

## **A Corpus-based Analysis of Semantic Type System of Event Nouns: A Case Study on *huìyì***

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Event nouns are a special type of nouns which lexically encode eventive information, including event structure and time. In this paper, we discuss a typical event noun in Chinese, *huìyì*, to find out the evidences of *huìyì* as an event, and examine the three levels of semantic representation system, i.e. argument structure, event structure and qualia structure, based on the generative lexicon theory.

### **1. Introduction**

Typical nouns are usually used to represent concrete or abstract objects, such as *chuānghu* ‘windows’ and *sīxiǎng* ‘thoughts’. However, there is a kind of nouns which lexically encode eventive information, including event structure and time. These nouns are called event nouns, temporal nouns or process nouns. They are a particular type in Mandarin Chinese. In this study, we use the term event nouns, because an “event” not only has temporal properties, but also includes activities happening in it.

The aims of this research are to find out the evidences of *huìyì* ‘conference’ as an event, and reveal its argument structure, event structure and qualia structure to establish its semantic representation system based on the generative lexicon theory (henceforth GLT).

GLT was first proposed in Pustejovsky (1991) and further developed in Pustejovsky (1995). Its goal is to capture the generative nature of lexical creativity and sense extension phenomena. GLT is a computational system composed of four levels of representation: (I) Argument Structure: the number and type of logical arguments; (II) Event Structure: event type and subeventual structure; (III) Qualia Structure: comprised of formal, constitutive, telic and agentive roles; (IV) Lexical Inheritance Structure: position of a lexical structure in the type lattice.

We adopt GLT as the theoretical basis of this study because it provides a comprehensive account of lexical semantic information of a lexical item. Qualia structure is the most important contribution of GLT which shows the semantic information of a lexical item.

Lexical inheritance structure is using a very shallow ontology in GTL, thus it will not be discussed in this paper.

The data in this study are collected from the tagged Chinese Gigaword Corpus (Second Edition)<sup>1</sup> using Chinese Word Sketch Engine<sup>2</sup>. It includes three distinct international sources of Chinese newswire, e.g. Central News Agency, Xinhua News Agency, and Zaobao Newspaper, with a total of 2,803,632 documents.

## 2. Related Research

There are various studies that focus on the patterns and properties of events nouns. Ma (1995) points out that typical nominals and predicates are related to denotation meaning and predication meaning respectively, and they are located on both ends of a continuum. Atypical nominals and predicates locate in the middle of the continuum, including nouns with predication meaning and verbs with denotation meaning.

He investigates the combination of nouns and localizers. Localizers are divided into three types:

A(spatial): *zuǒ* ‘left’ / *yòu* ‘right’ / *dōng* ‘east’ / *xī* ‘west’ / *lǐmiàn* ‘inside’ / *yǐwài* ‘outside’

B(temporal): *yǐqián* ‘before’ / *yǐhòu* ‘after’ / *dāngér* ‘when’

C(spatial or temporal): *qián* ‘before’ / *hòu* ‘after’ / *shàng* ‘on’ / *xià* ‘under’ / *zhōng* ‘middle, in the course of’

- Common nouns are words that can be followed by type A, but can not be followed by type B: such as *qiáo* ‘bridges’, *mén* ‘doors’, *yǐzi* ‘chairs’
- Process nouns are words that can be followed by type B, but can not be followed by type A: such as *zhànzhēng* ‘wars’, *léiyǔ* ‘thunderstorms’, *dàhuì* ‘large conferences’
- Both common nouns and process nouns can be followed by type C, but the former shows spatial meaning, while the latter shows temporal meaning.

Process nouns can be further divided into continuous and non-continuous ones according to whether they can be followed by *zhōng* ‘in the course of’. Continuous process nouns are able to collocate with durative temporal expressions, e.g. *zhànzhēng* ‘wars’, *léiyǔ* ‘thunderstorms’, while non-continuous ones are in collocation with punctual temporal expression, e.g. *jīntiān* ‘today’, *yuándàn* ‘New Year's Day’.

Secondly, process nouns can combine with activity classifiers, for examples:

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<sup>1</sup> <http://www ldc.upenn.edu/Catalog/CatalogEntry.jsp?catalogId=LDC2007T03>

<sup>2</sup> <http://wordsketch.ling.sinica.edu.tw/>

*yī cì huìyì/zhànzhēng/chēhuò/shìgù/shǒushù* (a conference/a war/a car accident/an accident/a surgery)

*yī cháng yǔ/xuě/fēng/bīngbáo/bìng/xì/zhànzhēng* (rain/snow/wind/hail/a disease /a drama/a war)

*yī dùn fàn* ‘a meal’

Chu (2000) proposes three formats in identifying event nouns as shown below:

(I) N + *qī jiān* ‘during’

(II) N + *qián* ‘before’/*hòu* ‘after’/*yǐqián* ‘before’/*yǐhòu* ‘after’/*zhīqián* ‘before’/*zhīhòu* ‘after’

