

詞 庫 小 組

技術報告 15-01

Technical Report no. 15-01

## **Semantic Roles and Semantic Role Labeling**

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出版處：台北，南港

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中文詞知識庫小組

# Semantic Roles and Semantic Role Labeling

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## 1 Introduction

Semantic roles denote different semantic relations that a noun phrase plays with respect to the action or state described by a predicate of a sentence. In a number of theories of linguistics, it is also referred to terms like thematic roles, participant role, theta role, case frames (Fillmore 1968), theta-grids (Stowell 1981) and deep case (Fillmore 1966, 1968) etc. However, object-related semantic roles are also considered in this paper because we deal with the task of semantic composition, i.e. to discover semantic relations between two dependent constituents and assign a unique semantic role to each dependent daughter. Therefore in this paper when we mention semantic roles, normally refer to semantic roles for events or objects. In order to achieve semantic composition, i.e. to derive semantic representations for sentences from lexical senses, we need to know possible semantic relations between two constituents and assigning the semantic role to the dependent daughter which best describes the semantic relations to its semantic head.

First of all, we need to clarify the distinction between semantic roles and semantic relations. As a matter of fact there are unlimited numbers of possible semantic relations between two constituents from coarse-grained to fine-grained relations and a constituent may have different relations with other constituents, but practically we need a set of limited number of semantic roles and label a unique semantic role to each constituent. In this paper, we will talk about two sets of semantic roles used by CKIP group and discuss the problems and possible solutions for semantic role labeling.

Linguists pay more attention on the semantic roles for events. We will discuss the semantic roles for event and also extend the related concepts to roles for objects and others. The event roles are sometimes vaguely used as syntactic structures

reflecting positions in the argument structure of the verb they are associated with; Dowty (1991) called this the argument-indexing function of thematic roles. The semantic relations are purely semantic descriptions of the way in which a constituent functioning with respect to the meaning of the action described by the verb or other constituents of a sentence. However, in some theories, only arguments but not adjuncts bear semantic roles (mostly known as theta roles). Nevertheless, arguments and adjuncts both establish semantic relations with the head verb and other constituents of a sentence, as exemplified in sentence (1) and (2).

(1)	餐飲高價化	最早	緣於	香港的	阿一鮑魚
<b>Theta Role:</b>	theme		head verb		source
<b>Semantic Relation:</b>	theme	temporal	head verb	locative	source/location

In sentence (1), the noun phrase 阿一鮑魚 bears two semantic relations, i.e. *source* and *location*, with respect to the head verb 緣於, but can only be assigned one preferable theta role *source*. Also, the adjuncts 最早 and 香港的 have temporal and locative semantic relations respectively with the head verb 緣於 which are not regarded as theta roles.

(2)	我們	種	菜	賣
<b>Theta Role:</b>	agent	head verb	patient	
<b>Semantic Relation:</b>	agent	head verb	patient	purpose
	agent		theme	head verb

In sentence (2), the noun phrase 菜 bears two semantic relations with respect to the two verbs in the sentence: they are *patient* of the head verb 種, and *theme* of the verb 賣. Though 賣(菜) is regarded as a complement in syntactic level and plays a *purpose* role in semantic level, for semantic role labeling only same-level relations are taken into consideration. Therefore we only assign *patient* role to the noun phrase 菜.

As we have noticed, a constituent may have many semantic relations with respect to head and other constituents, but we need to label a unique preferable semantic role which best describes the semantic relations with its head. Therefore how to establish a reasonable set of semantic roles and how to determine the best role labeling will be the major considerations of the paper.

In order to clarify the multiple relations between constituents and overlapping relations within semantic roles, in this research, we give accurate descriptions for semantic roles and provide several prototypical features to distinguish a role from the others. Considering the different purposes of syntactic-major and semantic-major tree structure representations, we had adopted two sets, i.e. coarse and fine grained semantic roles, to label the texts. A mapping table was also provided between these two sets of semantic role to make easy conversion between them. Furthermore, how to determine semantic roles in real context, i.e. the task of semantic role labeling, will be discussed and the labeling difficulties will then be addressed as well.

The organization of the paper is as follows: In the following section, two sets of semantic roles used by CKIP will be introduced and the mapping table will be given. In Section 3, how to determine a semantic role and the difficulties are discussed. The lexical knowledge we provide in E-HowNet for semantic role labeling is addressed in Section 4. And finally, a summary will be made.

## **2 Semantic Roles**

According to Dowty (1989), there are four characteristics that theories of thematic roles strive for:

- *Completeness*: Every argument of every verb is assigned some thematic role or other.
- *Uniqueness*: Every argument of every verb is assigned only one thematic role.
- *Distinctness*: Every argument of every verb is distinguished from the other arguments by the role it is assigned.
- *Independence*: Each role is given a consistent semantic definition that applies to all verbs and all situations.

We extend Dowty's characteristics for thematic roles to include roles for adjuncts and object-related roles too and derive the following design criteria for better characterizing sets of semantic roles.

- *Completeness*: Every constituent (dependent daughter) of every semantic head may be assigned some semantic roles to describe its semantic relations to its head.
- *Uniqueness*: Every constituent of every semantic head may have one semantic role which best describes its semantic relations to its head.
- *Distinctness*: Every constituent of every semantic head is distinguished from the other constituents by the role it is assigned except adjuncts.
- *Independence*: Each role is given a consistent semantic definition that applies to all verbs and all situations.

We have demonstrated the complexity and difficulty of the *uniqueness* and *distinctness* of semantic roles in previous section. As for the *completeness*, there is no agreement about which and how many roles are needed. This is precisely one of the major drawbacks of the definite semantic role list approach. Furthermore to achieve the characteristic of *independence* is also a crucial step for designing the set of semantic roles. Therefore, before the discussion of other characteristics, we will first propose our definition for each semantic role. The semantic roles/relations are adopted from major theories and discovered from morphological relations of complex lexical senses as well as syntactic structures of Treebank. The semantic roles/relations are arranged from coarse-grained to fine-grained relations in a hierarchical way. Our corpus-based approach guarantees the *completeness* and *independence* criteria empirically. The hierarchical approach resolves the *uniqueness* problem, since fine-grained semantic roles may better describe multiple semantic relations. As for *distinctness*, we adopt the thematic roles of major theories which satisfied the criteria of *distinctness* and *independence*.

## 2.1 Features and Semantic Relations to Define Semantic Roles

### (1) Roles for Event

- **Actor** is a causal source which contains alternative hyponym roles *agent* and *causer*.
  - **Agent** is a conscious actor which performs an action with control (on purpose) and has a physical, visible effect on object. It is an N or NP syntactically, the inherent semantic features for the proto-*agent* are

[+causative], [+volitive] and [+perceptive].

e.g. 新政策由教育部 (agent[+causative]) 負責推動, 班長 (agent[+perceptive]) 看見教室已經弄得天翻地覆, 家屬和醫生 (agent[+volitive]) 企圖隱瞞病情

- **Causer** is an unconscious force which incurs an event without purpose. It is also an N or NP syntactically, the inherent semantic features for the proto-*causer* are [+causative], [-volitive] and [-perceptive].

e.g. 賀爾蒙 (causer[+causative] [-volitive] [-perceptive]) 主宰人類情感

- **Goal** refers to a terminal recipient which contains three subordinate roles: *patient*, *target* and *content*.

