TempConEvt: Temporal Contouring Events
 TempN: Temporal Nouns
 vd_structure: The Whole Data of “V + Dào” Constructions
 VDir: Verb-Directional Constructions
 VPha: Verb-Phase Constructions
 VRes: Verb-Resultative Constructions

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Conflicts of Interest

No potential conflict of interest was reported by the authors.

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Biography

Lin Yu is an associate professor in the Research Center of Foreign Linguistics and Applied Linguistics at Henan University, and she also serves as Director of the *Editorial Office of Foreign Studies*. Her research interests focus on cognitive linguistics, pragmatics, and linguistic typology. She has published in journals such as *System*, *The Journal of Aesthetics and Art Criticism*, *Asia Pacific Journal of Education*, *Foreign Language Teaching and Research*, *Foreign Languages and Their Teaching*, *Linguistic Research*, etc.

Xuehan Jiang is a postgraduate student in the College of Foreign Languages at Henan University. Her research interests include cognitive linguistics, reciprocal events, and Pragmatics.