(III) N + *shíqī/shídài* ‘epoch’, including N + *shíhou* ‘during’, N + *niándài* ‘era’, N + *jiēduàn* ‘period’/*shíguāng* ‘time’

Type I and type III look at the time flow of these nouns from the internal aspect, including starting point, continuity, and ending point. Type II looks at the time flow of these nouns from the external world. According to the above three formats that nouns can enter into, they are divided into five classes:

Class A can only enter type II, including:

- A1: monosyllabic words, e.g. *bìng* ‘diseases’, *fàn* ‘meals’, *huì* ‘conferences’, *kè* ‘lessons’, *shì* ‘things’, *shuāng* ‘frost’, *yǔ* ‘rain’, *xuě* ‘snow’
- A2: nouns whose last morpheme is *qī* ‘period’, e.g. *huìqī* ‘conference period’, *xùngqī* ‘flood period’, *wēixiǎnqī* ‘dangerous period’, *jiàqī* ‘holidays’
- A3: activities or events with a short duration, e.g. *shǎndiàn* ‘lightening’, *kōng nà* ‘aircrashes’, *bàizhàng* ‘lost battles’, *shìgù* ‘accidents’, *cǎn’àn* ‘tragedies’, *chēhuò* ‘car accidents’
- A4: participants in an event, e.g. *wǔfàn* ‘lunch’, *zǎochá* ‘morning tea’, *zǎodiǎn* ‘breakfast’, *yèxiāo* ‘late snacks’, *zuòwén kè* ‘writing classes’

Class B can only enter type III. Most words represent human beings or things, e.g. *tángtàizōng shíqī* ‘the period of Emperor Taizong of Tang’, *sānyèchóng shídài* ‘the era of trilobites’.

Class C can enter any two types, including:

- C1 can only enter I and II. One type is representing activities, and is longer than A3, e.g. *shǒushù* ‘operations’, *wǎnyàn* ‘dinners’, *dàhuì* ‘large conferences’, *línyù* ‘showers’. The other type is words with *jià* ‘holidays’ as a morpheme, e.g. *hánjiǎ* ‘winter vacation’, *hūnjiǎ* ‘marriage leave’, *bìngjià* ‘sick leave’.
- C2 can only enter I and III, e.g. *dàxué* ‘universities’, *chūzhōng* ‘junior high schools’.
- C3 can only enter II and III. These are nouns representing people, works and dynasties.

Class D can enter I, II, and III. They represent activities, events or natural phenomena, e.g. *gémìng* ‘revolutions’, *zhànzhēng* ‘wars’, *yùndòng* ‘sports’, *jiāoyì* ‘trades’, *shìbiàn* ‘incidents’, *bǐsài* ‘competition’, *léiyǔ* ‘thunderstorms’, *táifēng* ‘typhoons’, *rìshí* ‘eclipses’.

Class E cannot enter any of the three formats.

With the above analysis, Chu (2000) sum up the temporality of nouns with a sequence from strong to weak: ①according to classes: D > C > A > B > E; ②according to semantics: activities, events or phenomena nouns > human or object nouns, concrete nouns > non-concrete nouns, humanity nouns > natural nouns, distinctive feature nouns > non-distinctive feature nouns, internal temporal nouns > external temporal nouns.

Wang & Zhu (2000) propose a way of subcategorizing nouns according to the classifiers that nouns can be in collocation with. Process nouns can only be modified by activity classifiers or temporal classifiers, e.g. *yī chǎng yǒuyì sài* ‘a friendly competition’, *yī zhèn léiyǔ* ‘a burst of thunderstorms’, *yī dùn wǎncān* ‘a dinner’, and *shí nián nèizhàn* ‘a decade of civil wars’.

Han (2010) proposes three formats to identify event nouns: (a) numeral + verbal classifier + \_\_\_\_; (b) \_\_\_\_ + *hòu* ‘after’; (c) \_\_\_\_ + *zhōng* ‘in the course of’.

Format I is the best frame and Format II is a preferred frame in determining event nouns. They have general application to prototype event nouns. Format III is just an aiding frame in determining event nouns.

From the above mentioned research, we know that a consensus that a noun followed by *qián* ‘before’ or *hòu* ‘after’ expresses temporal meaning, the noun is an event noun. Also, activity classifiers can be used to detect event nouns. In section 3, we will follow the two formats to check *huìyì*.

However, there are some problems with previous research: Ma (1995) regards temporal nouns, e.g. *jīntiān* ‘today’ and *yuándàn* ‘New Year’s Day’, as event nouns. In our study, we hold that these nouns only have temporal properties, but do not have event properties. So we do not treat them as event nouns. For Chu (2000), we argue that A2(nouns whose last morpheme is *qī*), C1(nouns with *jià* as a morpheme) and C2(e.g. *dàxué* ‘universities’, *chūzhōng* ‘junior middle school’) should belong to the same category, because they all purely express time. For this reason, they should have strongest time adaptation, instead of words of class D.