- **Patient** is a disposable and affected object that a physical action is acted upon or undergoes a physical action. It is an N or NP syntactically, and the direct object of a two-place predicates, the inherent semantic features for the proto-*patient* are [+affected] and [+disposable].

e.g. 楊婦親手殺害智障女兒 (patient[+affected]), 任由生菜 (patient[+disposable]) 被水流擺佈

- **Target** is an object which can be a recipient (i.e. an endpoint) who receives or acquires something (e.g. possession, knowledge, and especially for affective feelings); or a fixed referent which undergoes the event of correlation. It is an N or NP syntactically and usually the direct object of a two-place mental predicate, the inherent semantic features for the proto-*target* are [+recipient], [+correlative] and [-affected].

e.g. 所領補償無息退還市府 (target[+recipient]), 杜象允許他人 (target[+recipient]) 複製他的作品, 侍衛一步步靠近蘭相如 (target[+correlative])

- **Content** denotes a psychological state or a mental representation, which includes (1) state of affairs, knowledge or feelings that are transferred in mental processes; (2) a kind of mentality (or stimulus) that evokes the emotional response in the experiencer; (3) an activity that an agent is engaged under volition. *Content* can be an N, NP, V, VP or S syntactically, three-place predicates with the part-of-speech of VE, VF, VK, VL usually have the argument of *Content*. *Content*, as a direct object, often collocates with an indirect object such as *patient* or *target*. The inherent semantic features for the proto-*content* is [+Abstract or Event] and [-affected]

e.g. 部份人士醞釀發動投資人赴立法院請願(content[+Abstract or Event]), 醫院教導民眾正確的保健知識(content[+Abstract or Event])

- **Theme** is (1) an object which undergoes a change of location, possession, existence, category or quantity; (2) an original item which undergoes the event of comparison; or (3) an entity which is described by a stative event. It is an N or NP syntactically, the inherent semantic features for the proto-*theme* are [+motion] or [+DescribedEntity] or [+comparative].

e.g. 師生(theme[+motion])一起步行到車站, 米價(theme[+motion])持續上漲, 世界杯足球賽(theme[+comparative])要比奧運會還要賣座, 港內設施(theme[+DescribedEntity])都已生鏽

Moreover, since possession and production have characteristics of changing location, possession, and existence, we classify three semantic roles *possession*, *PatientProduct* and *ContentProduct* subordinating to *theme*. In addition to the inherited features of *theme*, they also have their own inherent semantic features, which are derived from the fine-grained senses of ownership and creativeness, described as follows:

- **Possession** is an owned theme which is transferred between its possessor and recipient, or possessor and source. It is mainly an N or NP syntactically, the inherent semantic features for the proto-*possession* is [+possessive].

e.g. 長榮集團終於奪得先機(possession[+possessive]), 八名學生獲得免試分發(possession[+possessive])

- **PatientProduct** and **ContentProduct**, also called increamental-theme denote created objects which are produced by creating or compiling. They are both an N or NP syntactically, the inherent semantic features for the proto-*PatientProduct* and proto-*ContentProduct* are [+agentive] [+incremental].

e.g. 他做了一個彎鉤(PatientProduct[+agentive]), 他們夫婦曾合作譜寫了不少曲子(ContentProduct[+agentive]), 三隻綠蠵龜的故事(ContentProduct[+incremental])一點一點地逐漸成形

- **Experiencer** is an animate being who perceives a stimulus or registers a particular mental or emotional process or state. It is an N or NP syntactically; it is usually a subject of a mental predicate. The inherent semantic features for the proto-*experiencer* are [+perceptive] and [+affected].

e.g. 媽媽(experiencer[+perceptive])很滿意現在的髮型, 對您的付出我(experiencer[+affected])銘感五內

- **Contrast**, comparing with an original item, is a referential item which undergoes the event of comparison. It can be an N, NP, V, VP, or S syntactically, the inherent semantic feature for the proto-contrast is [+comparative].

e.g. 民族主義與疾病(contrast[+comparative])無異, 以毛毛蟲脫蛹而出(contrast[+comparative])比喻生命的蛻變與昇華

- **Companion** is a co-participant of the subject or object. It is an N or NP syntactically, the inherent semantic feature for the proto-companion is [+co-participant].

e.g. 民意代表及政府官員(companion[+co-participant])公開辯論, 友訊企圖與聯電(companion[+co-participant])結盟

- **Range** is an extent of variation within a category, which is disposed in a particular order, e.g. in lines; or a range value which is preceded by a range pointer. *RangeIni* (i.e. RangeInitial) and *RangeFin* (i.e. RangeFinal) subordinate to *range*. It is an N, NP, V or VP syntactically and usually presented in a fixed phrase pattern or preceded by a range pointer. The inherent semantic features for the proto-range are [+RangeValue], [+extent] and [+quantity].

e.g. 從此後人們就管時間叫光陰(range[+RangeValue]), 來賓只有 8 人(range[+quantity]), 漏水範圍從一至四樓(range[+extent])

- **Beneficiary** is a person or an object which gains or benefits from an action or a person. It is an N or NP syntactically. The inherent semantic feature for the proto-beneficiary is [+beneficent].

e.g. 這項措施進而造福了旅遊消費大眾(beneficiary[+beneficent])

- **Location** is a concrete object that occupies a space or an abstract object in which an activity takes place. It can be an N, NP, GP or DM syntactically, the inherent semantic features for the proto-location are [+locative] and [-temporal]. There are few roles subordinate to *location*, shown as below:

- **LocationIni**, equals to location[+StartPoint], is a location which denotes a start point of an entity. The preposition denotes *LocationIni* can be: 自, 由, 從, 打從, 打

e.g. 兩百萬軍民自大陸(LocationIni)來台



- **LocationThru**, equals to location[+through], is a location which denotes a path that an entity passes. The preposition denotes *LocationThru* can be: 經,經過,經由,歷經,途經,順,沿,循,依循,依(著)  
e.g. 易北河貫穿該市(LocationThru)
  - **LocationFin**, equals to location[+EndPoint], is a location which denotes an end point of an entity. The preposition denotes *LocationFin* can be: 至,到,直到,迄  
e.g. 貨輪可從湖北省各口岸通往香港(LocationFin)
  - **Direction**, equals to location[+direction], is a pointing location.  
e.g. 一夥人奮勉向前(direction)跳
  - **Toward**, equals to location[+toward], is a facing location. The preposition denotes *toward* can be: 往,向,望(著),朝(著),(迎)著  
e.g. 市區人口漸往郊區(toward)發展
- **Time** is a non-spatial continuum in which events occur in apparently irreversible succession from the past through the present to the future. It can be an N, NP, GP VP, S or DM syntactically, the inherent semantic features for the proto-*time* are [+temporal] and [-locative]. There are few roles subordinate to *time*, shown as below:
- **TimePoint**, equals to time[+FixedPoint], is a fixed time point of an entity. The preposition denotes *TimePoint* can be: 在,於,于  
e.g. 明天中午(TimePoint)開始展售
  - **TimeIni**, equals to time[+StartPoint], is a TimePoint which denotes a starting time of an entity. The preposition denotes *TimeIni* can be: 自,由,從,自從,打從,打  
e.g. 打從十三、四歲起(TimeIni)就踏入這一行
  - **TimeFin**, equals to time[+EndPoint], is a TimePoint which denotes an ending time of an entity. The preposition denotes *TimeFin* can be: 至,到,直到,迄,及至,等到,待到  
e.g. 可惜及至七十年代(TimeFin)都無法交出成績單
  - **Duration**, equals to time[+through], is a continuance of any object or event in time. The preposition denotes *duration* can be: 經,經過,經由,歷經

e.g. 全球在金融風暴中度過不平靜的一年(duration)