Previous studies have given us a picture of the properties of event nouns. Some questions, however, remain unexplored. In the following sections, we will discuss the three problems: (1) Why *huìyì* can be treated as an event? (2) What is *huìyì*’s semantic

representation, e.g. argument structure, event structure and qualia structure? (3)How to represent *huìyì*'s semantic type system?

### 3. Evidences of *huìyì* as an Event

The word *huìyì* has two basic senses: one is a formal meeting for consultation or discussion, the other is an organization that usually discusses and deals with important issues, such as *zhōngguó rénmin zhèngzhì xiéshāng huìyì* (Chinese People's Political Consultative Conference). *huìyì* on the first sense is regarded as an event, while the second is not.

In this section, we will use four formats to prove that *huìyì* is an event noun.

#### 3.1 *huìyì* + *qián* 'before' / *hòu* 'after'

(Chu 2000; Han 2010; Liu 2004; Ma 1995) all hold that when a noun followed by *qián* 'before' or *hòu* 'after' expresses temporal meaning, the noun is an event noun. The following examples show that *huìyì* can collocate with *qián* 'before' and *hòu* 'after', which indicate *huìyì*'s boundaries and distinguish it from other events. In (1), before the conference event, there is another event that the stock market is rising. In (2), after the conference event, there will be an event of studying an issue.

(1) jīngjì huìyì qián gǔshì jiāng chíxù shàngzhǎng 。

Economy conference before stock market will continue rise  
'The stock market will continue rising before the economy conference.'

(2) zhè cì huìyì hòu, jiù yào zhuòshǒu yánjiū zhè gè wèntí 。

This classifier conference after, should will set about study this CL issue  
'After this conference, (we) should set about studying this issue.'

#### 3.2 *huìyì* + Durative Temporal Expression

*huìyì* can be modified by durative temporal expression as shown in (3). It means that *huìyì* is an event with process.

(3) jīntiān de huìyì jìnxíng le qī gè duō xiǎoshí 。

Today DE conference go on ASP seven CL more hour  
'Today's conference went on for over seven hours.'

This process can be interrupted, for example:

(4) huìyì měi jìnxíng liǎng gè xiǎoshí jiù yǒu yī cì cháxiē 。

Conference every go on two classifier hour at once have one CL tea break  
'There is a tea break every two hours during the conference.'

Also, this process has starting point and ending point:

(5) běn cì huìyì cóng liùyuè qīrì kāishǐ 。

this CL conference from June seventh start

‘This conference starts from June 7<sup>th</sup>.’

(6) zhōng fǎ gōngyè hézuò huìyì yuánmǎn jiéshù 。  
China France industry cooperation conference satisfactory end

‘Sino-French industrial cooperation conference comes to a successful ending.’

### 3.3 Numeral/Demonstrative + Event Classifier + *huìyì*

Huang et al. (1997) distinguish event classifiers from activity classifiers. The former is used to enumerate the number of events, e.g. *yī bǐ shēngyì* ‘a deal of business’; the latter is used to enumerate the times of action, e.g. *qù le yī tàng* ‘went once’. Moreover, the former usually appear before the enumerated event; the latter usually appear after the enumerated action. Huang & Ahrens (2003) further point out that an event classifier can coerce an event reading from a noun.

Huang et al. (1997) list 35 event classifiers: *bō* ‘of staggered event’, *bān* ‘of shift, scheduled flight/bus etc.’, *bǐ* ‘of transaction’, *bù* ‘step (event procedures)’, *pào* ‘a brewing (of tea etc.)’, *pán* ‘a serving round (of a dish)’, *mù* ‘act (of a play)’, *fān* ‘times (of a repeated event)’, *dào* ‘of dishes of procedures’, *dàng* ‘duration of a run (of play, movie etc.)’, *duàn* ‘section (of play etc.)’, *dùn* ‘the process of a meal’, *tái* ‘a run of a traveling troupe’, *táng* ‘a class’, *tàng* ‘a journey’, *tōng* ‘a phone call’, *lún* ‘a round’, *huí* ‘a roundtrip’, *jié* ‘a class, a session’, *jiè* ‘an annual event’, *jiàn* ‘event’, *jú* ‘game’, *qī* ‘term’, *qǐ* ‘event (especially a happening, an accident)’, *quān* ‘round (of majong)’, *xí* ‘lecture’, *zhé* ‘an act (in a Chinese play)’, *zhèn* ‘one of a sporadic event(s)’, *zhuāng* ‘event’, *chǎng* ‘a (scheduled) event (with beginning and ending)’, *chū* ‘a play’, *rèn* ‘term (of a termed position)’, *zōng* ‘trade/transaction’, *cān* ‘a meal’, *cì* ‘once (re. frequency of event)’.

*huìyì* can combine with four of them: *lún*, *jiè*, *chǎng*, *cì*. Besides, *huìyì* can also combine with *dù* ‘frequency of an event’, which is an event classifier similar to *cì*.

*dù* can directly modify *huìyì* to enumerate the times of the conference, which shows that *huìyì* is an event noun, For example:

(7) měi nián yī dù de zhōng rì jīngjì mào yì huìyì  
every year one CL DE China Japanese economy trade conference  
‘the annual meeting of the Sino-Japanese economic and trade conference’

(8) yī nián yī dù de yà tài jīng hé huìyì  
one year one CL DE Asia Pacific economy cooperation conference  
‘the annual meeting of the Asia-Pacific Economic Cooperation conference’

Table 1 depicts the frequency and saliency when *huìyì* combines with event classifiers in tagged Chinese Gigaword (Second Edition). It shows that *cì* and *jiè* are the two most salient event classifiers of *huìyì*, followed by *chǎng*, *lún* and *dù*.

Table 1: Event Classifiers the modify *huìyì*

Event Classifiers	Frequency	Saliency	Examples
<i>cì</i> ‘once (re. frequency of event)’	94477	100.13	xiǎozǔ jiāng zài běnzhōu wǔ zài zhàokāi yī <u>cì huìyì</u> 。 ‘This group will convene another meeting on Friday.’
<i>jiè</i> ‘an annual event’	12471	65.05	běn jiè <u>huìyì</u> tāolùn zhǔtí wéi gōngyè jí kējì hézuò 。 ‘The discussion themes of this conference are industrial and technological cooperation.’
<i>chǎng</i> ‘a (scheduled) event (with beginning and ending)’	660	19.78	zuìhòu yī <u>chǎng huìyì</u> zhǔyào tàntǎo zázhi de fāzhǎn 。 ‘The final session of this conference is to probe into the development of journals.’
<i>lún</i> ‘a round’	185	17.27	sàimòdá de hǎigǎng gōngsī guòqù 10 gè yuè zhàokāi le jǐ <u>lún gāocéng huìyì</u> 。 ‘Seaport Terminal of Syed Mokhtar held several rounds of high-level meetings in the past 10 months.’
<i>dù</i> ‘frequency of an event’	50	1.48	shuāngfāng zhàokāi guò shù <u>dù dāngjúzhě huìyì</u> 。 ‘The two sides held authority meetings several times.’

### 3.4 *huìyì* + *hé* ‘and’ / *jí* ‘and’ / *huò* ‘or’

If *huìyì* is an event, then the word that coordinates with it should be an event as well. Such coordination is connected by *hé* ‘and’, *jí* ‘and’ or *huò* ‘or’. For examples, *huìyì hé qìngdiǎn* ‘conferences and celebrations’, *huìyì jí shāngzhǎn* ‘conferences and trade shows’, *huìyì huò jiǎngzuò* ‘conferences or seminars’. Since *qìngdiǎn* ‘celebrations’, *shāngzhǎn* ‘trade shows’, *jiǎngzuò* ‘seminars’ are all events, *huìyì* is correspondingly an event.

## 4. Argument Structure of *huìyì*

### 4.1 *huìyì* can Assign Argument Roles

In this section, we argue that *huìyì* can assign argument roles to its participants. The reasons are:

First, many verbs in collocation with *huìyì* are light verbs which do not contain much content and do not assign participant role, for examples, *zuò* ‘作, make’, *zuòchū* ‘作出, make’, *zuò* ‘做, make’, *zuòchū* ‘做出, make’. So we need to look for it somewhere else, for instance, from the event noun.

(9) jīntiān de huìyì méiyǒu zuòchū rènhé juéyì。  
today DE conference not have make any resolution  
'Today's meeting did not make any resolution.'

Second, typical verbs, such as *tōngguò* 'pass', *xuānbù* 'announce', *xiūgǎi* 'revise', *shēnchá* 'examine' can assign argument structure.

(10) huìyì tōngguò/xuānbù/xiūgǎi/shēnchá le juéyì  
conference pass/announce/revise/examine ASP proposal  
'The conference passed/announced/revised/examined the proposal.'

(11) zhōngdōng héping huìyì jǔxíng zàijí。  
Middle East peace conference hold soon  
'Middle East peace conference is to be held soon.'

However, *huìyì* itself does not meet the selectional requirement of these words. Instead, the participant role specification of these words comes from the qualia structure of *huìyì*. It is the people who attend the conference *pass/announce/revise/examine* the proposal. Thus these words are the telic role of *huìyì*.

#### 4.2 Argument Types of *huìyì*

Pustejovsky (1995) distinct four types of arguments: true arguments, default arguments, shadow arguments, true adjuncts. True arguments are syntactically realized words, e.g. *Julia* came. Default arguments are words that participate in the logical expression in the qualia, but they do not need to be expressed syntactically, e.g. Bill made the table *out of rosewood*. Shadow arguments are words that are lexicalized into the lexical item and they can only be expressed by subtyping or discourse specification; otherwise, they will lead to pleonasm. For example, Evan kicked the door *with his left leg*. True adjuncts are words that modify the logical expression, but are not fastened to any lexical item's semantic representation, e.g. Lucy goes shopping *in Harbor City*. In the following section, we will show that *huìyì* takes two default arguments as core arguments, and takes a variety of true adjuncts as modification.