- **While**, equals to time[+EventTime], indicates a time that two separate events occurs simultaneously. The preposition denotes *while* can be: 當, 趁, 逢, 值, 待, 等

e.g. 趁光復隊一次失誤(while)連添三分

- **Aspect**, equals to time[+Vachieve/Vgoingon], denotes the status of achievement of an event. The particle denotes *aspect* can be: 了, 著, 過

e.g. 光台灣就新增了(aspect)三十餘所博物館

- **Sequence**, equals to time[+order], denotes the order of an attribute or an object. The prefix denotes *sequence* is: 第

e.g. 首先(sequence)要注意安全

- **Frequency** is the number of occurrences of a repeating event per unit time. The measure word denotes *frequency* can be: 次, 回, 下, 腳, 刀 etc.

e.g. 把手放進醋裡浸一下(frequency)

- **Source** is a starting point at which something springs into being, or from which it derives or is obtained. It is the hypernymous concept of *agent*, *LocationIni*, *TimeIni* and *StateIni*. Source is an N or NP syntactically, the inherent semantic feature for the proto-*source* is [+StartPoint].

e.g. 由作家的孤寂不安(source[+StartPoint])來推想這位主角人物

- **Whole**, comparing with parts, is a group of object or a unity of being which undergoes the event of constitution. It is an N or NP syntactically, the inherent semantic features for the proto-*whole* are [+constitutive], [+group] and [+united].

e.g. 除非她加入共犯集團(whole[+group]),很難歸納出一個模式(whole[+united]),觀眾席(whole[+constitutive])可容納 1300 人

- **Component** is constituent parts or materials of something. It is an N or NP syntactically; it usually collocates with the verbs containing composing sense. The inherent semantic features for the proto-*component* are [+constitutive], [+partial] and [+material]. The preposition precedes a *component* is: 由

e.g. 食材(component[+material])加入湯中熬燉,許多著作物會附帶一段文字宣告(component[+partial]),企業主積極網羅人才(component[+constitutive])

- **Situation** is a particular state with respect to circumstances, which is used to describe the background condition of a main action. It is the hypernymous concept of below roles.
  - **Degree** denotes the position on a scale of intensity or quality.  
e.g. 太陽跑得最快(degree)
  - **Manner** denotes the way an event performs.  
e.g. 於是我迫不及待地(manner)奔向他家
  - **Means** is a medium or a method by which another action can be accomplished or an end achieved. It is the hypernymous concept of *instrument*. Means is an N, NP, V, VP or S syntactically, the inherent semantic features for the proto-*means* are [+instrument] and [+method]. The prepositions precedes a *means* are: 由, 經, 經過, 經由, 靠, 靠著, 假, 倚, 以, 用, 藉, 透過  
e.g. 巴西人常用椰子奶(means[+instrument])烹煮海鮮, 貧農不靠互助(means[+method])就活不下去
  - **StateIni** (i.e. State Initial) is an initial state which exists before an occurrence of an event.  
e.g. 蟲兒數量已不復去年盛況(StateIni)
  - **StateFin** (i.e. State Final) is a new state which happens after an occurrence of an event.  
e.g. 行為變得非常任性(StateFin)
  - **Price** denotes an amount of money one pays in purchase or for service.  
e.g. 糖賣五塊錢(price)
- **Standard** is a dependence by which an action is brought out, judged or achieved. Standard is an N or NP syntactically; Similar to *means-instrument*, standard can be a concrete or an abstract object, but only led by the prepositions with the sense of *according to*. The prepositions precedes a *standard* are: 順, 沿, 循, 依循, 依(著), 以, 視, 論, 基於, 本著, 按(著), 照(著), 秉(著), 隨(著), 據, 依據, 按照, 根據  
e.g. 行政院應依原計畫(standard)貫徹執行
- **Topic** is a subject of discussion that provides a background circumstance, upon which the speaker expresses his evaluation, description or the action he takes

on. It is an N, NP, V, VP or S syntactically.

e.g. 房子(topic)換主人了, 這套方法(topic)完全遵照明朝流傳下來的古法

- **Reason** is a basis or motive for an action.

e.g. 活動因人潮蜂擁而至(reason)而取消

- **Purpose** is a beneficial aim for which an action is done.

e.g. 他準備十道菜來款待賓客(purpose)

## (2) Roles for Object

- **Host** is an entity which is usually described or modified by particular attributes and properties, for example in *She has a long hair*, *Hair* is the host of *length* (attribute) *long* (property). It can be an N or V syntactically, for example, in the Chinese compound 兵力, the host of the attribute *strength* is the noun *army*; while in the compound 吸力, the host of attribute *strength* is the verb *attract*.

e.g. 他膚(host)色黑

- **Attributes** refer to a special class of nouns which denote particular properties of entities. For example, shape, color and size.

e.g. 他膚色(attribute)黑

- **Property**: Attribute is usually represented by its values, i.e. properties or attribute values. For example, in *She has a long hair*, the attribute *length* is omitted and only represented by its value *long*. Some values of attribute include subjective preference which can be classified into positive and negative aspect, such as *beautiful* versus *ugly*.

e.g. 他膚色黑(property)

- **Telic** denotes the typical function of an entity.

e.g. 利用養生(telic)食品來斂財

- **Predication** denotes the event in which an object involves.

e.g. 有意購屋(predication)者可精挑細選一番

- **Speed** denotes the magnitude of velocity of an object.

e.g. 復興號、莒光號及自強號都是屬於對號快(speed)車

- **Quantity** denotes the quantity of object.

e.g. 這三篇(quantity)小說都很動人

- **Domain** is a realm within the limits an event affects.

e.g. 廟的四周就成了商業(domain)區

The illustrated description of semantic roles and features for arguments is shown as appendix I.

## 2.2 Mapping between Two Sets of Semantic Roles in CKIP

Sinica Treebank is a database which gives skeletal parses showing syntactic structures and coarse-grained semantic information, i.e. for each constituent of a tree structure is tagged with its part-of-speech and semantic role. There are 60 different semantic roles, including 5 object-related roles.