##### 4.2.1 Default Arguments of *huìyì*

*huìyì* is a kind of event attended by some people with common interests on a particular topic. Thus interlocutors and a topic are the arguments of *huìyì*. They have the following characteristics:

First, both of them are default arguments, which are not necessarily expressed syntactically. However, even when they do not appear syntactically, they are presupposed by the *huìyì* event and can usually be found before or after the sentence that does not contain them.



### (I) Interlocutors

(12) běiyuēzǔzhī zhàokāi tèbié shǒunǎo huìyì 。 (expressed syntactically)

NATO hold special head conference

‘NATO held a special summit.’

(13) huìyì yǐ yuánzé tōngguò zài wèilái shí nián nèi jiàn shè

conference already principle pass in future ten year within construct

「 sānxiá gōngchéng 」 de juédìng 。 (not expressed syntactically)

Three Gorges Project DE resolution

‘The conference has passed in principle the resolution of constructing Three Gorges Project in the next ten years.’

### (II) Topic

(14) zhōng jiā gāoděngjiàoyù huìyì zài jiānádà jǔxíng 。 (expressed syntactically)

China Canada high education conference in Canada hold

‘Sino-Canada higher education conference is held in Canada.’

(15) jīntiān de huìyì yuándìng zhōngwǔ jiéshù 。 (not expressed syntactically)

today DE conference scheduled noon finish

‘Today’s conference was scheduled to finish at noon.’

Second, they are encoded into the *huìyì* event and are indispensable from it. One can hardly imagine any conference without people or a topic. Therefore they are the core arguments of *huìyì*.

Thirdly, the interlocutors of *huìyì* have these properties:

(I) *huìyì*’s interlocutors must be more than one person. One person speaking without any audience is called monologue, not conference. *huìyì* has an encoded action of discussion, which need not less than two participants.

(II) position, identity, country, place, and organization are always used to represent the interlocutors.

#### (a) Position

(16) shíyóushūchūguóuzǔzhī bùzhǎng huìyì zài rìnèiwǎ jǔxíng 。

OPEC minister conference in Geneva hold

‘The minister conference of OPEC will be held in Geneva.’

#### (b) Identity

(17) yuànshì huìyì měi liǎng nián zhàokāi yī cì 。

academician conference every two year hold one CL  
'The academician conference is held every two years.'

(c) Country or Place

(18) nánhán xīwàng jīnnián qiūtiān ānpái nánběihán jǔxíng lìshǐxíng de  
South Korea hope this year fall arrange south and north Korea hold historic DE  
gāofēng huìyì 。  
summit conference

'South Korea hoped that this fall there can be an arrangement of a historic summit between South and North Korea.'

(d) Organization

(19) xià cì dǒngshìhuì huìyì jiāng huì jìnsù jǔxíng 。  
next CL board conference will should ASAP hold

'Next board conference will be held as soon as possible.'

4.2.2 True Adjuncts of *huìyì*

*huìyì* takes temporal and spatial modification, which are true adjuncts of *huìyì*.

(I) Time: *niánchū* 'the beginning of a year', *niánzhōng* 'the end of a year', *qùnián* 'last year', *zuìjìn* 'recently', *jīnrì* 'today', *rìqián* 'a few days ago', *bàngwǎn* 'in the evening', *yuèdǐ* 'the end of a month', *xiàjì* 'the summer'

(II) Place: *chǎngsuǒ* 'sites', *huìchǎng* 'conference venues', *chǎngdì* 'venues', *zhùdì* 'station', *huìzhǐ* 'the site of a conference', *jiùzhǐ* 'former site', *dìzhǐ* 'address', *dìdiǎn* 'location', *suǒzài* 'location'

5. Event Structure of *huìyì*

Pustejovsky (1995) distinguishes three situation types: state, activity and event, where the last class is divided into accomplishment, and achievement events. In this section, we introduce the situation types of *huìyì*, reveal the aspectual shift of it, and figure out some tests for *huìyì*'s situation types. We also notice that some sentences can express more than one situation type.

5.1 Basic Situation Types of *huìyì*

5.1.1 State

A state has no internal structure, and it can hold for certain time. *huìyì* itself is a bare noun. When it appears in the subject position, and followed by an adjectival predicate, it describes a state and has a generic reading. For example:

(20) *huìyì* hěn yǒuqù 。  
conference very interesting

'This conference is very interesting.'

### 5.1.2 Activity

An activity describes an unbounded dynamic situation. When a sentence is describing the process of *huìyì*, then it expresses activity. For example:

- (21) yàzhōu fángkòng qínligǎn jǐnjí huìyì zhèngzài mǎngǔ jǔxíng 。  
 Asia prevent bird flu emergent conference now Bangkok hold  
 ‘Asia bird flu emergent prevention conference is being held in Bangkok.’

## 5.2 Aspectual Shift of *huìyì*

### 5.2.1 Words that Lead to Aspectual Shift of *huìyì*

It is well known that for verbs, their aspectual properties may change due to some factors. For instance, Pustejovsky (1995) finds that adverbial modification (durative and frame), the structure of the NP in an argument position (e.g., definite vs. bare plural), or a prepositional phrase can lead to aspectual shift. Smith (1990) notices that a situation type is affected by constellation of verb, complements and adverbial. Smith (1994) points out that in Mandarin Chinese certain resultative verbal complements, such as *wán*, *hǎo*, *zháo*, *chéng* convey the completion of an accomplishment.

In this section, we show that *huìyì* is always shifted to be (interpreted as) an accomplishment when it is delimited by demonstratives, localizers or quantifiers.

#### 5.2.1.1 Demonstratives

- (22) nà cì huìyì de yī gè jiéguǒ jiùshì jiànli le guójì huòbì jījīn zǔzhī 。  
 that CL conference DE one CL result is establish ASP international currency organization  
 ‘One result of that meeting is the establishment of the International Monetary Fund.’

- (23) zhè cì huìyì hěn chénggōng 。  
 this CL conference very successful  
 ‘This conference is very successful.’

#### 5.2.1.2 Localizer

- (24) shàng cì huìyì yú 2003 nián 7 yuè zài èguāduōěr shǒudū jīduō jǔxíng 。  
 last CL conference on 2003 year 7 month in Ecuador capital Quito hold  
 ‘Last conference is held in Quito, the capital city of Ecuador, in July 2003.’

- (25) xià cì huìyì jiāng zài míngnián chū jǔxíng 。  
 next CL conference will in next year early hold  
 ‘The next meeting will be held early next year.’

- (26) zhè cì huìyì zài qián cì huìyì zhǔtí de jīchǔ shàng, yòu  
 this CL conference on last CL conference theme DE basis on, again  
 zēngjiā le 3 gè fùzhǔtí 。  
 add ASP 3 CL sub-theme  
 ‘This conference added three sub-themes based on the theme of last conference.’

### 5.2.1.3 Quantifiers

(27) zài yī cì huìyì shàng, wǒ yùjiàn tā 。  
on a CL conference on, I meet him  
'On a conference, I met him.'

## 5.3 Tests for Different Situation Types

### 5.3.1 Test for States

When *huìyì* appears in the format “N+(很 *hěn* ‘very’)+adj”, it is a state.

### 5.3.2 Entailment of Activity Sentences

Activity is a homogenous event. Any part of it is the same as other parts. For instance:

(28) *huìyì kāi le wǔ gè xiǎoshí le* 。 → *huìyì kāi le sān gè xiǎoshí le* 。  
conference hold ASP five CL hour ASP → conference hold ASP three CL hour ASP  
'The conference has been on for five hours.' entails 'The conference has been on for three hours.'

## 5.4 Ambiguity

We noticed that a sentence or expression with *huìyì* is sometimes underspecified. In such a case, it expresses more than one situation types. For instance:

(29) zhōngguó zuòxié zhòngqìng *huìyì* hěn yǒu qù 。  
China writer association Chongqing conference very interesting  
'China Writer Association's conference in Chongqing is very interesting.'

There is no tense marking on verbs in Mandarin Chinese. When there is no temporal expression in a sentence, the event time is not expressed. In such a case, we can understand the above sentence as an event that is just finished, then *huìyì* here is accomplishment; or we can understand *hěn yǒuqù* 'very interesting' as a regular property of *zhōngguó zuòxié zhòngqìng huìyì* 'China Writer Association's conference in Chongqing', then *huìyì* here is state.

Another example is *zhè cì huìyì* 'this conference'. It can mean the conference has not started, is ongoing or was just finished. Thus it can be activity or accomplishment.

*zhè jǐtiān de huìyì* 'the several days' conference' can mean an ongoing conference or a just completed conference. Consequently, it is activity or accomplishment.

## 6. Qualia Structure

Pustejovsky (1995) shows how lexical items encode semantic information in the qualia structure. There are four roles in a qualia structure, and each is associated with some values. (I) The constitutive role is about the relation between an object and its constituents or parts. Its role values include material, weight, parts and component elements. (II) The formal role can distinguish the object within a larger domain. Orientation, magnitude, shape, dimensionality, color, and position are its role values. (III)

The telic role is about the purpose and function of the object. (IV) The agentive role describes factors involved in the origin of an object, such as creator, artifact, natural kind, causal chain.