E-HowNet (Extended-HowNet) is a lexical knowledge base which consists of definitions for lexical senses, where more than 100 semantic roles (including functions) are used to describe the sense relations. Due to the need of interoperability and automatic conversion of semantic roles, we try to map two sets of semantic roles, and at the meantime describe the function, source and features for each semantic role. Take (3) as an example:

(3)	Tree Bank Role	E-HowNet Role
	<p><b>theme</b></p> <p>1. X: [+object] → <i>derived from the head verb</i>            [+subjective] → <i>derived from checking positions with respect to head verb</i>            Head: [+state] or [+value]</p> <p>2. X: [+entity] → <i>derived from the head verb</i>            [+comparative] → <i>derived from the head verb</i>            [+subjective] → <i>derived from checking positions with respect to head verb</i>            Head: [+AlterComparison][+comparison]</p> <p>3. X: [+movable] → <i>derived from the head verb</i>            [+subjective] → <i>derived from checking positions with respect to head verb</i>            Head: [+AlterLocation]</p>	<p><b>theme   客體</b></p>

<p>Actor(Head)=X</p> <p>4. X: [+incremental][+agentive] → <i>derived from the head verb</i>  [+objective] → <i>derived from checking positions with respect to head verb</i>  Head:[+create] or [+write, +translate, +record, +draw, +carve, +print, +publish]  Result(Head)=X</p> <p>5. X: [-affected][-agentive][+possessive] → <i>derived from the head verb</i>  [+objective] → <i>derived from checking positions with respect to head verb</i>  Head:[+AlterPossession][+OwnOrOwnNot]  [+surplus]</p>	<p><b>product</b>   產品</p> <p><b>PatientProduct</b>   製成 產品</p> <p><b>ContentProduct</b>   製成 內容</p> <p><b>possession</b>   持有物</p>
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The roles of TreeBank mainly establish a surface semantic relation between constituents and their head verb. They are thus coarse-grained and able to map to several fine-grained roles of E-HowNet in most occasions. For example, the *theme* of TreeBank, in the left column at above table, has been mapped to fine-grained role in E-HowNet like *possession*, *PatientProduct*, and *ContentProduct* as shown in the right column of above table. Conversely, these fine-grained relations can also be replaced with a coarse-grained TreeBank Role, *theme*, if necessary. The following pair sentences show the difference:

(4) a **TreeBank syntactic structure**: S(**agent**:NP(Head:Nba:劉邦)|Head:VC31:製造|aspect:Di:了|**theme**:NP(time:Nddc:最後|nominal:DE:的|Head:Nv4:勝利))

a' **E-HowNet semantic representation**: {produce|製造:**agent**={劉邦|Liu-bang}, **PatientProduct**={affairs|事務:CoEvent={win|獲勝:sequence={last|最後}}}

b **TreeBank syntactic structure**: S(**agent**:NP(property:Nab:國民|Head:Nac:政府)|Head:VC31:接收|**theme**:NP(Head:Nca:金瓜石))

b' **E-HowNet semantic representation**: {receive|收受:**theme**= {國民政府|government}, **possession**= {place|地方:quantifier={definite|定指},name={"金瓜石"},location={Taiwan|台灣}}}

Furthermore, the mapping table not only shows the taxonomic relations between coarse-grained to fine-grained role mapping but also provides role features

and other information to characterize and distinct each role. They are (1) The features of the semantic role *X*, that is, the semantic or syntax constraints of the noun/verb phrase *X*, such as *X*: [+incremental][+agentive] for the *product* role ; (2) The sense constraint of head verb of a sentence, such as Head of *product*: [+create] or [+write, +translate, +record, +draw, +carve, +print, +publish]; (3) The prepositional markers which *X* are often collocated with, such as *agent* Marker: [P:由,為,被...]; (4) The additional semantic relation between *X* and the head verb, such as Actor(Head)=*X* or Result(Head)=*X*; and (5) The source of the information, such as *X*: [+movable] → derived from the head verb. Based on the given information, after parsing a sentence and identifying the sense of NP, preposition, and head verb, the system may judge automatically whether the NP (or VP) meets the constraints of a role or not, and helping to perform automatic role labeling.

The complete mapping table is shown in Appendix II.

### 3 Semantic Role Labeling

Regarding the fulfillment of designing criterion for semantic roles, we have achieved the goal of *independence* of semantic roles by giving accurate semantic-based and language-independent definitions for roles in previous section. We also constructed the event frame, i.e. the set of semantic roles for arguments, for every event type in E-HowNet ontology (see 4.1) and use them to represent basic argument structures for more than 80,000 word senses in CKIP dictionary, which justifies the design criteria of *completeness* for semantic roles. As for the *uniqueness* and *distinctness* of semantic role, since they are both related to semantic role labeling processing, and there are other factors also affect role assignment, we will discuss and address the issues in more detail in this section.

#### 3.1 Factors Affect Semantic Role Assignment and the Difficulties

In general, as we have roughly mentioned there are four factors to determine the semantic role of a constituent. The first factor is **verb sense**, from which the event frame is derived, i.e. the semantic roles of arguments are specified. The second factor is the **major sense of constituent**. Many adjuncts' semantic roles or modifiers of objects are self-describing, such as temporal, aspectual, color, weight...etc.

Furthermore in some cases the argument roles in an event frame are underspecified which need to be refined by the sense of arguments. As exemplified in (5), a noun with or without [+volitive] feature can determine a role to be an *agent* or a *causer*.

(5)                    聯合國            決定            vs.    天候狀況            決定  
 Semantic Role:    agent[+volitive]    head verb            causer[-volitive]    head verb

The third factor is the **preposition**, a relation marker, as the example shown in (6), which the marker specified *direction* of a pronoun. Similarly, markers can specify *range* of a location, and transform an *experiencer* into a *theme*, more examples will be shown in Section 4.2.

(6)                    朝我            看  
 Semantic Role:    PP-direction            head verb

The fourth factor is **construction pattern**. As a matter of fact, construction patterns specify the order of semantic roles. As exemplified in (7), deep semantic structure is determined by construction patterns and surface word senses.

(7)                    因為            工作繁重            所致  
 Syntactic Structure:    reason            theme            head verb-VH  
 Semantic Structure:    cause={工作繁重}

The guideline for semantic role labeling is as follows. For each phrase, determine the syntactic head and assign the semantic role *Head* to it. Then, for each dependent daughter of the head find the semantic relations between the head and the dependent daughter. Determine the semantic role which best describes the semantic relations according to above mentioned four factors. However knowing the above multiple factors, practically to assign a unique semantic role for each constituent may still encounter the following difficulties.

### 3.1.1 How to determine active and stative verbs?

To pursue semantic role labeling, identifying the sense of head verb is the first step since the event frame is mainly decided by the head verb. To distinguish an active verb from a stative verb, vice versa, is of equal importance because the subject of active verbs should be *agent* or *experiencer* and the subject of stative verbs should be *theme*. However, there is not always a clear cut difference between acts and



states. For example, it is hard to judge that there is any force applied (without considering force of gravity) for the primitive concept {withstand|抗住}, therefore it is hard to judge {withstand|抗住} an act or a state. In fact, diversity of viewpoints of an event causes various fine-grained differences of verb senses and different morphological constructions. For example, {enjoy|享受} is a dual process-state event type. Its argument roles are determined by the focus of event. In the sentence (8), the focus of 享受 is the mental process which has the event frame of *experiencer* and *content*, while in the sentence (9), the 享受 is focused on the result state which has the argument of *theme*.

(8) 人們(experiencer)享受著涼風吹拂(content)

(9) 涼風吹拂(theme)真享受

Moreover, many VR-like words have to be classified into either process or state, but they usually relate to two different types of primitive concepts. For example, 治好 involves two concepts {doctor|醫治} and {BeRecovered|復原} and thus two event frame structures. The focus of its event type might be process or state due to different constructions.

To solve this problem, we classify each event type and give a prototypical argument structure for each type. The semantic role for each argument may shift due to sense variation of verbs, roles, and constructions. Role shifting rules are designed according to PoS changes, NP semantic type, and construction meaning. For example, in the case of 治好, the shifting rule is: patient({doctor|醫治})=theme({BeRecovered|復原}). More details about constructional affected role shifting rules can see 3.1.3.