*huìyì* is a formal event on which some people discuss a topic with the aim of reaching a decision. Consequently, the qualia structure of *huìyì* is illustrated below:

$$\left( \begin{array}{l} \text{QUALIA} = \left( \begin{array}{l} \text{FORMAL} = \text{event} \\ \text{CONSTITUTIVE} = \text{Interlocutors, topic, decision, discussion} \\ \text{TELIC} = \text{reach a decision} \\ \text{AGENTIVE} = \text{organized by people or organization} \end{array} \right) \end{array} \right)$$

*huìyì* as a head and a modifier behaves differently. First, the frequency and saliency of nouns appear before and after *huìyì* is quite different as depicted in Table 2. About 2/3 more nouns tend to appear before *huìyì* than after it. Also, nouns before *huìyì* are more salient than after it.

Table 2. Frequency and Saliency of Nouns before and after *huìyì*

No.	Relation	Frequency		Saliency	Examples
		Tokens	percentage		
1	N_Modifier	358601	35.38%	1.6%	<i>shǒunǎo huìyì</i> ‘conferences of heads of a state or government’, <i>gāofēng huìyì</i> ‘summit meetings’
2	Modifies	129350	12.76%	0.6%	<i>huìyì qījiān</i> ‘during the conference’, <i>huìyì jìyào</i> ‘minutes of a conference’

Second, the same noun seldom appears both before and after *huìyì*. Out of all nouns modifying *huìyì* or as heads of *huìyì*, only two can appear in both pre- *huìyì* and post- *huìyì* position. The two nouns are *lǐngxiù* ‘leaders’ and *zhǔxítuán* ‘presidiums’. By intuition, there should be many such nouns, but according to Gigaword corpus data, it is not.

Third, even when the same noun appears both before and after *huìyì*, the meaning can be different. This can be shown in the contrast between 领袖会议 and 会议领袖. The former is ambiguous: it can refer to a conference about leaders or a conference attended

by hosts; the latter refers to the role of the participant. Also, the former must be more than one person while the latter can be only one person.

In the following section, we will explore the qualia modification to *huìyì* when it is the head noun, and *huìyì*'s modification to other nouns when it is the modifier.

### 6.1 *huìyì* as the Head

When *huìyì* is the head of a structure, its eventive information decides what kind of modification it gets. We find that *huìyì* usually gets formal and constitutive modification when it is the head.

#### 6.1.1 Formal Modification

$$\left( \begin{array}{l} \text{dàxíng huìyì 'large scale conferences'} \\ \text{QUALIA = [ FORMAL = scale ]} \end{array} \right)$$

In *dàxíng huìyì* 'large scale conferences', *dàxíng* 'large scale' points to the scale of the *huìyì* event, which is the formal role of *huìyì*. Similarly, *dà* 'big', *xiǎo* 'small', *xiǎoxíng* 'small scale', *shèngdà* 'grand' all refer to the scale of a conference.

#### 6.1.2 Constitutive Modification

According to Pustejovsky (1995), constitutive role expresses the relation between an object and its parts. *huìyì* is not a typical object, but a kind of event involving a series of activities with a particular topic and a group of people, which are inseparable parts of *huìyì*, just as a CPU is inseparable from a computer.

Here we extend constitutive role to include the relation between an event and its participant roles. Consequently, in *jīngjì huìyì* 'economy conferences' and *yuànrshì huìyì* 'academician conferences', economy and academicians are regarded as the constitutive role of *huìyì*.

$$\left( \begin{array}{l} \text{jīngjì huìyì 'economy conferences'} \\ \text{QUALIA = [ CONSTITUTIVE = economy as the topic ]} \end{array} \right)$$

$$\left( \begin{array}{l} \text{yuànrshì huìyì 'academician conferences'} \\ \text{QUALIA = [ CONSTITUTIVE = academicians as Interlocutors ]} \end{array} \right)$$

Topic: *shāngwù* 'business', *guówù* 'national affairs', *guóshì* 'national affairs', *tiānwén* 'astronomy', *qìhòu* 'climate', *hǎishì* 'maritime affairs'

Interlocutors: *qīnshǔ* ‘relatives’, *zōngqīn* ‘clans’, *zhǎnglǎo* ‘presbyteries’, *zhǔjiào* ‘bishops’, *shǔjī zhǔjiào* ‘cardinal-bishops’, *jiàoshī* ‘priests’, *zhàojí rén* ‘convenors’

There are some words which modify the encoded content aspect of the constitutive role of *huìyì* as shown from (a) to (e). (a)Duration: *rǒngcháng* ‘tediously long’, *mǎlāsōng shì* ‘marathon-style’, *jiǎnduǎn* ‘short’, *duǎnzàn* ‘brief’. *huìyì*, as an event, has duration aspect encoded in its meaning, so these words modifies the constitutive role of *huìyì*. (b)Manner: *zhòngdà* ‘significant’, *pángdà* ‘huge’, *kuòdà* ‘enlarged’, *biékāishēngmiàn* ‘break new ground’, *zhèngshì* ‘formal’, *fēizhèngshì* ‘informal’, *zhǔmù* ‘fix one's eyes upon’, *xīn* ‘new’, *yīliú* ‘first-class’, *yánsù* ‘serious’, *jǐnjí* ‘urgent’, *zhùmíng* ‘well-known’, *gōngkāi* ‘public’. (c)Frequency: *mìjí* ‘intensive’, *yìliánchuàn* ‘series of’. (d)Influence: *huà shídài* ‘epoch-making’, *jìwǎng kāilái* ‘to carry on the past and open a way for future’, *shēnyuǎn* ‘far-reaching’. (e)Result: *chénggōng* ‘successful’, *yuánmǎn* ‘satisfactory’.