It is worth noting that, there are at least three types of static (v.s. dynamic) event types: **pure state**, e.g. 美麗, **state of dual-process-state**, e.g. 享受, and **static viewpoint of acts**, e.g. 得救. Since the first type is easy to be recognized and we have explained the second type, only the third type will be discussed in next section from a viewpoint of multi-level semantic role labeling.

### 3.1.2 Surface or deep semantic role labeling

*Static viewpoint of acts* are defined as those active verbs which have dynamic

event frame but expressed a static view in context. The *static viewpoint of acts* can be classified into the following types. (1) passive structure, e.g. 遇襲, 受害; (2) aspectual structure, e.g. 睡著, 中彈; (3) idiomatic descriptions, e.g. 牛刀小試, 裝模作樣; (4) modal+action, e.g. 免稅, 必勝; (5) VR structure focused on result, e.g. 撐不住, 看得見; (6) others. Based on the syntactic part-of-speech classification, the verbs of above types are classified as stative intransitive verb, i.e. VH PoS in CKIP classification. Therefore in CKIP TreeBank the subjects of them are all labeled *theme*, as shown in (10).

- (10) a. 原住民(theme) 無端(evaluation) 受害(VH)  
 b. 獅子(theme) 睡著(VH) 了(particle)  
 c. 李東華(theme) 只是(evaluation) 牛刀小試(VH)  
 d. 進口物品(theme) 都(quantity) 免稅(VH)  
 e. 東尼(theme) 已經(time) 撐不住(VH)

To justify the design criteria of *uniqueness* for semantic roles, we only label a unique preferable semantic role which best describes the semantic relations with its head. However, we found that such a surface semantic role labeling did not express the deep sense of a sentence and also impeded to achieve canonical sense representation for sentences with different surface forms. For example, we will not be able to acquire the same event role of their original dynamic event frame as shown in (11).

- (11) a. 政府(agent) 侵害(VC) 原住民(patient)  
 b. 獅子(agent) 睡(VA) 中間(location)  
 c. 李東華(agent) 嘗試(VF) 自組公司(content)  
 d. 政府(agent) 不(negation) 徵收(VC) 進口物品稅(theme)  
 e. 東尼(agent) 獨(manner) 撐(VC) 大局(theme)

Although we adopt the surface semantic role labeling approach, we set rules to convert the surface semantic role labeling to deep semantic role labeling, and vice versa, to solve the problem of different viewpoint of understanding the same sentence. For example, the sentences in (10) can be further analyzed as their deep

semantic role labeling as in (12).

- (12) a. 原住民(theme<->patient) 無端(evaluation) [受(passive marker) 害(VC)]  
 b. 獅子(theme<->agent) [睡(VA) 著(aspectual marker)] 了(aspectual marker)  
 c. 李東華(theme<->agent) 只是(evaluation) [牛刀小試(idiom type of try-VF)]  
 d. 進口物品(theme<->theme)都(quantity) [免(modal) 稅(omission of levy-VC)]  
 e. 東尼(theme<->agent) 已經(time) [撐(VC) 不住(result complement)]

By identifying the verbs of static viewpoint of acts into prototypical action and marker/complement, or restoring idiom type to their original primitive, we return the static viewpoint of acts to actions; meanwhile regain the event frames of them. After doing so, 原住民 in (11)a and (12)a can be easily recognized as the same semantic role, i.e. the patient of *damage*. On the contrary, when surface syntactic roles are needed, since the boundary was set, they can also be restored by combining the markers/complements and actions together, to resume states, while maintaining the PoS of VH and having subject been labeled *theme*.

### 3.1.3 A constituent of an event may bear multiple semantic relations.

There are several different cases when we refer to multiple semantic relations of a constituent. First, a constituent of an event bears multiple semantic relations with another constituent, such as the destination of *lead to* may have relations of *location* and *goal*; the seller of the event *buy* can play the roles of *source* or *possessor*. Second, it also refers to a constituent bears multiple semantic relations with different constituents of the sentence. For example in (13), 骨肉 *dead body* is the *possession* of 檢回 *reclaim* and the *theme* of 埋葬 *bury*; 鄉民 is the *theme* of 歸鄉 *returning to home village* and 檢回 *reclaim*, the *agent* of 埋葬 *bury* and the *theme* of 倖存 *survive*.

(13) 由	倖存	鄉民	檢回	骨肉	歸鄉	埋葬
		theme	Head	possession		
		agent		theme		Head
		theme			Head	
	Head	theme				

Third, role markers, such as prepositions and construction patterns, establish

new semantic relations as well, for example, in (14)a 病患 is the *theme* of moving object but is a *patient* of being shifted to the department of internal medicine in (14)b. It is a big issue of semantic role labeling because it shows context (or construction) but not merely verb sense dominates the semantic role assignment. Since the task of semantic role labeling is trying to label a unique semantic role which best describes the semantic role of the constituent, the issue of multiple relations has to be resolved.

(14) a. 病患(theme)轉入內科

b. 病患(patient)被轉入內科

To solve the first case, we suggest giving the prototypical semantic features for each semantic role (Dowty 1991) and a rank order for all semantic roles (see 4.1). For each constituent, we then select the higher rank role best describing the semantic characteristics of the constituent as its semantic role. As for the second case, it is not a problem of selecting a best semantic role but an issue of labeling semantic relations at different levels of syntactic structure. For Sinica Treebank, we only label semantic relations of the highest-level dependent relations (See our Role Labeling Guideline at page 15). As soon as the highest-level dependent head is recognized, the case 1 labeling method will be followed, as shown in (15)a. For the Semantic Bank (abbreviated as SemBank) under developing, all word senses and their fine-grained relations are represented in the structure as exemplified in (15)b. Co-reference relations and zero anaphora are also explicitly expressed.

(15) 由倖存鄉民撿回骨肉歸鄉埋葬

a. VP(**agent**:PP(Head:P06:由|DUMMY:NP(property:VH11:倖存|Head:Nab:鄉民))|**Head**:VC31:撿回|**theme**:NP(Head:Nab:骨肉)|complement:VP(Head:VA13:歸鄉|complement:VC33:埋葬))

b. {撿回\_4. obtain|得到:

由\_1.**theme**= {[x1]鄉民\_3. 鄉下人|CountryFolk :

Predication={倖存\_2. alive|活著:

**theme**={~}

}

},

**possession**={[x2]骨肉\_5.{or({bone|骨},{flesh|肉})}},

**purpose**={埋葬\_7. bury|埋入:

TimePoint={TimeAfter({歸鄉\_6. GoBack|返

```

    回:LocationFin={ [x3]家鄉|hometown } }},
    agent={ [x1] },
    theme={ [x2] },
    location={ [x3] }
  }
}

```

In SemBank annotation shown in (15)b, each word is followed by word order formulated as `_NUM`, and E-HowNet sense type formulated as `.SENSE EXPRESSION`. In addition, `[x]` is used to indicate the co-reference relation between constituents at different levels of syntactic structure. As for Case 3, in Sinica Treebank, some deep semantic relations are different from surface semantic roles but in SemBank the deep semantic relations can be all revealed as exemplified in (16).

(16) a. 病患轉入內科

**TreeBank:** S(theme:NP(Head:Nab:病患)|Head:VC1:轉入|goal:NP(Head:Ncb:內科))

**SemBank:** {轉入\_2.{ MoveItOut|外移}:  
 theme={病患\_1. 病人|SickPatient },  
 LocationFin={ 內科 \_3.{organization|組織 :whole={ 醫院|hospital }}}  
 }

b. 病患被轉入內科

**TreeBank:** S(theme:NP(Head:Nab:病患)|agent:PP(Head:P02:被)|Head:VC1:轉入|goal:NP(Head:Ncb:內科))

**SemBank:** {轉入\_3.{ MoveItOut|外移}:  
 被\_2.agent={},  
 patient={病患\_1. 病人|SickPatient },  
 LocationFin={ 內科 \_4.{organization|組織 :whole={ 醫院|hospital }}}  
 }

At last, we provide semantic representation for each common used construction pattern to expose the constructional meaning of a sentence, such as comparative pattern, *Ba*-construction, *Bei*-construction etc., so as to determine the corresponding semantic roles. Below (17) are some examples:

(17) **Comparative construction: theme, contrast, ComparativeAttribute, range**

e.g. 妹妹(theme) 體重(ComparativeAttribute) 卻 重(Head) 我(contrast)  
五公斤(range)

重 original frame: theme

**Causative construction: actor, goal/theme**

e.g. 大自然(causer) 能 沈靜(Head) 心靈(patient)

沈靜 original frame: theme

**Quantitative construction: theme, range**

e.g. 這口井(theme) 深(Head) 27公尺(range)

深 original frame: theme

**Metaphorical construction: agent, patient**

e.g. 他(agent) 嚐到(Head) 經濟成長放緩的苦況(patient)

嚐到 original frame: experiencer, content

**Ba construction: actor, patient**

e.g. 我(agent) 把英雄(patient) 變(Head) 美人(result) 啦

變 original frame: theme, result

### 3.1.4 Overlapping relations and features of semantic roles

In previous three sections we deal with the *uniqueness* of semantic role. In this section, the *distinctness* of semantic role will be addressed. The criterion of *Distinctness* requests that every constituent (dependent daughter) of a semantic head is distinguished from the other constituents by the role it is assigned except adjuncts, i.e. each argument needs to be distinct role, but some adjuncts may allow multiple occurrences of same roles. The *Distinctness* criterion can be fulfilled because the number of arguments for each event is very limited and each argument can be distinguished by coarse-grained theta role. However adjuncts may not be able to assign distinct coarse-grained semantic roles. For instance, if there is only one semantic role *Time* to express all temporal relations, it is not possible to distinct fine-grained semantic roles of *time point*, *duration*, *frequency* etc. which might occurred at the same phrase. Therefore to fulfill the criterion of *Distinctness* completely it requires a set of fine-grained semantic roles. However fine-grained semantic roles may very possibly have overlapping relation features, since they may be hyponym relations of the same parent. They needs to be distinct carefully while

perform automatic role labeling. For example,

**range vs. location:** *Range* refers to an extent, i.e. a large area, while *location* refers to a fixed space. E.g. 研究對象限於重大疾病(range),阿猴蝸牛只侷限於四重溪一帶(location)

**LocationIni (location initial) vs. source:** *LocationIni* refers to a start point of an area while *source* refers to a start point of an event, including moving event. E.g. 龍神心中(LocationIni)升起一股明悟,安全感的建立完全源自內心(source)

**agent vs. source:** *Agent* refers to a causative force while *source* refers to a start point of an event, for example, agent of 'give' is also source of 'possession'. E.g. 政府(agent)可給予國宅貸款,美國(source)一向予人超強國的印象

**reason vs. purpose:** *Reason* refers to an extensive motivation of engaging something while *purpose* being constrained to a beneficial motivation. E.g. 畫漫畫是為了博取女友的歡心(reason/purpose),大家為了同一目標(purpose/reason)奮鬥,他一定是為了教育有方(reason)而感到驕傲吧,消費者無需為了負擔不起高額消費(reason)而難為情

**range vs. possession:** *Range* refers to an extent of variation within a category while *possession* emphasizes one's belongings. E.g. 他獨自享有五十坪 (range),中國對釣魚台擁有主權(possession)

**target vs. location:** *Target* refers to a correlative object while *location* refers to a fixed place. E.g. 侍衛一步步靠近蘭相如(target); 揚州鄰近天下名泉(location)

**LocationIni vs. StateIni:** *LocationIni* refers to a start point of an area while *StateIni* refers to a start point of a condition. E.g.我只好回公園(LocationIni)來; 台灣才能復歸安定(StateIni)

To solve the problem of overlapping relations and features of semantic roles, we also suggest giving the rank order for all semantic roles and selecting the higher rank role if multiple semantic relations occurred. For example, the event frame of {appear|出現} is LOCATION{location, source}, THEME: *thing appearing*{theme}, it indicates that in majority of sentences, theme appears in location, e.g. 心中(location)湧上(head verb-VC1)些許喜悅(theme), while in few cases, appearing collocates with

source, e.g. 他們(theme)發祥(head verb-VI3)於渭水盆地(source). Part of speech of head verb can also help to determine the role.

#### 4. Lexical Knowledge in E-HowNet for Semantic Role Labeling

To design an automatic semantic role labeling system and achieve better accuracy, we need to overcome the problems discussed above. Our designed E-HowNet ontology provides the lexical knowledge of word senses and semantic roles in the taxonomies for events, objects and relations, to achieve the goal. The major lexical knowledge include sense expressions, part-of-speeches, event frames etc.

##### 4.1 Arguments (event frame) of Verbs

For each event type, by referring to HowNet and Chinese PropBank, we coded a set of semantic roles for its arguments in E-HowNet, and verify the consistency and reasonableness of each event frame with the labeled instances in Sinica TreeBank. The format of the event frame is shown as in (18):

- (18) **Event Type:** {separate|分離}
- Event Frame description:** ACTOR: *separator* {agent, causer},  
 THEME: *thing separated* {theme},  
 COMPANION: *THEME is separated from* {companion}

**TreeBank sentences:**

- S(causer:NP(Head:Naa:酵素)|manner:VH11:快速|theme:PP(Head:P07:將|DUMMY:NP(Head:Nab:魚體))|Head:VC2:分解)
- S(agent:NP(Head:Nab:山豬)|time:Dd:連忙|instrument:PP(Head:P39:用|DUMMY:NP(possessor:Nhaa:他|property:V•的(head:VH11:尖利|Head:DE:的)|Head:Nab:獠牙))|deixis:Dbab:去|Head:VC2:撥開|theme:NP(Head:Nab:網子))
- VP(theme:PP(Head:P07:把|DUMMY:NP(quantifier:DM:一條|Head:Nab:河))|Head:VG1:分成|range:NP(quantifier:DM:兩條|Head:Nac:河))

**Constraint & Role Shifting Rules:**

- ACTOR[-animate]=causer e.g. 酵素
- ACTOR[+animate]=agent e.g. 山豬
- Resultative Construction:theme→theme, range e.g. 一條河(theme), 兩條



河(range)

In each event frame we provide fine-grained description (italicized) of arguments and their respective coarse-grained roles (capitalized) and fine-grained alternations. We also provide constraints to distinguish the differences between the fine-grained alternations. Additional constructional frames are provided to meet the needs of meaning shift of verbs.

The complete analysis of event frame of E-HowNet is given in appendix III.