## 6.2 *huìyì* as the Modifier

When *huìyì* is the modifier, it usually modifies the telic and agentive role of the head noun.

### 6.2.1 Telic Modification

$$\left( \begin{array}{l} \textit{huìyì jìniànpǐn} \text{ ‘conference souvenirs’} \\ \text{QUALIA} = \left[ \text{TELIC} = \text{conference use} \right] \end{array} \right)$$

*jìniànpǐn* are souvenirs for memory. When it is modified by *huìyì*, its function is specified as an item for the memory of a conference. Similar examples are *zhǔxí tái* ‘podiums’, *dàlóu* ‘buildings’, *dàshà* ‘buildings’, *dàtīng* ‘halls’, *tīngtáng* ‘halls’, *bàngōngshì* ‘offices’, *jiǎngtán* ‘platforms’, *shāpán* ‘sand tables’, *zhuānxiàn* ‘direct lines’, *zhǔzhóu* ‘spindles’, *qǐngjiǎn* ‘invitations’, *shǒucè* ‘manuals’, *xūkězhèng* ‘licenses’, *jìniànpǐn* ‘souvenirs’, *cáiliào* ‘materials’

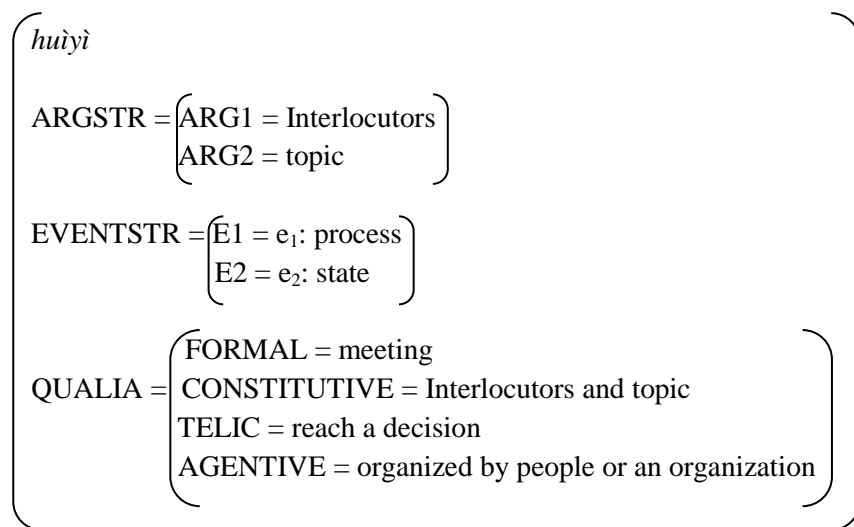
### 6.2.2 Agentive Modification

$$\left( \begin{array}{l} \textit{huìyì juéyì} \text{ ‘conference resolution’} \\ \text{QUALIA} = \left[ \text{AGENTIVE} = \text{source} \right] \end{array} \right)$$

*juéyì* is typically a kind of resolution reached after discussion. In *huìyì juéyì* ‘conference resolution’, *huìyì* states the origin of the resolution.

Similar examples are *chǎngmiàn* ‘scenes’, *chéngguǒ* ‘achievements’, *shìfēi* ‘right and wrong’, *huǒshí* ‘food’, *wǎncān* ‘dinners’, *xiāoxi* ‘messages’, *xīnwén* ‘news’.

To conclude, through the above exploration, we have revealed the argument structure, event structure and qualia structure of *huìyì* and established the semantic type system of it, which is illustrated below.



## 7. Conclusion

In sum, this paper gives a detailed semantic analysis of the event noun *huìyì* based on GLT. First, it finds that *huìyì* takes two default arguments: Interlocutors and two default arguments: time and space. Second, the basic event types of *huìyì* are state and activity. Furthermore, *huìyì* can go aspectual shift and become accomplishment when delimited. Third, *huìyì*'s qualia structure and its qualia modification as the head and the modifier are explored. Finally, we expanded the constitutive qualia role of GLT to include an event and its activities.

**Acknowledgements:** The authors would like to thank Prof. Dingxu SHI, Prof. Haihua PAN, Jing JIN and Jing YANG for their constructive comments on *Linguistic Society of Hong Kong-Annual Research Forum 2010*. The remaining errors are ours.

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