## 4.2 Semantic Relations and Features of Prepositions

Prepositions play the function of role marker. Therefore in addition to verb sense and construction meaning, prepositions are major factors to determine semantic roles. Hence in E-HowNet we provide semantic and role features for each preposition to facilitate semantic role labeling. For example, we provide the preposition 自 with the feature of [+StartPoint], thus, the roles being assigned to prepositional phrases in (19) must contain the sense of start point, otherwise they would be incorrect role labels.

(19) 我也歡天喜地自北京(LocationIni[+StartPoint])南下

原以為自公職退下來(TimeIni[+StartPoint])後

我朋友仍尚未自離婚的傷痛(source[+StartPoint])復元

這些服務包括自讀書、寫字(RangeIni[+StartPoint])到舉辦職業訓練班次

\*自資訊運用的層面(topic[+StartPoint])來看 vs.

自資訊運用的層面(RangeIni[+StartPoint])來看

Likewise, the prepositions 被,受,遭,叫,讓,承,蒙 bear the role features of *agent* or *experiencer*. The noun phrase marked by these words is either *agent* or *experiencer*, if it has either the features of *agent*, i.e. [+volitive] and [+perceptive], or has the features of *experiencer*, i.e. [+perceptive] and [+affected] respectively. For example, in the sentence of 蒙您厚愛,您, introduced by the preposition 蒙, is the *experiencer* of 厚愛 which is represented by the primitive of {FondOf|喜歡}.

Strictly speaking, when we adopt semantic and role features to describe the senses of prepositions, it result that we are doing the task of adding semantic or role features to the marked constituent to determine its semantic role. The complete sense descriptions of prepositions are shown in Appendix IV.

### 4.3 Semantic Types and Features of Objects

In E-HowNet, we divide events into acts (also known as processes) and states; objects into things, time and space to create taxonomies with their hyponym semantic types and lexical senses. Each semantic type may have different tendency to play different semantic roles. For examples, *agent* normally is an animate; *location* is a place. Furthermore many value type concepts bear fixed semantic role. For instances, 紅 *red*, 黃 *yellow*, 綠 *green* play *color* role only. However many times semantic roles are not distinct by constituents' major semantic types, but rather by their semantic features, such as body part is often used as a *location* or country used as an *agent*. In Section 2.1, we have proposed few semantic features to discriminate semantic roles. These features are also imbedded in E-HowNet to facilitate the task of automatic semantic role labeling. The descriptions of them are shown below:

#### Features of Semantic Roles

- **[+causative]**: It denotes a subject causes someone or something else to do or be something; or causes a change in state of a non-volitional event.
- **[+volitive]**: It denotes an animate with cognitive ability and purposive striving by which an individual decides on and commits to a particular course of action.
- **[+perceptive]**: It denotes an animate with sensory ability by which it can represent and understand the environment.
- **[+affected]**: It denotes an object which is physically and visibly affected under an action.
- **[+disposable]**: It denotes a physical object which can be disposed by someone who is engaged under volition.
- **[+agentive]**: It denotes the factors involved in the object's origins or coming into being.
- **[+movable]**: It denotes something that can move or be moved.
- **[+incremental]**: It denotes an object which under a change-of-state action and be changed quantitatively but not affected physically.
- **[+recipient]**: It denotes an animate that receives or acquires something such as possession, knowledge, and feelings.

- **[+Abstract or Event]**: It denotes an event or a nominalized event, i.e. an affair.
- **[+correlative]**: It denotes the factors involved in the event of correlation.
- **[+DescribedEntity]**: It denotes an object with various attributes which can be described.
- **[+possessive]**: It denotes the factors involved in the object's transference caused by the change of ownership.
- **[+beneficent]**: It denotes the factors involved in doing good, causing good to be done, or the result of doing good.
- **[+comparative]**: It denotes the factors involved in the event of comparison.
- **[+co-participant]**: It denotes the substance of which a thing is made or composed.
- **[+StartPoint]**: It denotes the initial place, range, situation or time point.
- **[+EndPoint]**: It denotes the final place, range, situation or time point.
- **[+FixedPoint]**: It denotes a particular place or time point.

## Features Embedded in the E-HowNet Object Nodes (extracted)



## 5. Conclusion

Semantic roles denote different semantic relations that a constituent plays with respect to the semantic head in a phrase. However the requirement of a unique semantic role labeling is counter to the facts of multiple semantic relations in texts. How to determine the preferable semantic role for each constituent which best describes the semantic relations with its head becomes the major considerations of the paper. Since there are four factors, i.e. verb sense, major sense of constituent, prepositional marker and construction pattern, to determine the semantic role of a constituent; we proposed a guideline to pursue the role assignment. That is, for each phrase, determine the syntactic head and assign the semantic role *Head* to it. Then, for each dependent daughter of the head find the semantic relations between the head and the dependent daughter by referring to the event frame of the head verb, semantic type of noun phrase, semantic features of preposition, and additional frame providing by construction pattern. When ambiguous role assignment occurs, we suggest assigning the role which fits the most semantic features derived from the above four factors and a higher rank role.

We also encounter the difficulty of whether to determine a role from the viewpoint of surface form or of deep sense. It usually takes place in the sentences with the head verb of *Static viewpoint of acts*, such as 受害, 睡著. Because these verbs are used as state verbs in context but have dynamic event frames concerning deep sense. We resolve the problem by adopting the approach of multi-level semantic role labeling, i.e. setting rules to convert the surface semantic role labeling to deep semantic role labeling, and vice versa. For example, 受害 can be analyzed as an intransitive state with the PoS of VH and an argument *theme*, or a transitive act joined with a passive marker, represented as [受(passive marker) 害(VC)] which have the event frame of *agent* and *patient*. To reveal all fine-grained semantic relations for constituents at different levels of syntactic structure, we had just start the project of E-HowNet SemBank annotation which has demonstrated in (15)b and (16).

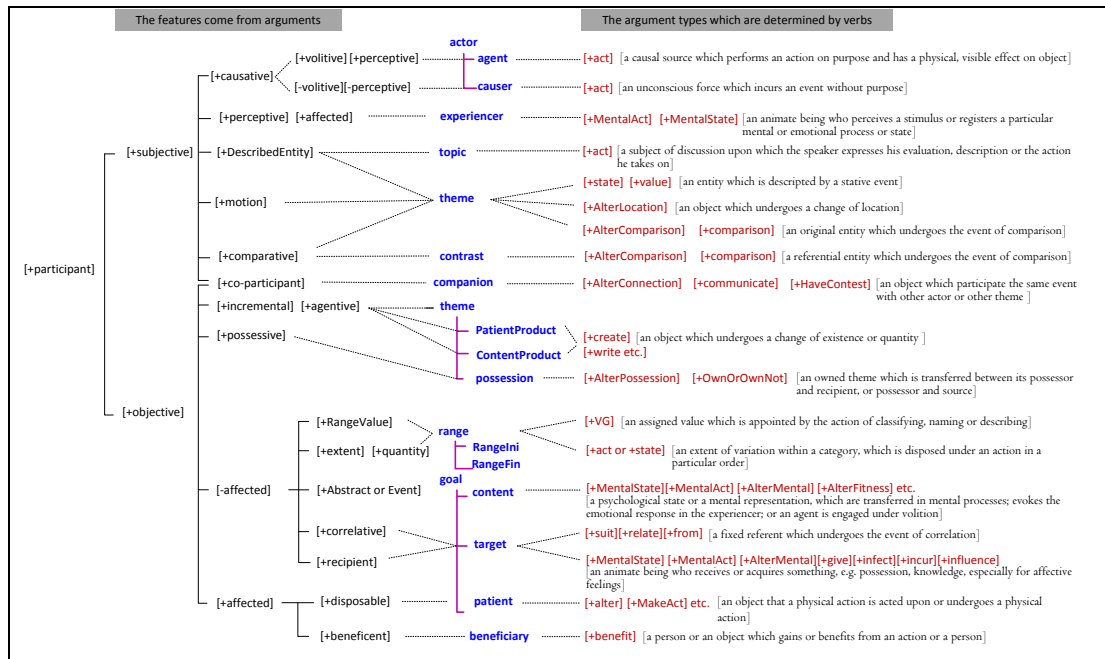
Our ultimate objective is to achieve an automatic semantic role labeling system, and the role set we adopt must fulfill the extended criteria of semantic role, i.e. Completeness, Uniqueness, Distinctness and Independence. The designed E-HowNet ontology provides the lexical knowledge of word senses and semantic roles in the

taxonomies for events, objects and relations, to achieve the goal. The set of semantic roles/relations are arranged from coarse-grained to fine-grained relations in a hierarchical way, and used to represent basic argument structures for more than 80,000 word senses in CKIP dictionary, which justifies the design criteria of *completeness* for semantic roles. Our corpus-based approach guarantees the *completeness* and *independence* criteria. The hierarchical approach resolves the *uniqueness* problem, since fine-grained semantic roles may better describe multiple semantic relations. As for *distinctness*, we adopt the thematic roles of major theories which satisfied the criteria of *distinctness* and *independence*.

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## Appendix I: Semantic Feature of Argument in E-HowNet



## Appendix II: Mapping between Two Sets of Semantic Roles in CKIP

→ denotes the derivation of semantic feature

TreeBank	E-HowNet
Role for Noun X/Head	
<p>predication</p> <p><b>X:</b> [+act][-value] → derived from the nominal head</p> <p>[+instance] → [+temporal] [+locative] derived from adjuncts.</p> <p>Head=Argument(X)</p>	<p>predication   動作描述</p> <p>telic   功能      Head=Agent(X)</p> <p>agentive   製作      Head=Theme(X)</p>
<p>property</p> <p><b>X:</b> [+value] or [+state] → derived from the nominal head</p> <p>Attribute(Head)=X</p>	<p>property   性質</p> <p>PartOf   部分</p> <p>component   部件 <b>X:</b> [+partial]</p> <p><b>Marker:</b> [P:由] → derived from preposition words</p> <p>material   材料</p> <p>ingredients   成分</p> <p>ObjectEvaluation   實體評價</p> <p>attribute   特性</p> <p>scene   背景</p> <p>locational   位置相關</p> <p>temporal   時間相關</p>

<p>possessor</p> <p><b>X:</b> [+De] → derived from checking positions with respect to head verb.</p> <p>[+object] → derived from the nominal head.</p> <p><b>Member(X)=Head</b> or</p> <p><b>Creator(Head)=X</b> or</p> <p><b>Owner(Head)=X</b> or</p> <p><b>Part-of(X)=Head</b></p>	<p>possessor   領屬者</p> <p>member   成員</p> <p>creator   創造者 <b>X:</b> [+agentive] → derived from the head verb</p> <p>owner   擁有者 <b>X:</b> [+possessive] → derived from the head verb</p> <p>whole   整體 <b>X:</b> [+constitutive] → derived from the head verb</p>
<p>quantifier</p> <p><b>X:</b> [+quantity] → derived from the adjunct</p>	<p>quantifier   定量</p> <p>QuantityProperty   數量特性</p> <p>quantitative   數量精確</p> <p>quantity   數量</p>
<p>apposition</p> <p><b>Referent(X)=Referent(Head)</b></p> <p><b>Maker:</b> [P: 比如, 比如說, 譬如, 譬如說, 比方, 比方說, 例如, 例如說, 諸如, 例, 諸如說, 像]</p>	<p>apposition   同位語</p> <p>CoEvent   共發事件</p>
Argument X	
<p>agent</p> <p><b>X:</b> [+volitive][+perceptive] → derived from the head verb</p> <p>[+subjective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+act]</p> <p><b>Actor(Head)=X</b></p> <p><b>Maker:</b> [P: 由, 為, 被, 受, 遭(受), 叫, 讓, 承, 蒙, 歸, 挨, 給, 承蒙, 深為, 備受, 倍受, 深受] → derived from preposition words</p>	<p>agent   主事者</p>
<p>experiencer</p> <p><b>X:</b> [+perceptive][+affected] → derived from the head verb</p> <p>[+subjective] → derive from checking positions with respect to head verb</p> <p><b>Head:</b> [+MentalAct] or [+MentalState]</p> <p><b>Actor(Head)=X</b></p> <p><b>Maker:</b> [P: 由, 為, 被, 受, 遭(受), 叫, 讓, 承, 蒙, 歸, 挨, 給, 承蒙, 深為, 備受, 倍受, 深受] → derived from preposition words</p>	<p>experiencer   經驗者</p>
<p>theme</p> <p>1 <b>X:</b> [+object] → derived from the head verb</p> <p>[+subjective] → derived from checking positions</p>	<p>theme   客體</p>



<p>with respect to head verb</p> <p><b>Head:</b> [+state] or [+value]</p> <p>2 <b>X:</b> [+entity] → derived from the head verb</p> <p>[+comparative] → derived from the head verb</p> <p>[+subjective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+AlterComparison][+comparison]</p> <p>3 <b>X:</b> [+motion] → derived from the head verb</p> <p>[+subjective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+AlterLocation]</p> <p><b>Actor(Head)=X</b></p> <p>4 <b>X:</b> [+incremental][+agentive] → derived from the head verb</p> <p>[+objective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+create] or [+write, +translate, +record, +draw, +carve, +print, +publish]</p> <p><b>Result(Head)=X</b></p> <p>5 <b>X:</b> [-affected][+agentive] [+possessive] → derived from the head verb</p> <p>[+objective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+AlterPossession] [+OwnOrOwnNot] [+surplus]</p>	<p><b>product</b>   產品</p> <p><b>PatientProduct</b>   製成產品</p> <p><b>ContentProduct</b>   製成內容</p> <p><b>possession</b>   持有物</p>
<p><b>goal</b></p> <p>As one of E-HowNet role at the right column</p>	<p><b>goal</b>   目標</p> <p><b>content</b>   內容</p> <p><b>X:</b> [-affected] [+Abstract or +Event] → derived from the head verb</p> <p>[+objective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+MentalState][+MentalAct] [+AlterMental]</p> <p>[+AlterFitness][+addict] [+help][+fulfil][+GeneralAct] [+MakeAct]</p> <p><b>Marker:</b> [P:對 etc.]</p> <hr/> <p><b>patient</b>   受事者</p> <p><b>X:</b> [+affected][+disposable] → derived from the head verb</p> <p>[+objective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+control][+stabilize][+alter]</p> <p>[+ProvideFor][+CauseToGrow][+resume][+AlterStateGood][+AlterStateBad][+CauseToBeHidden] [+AlterAttribute] [+MakeAct]</p>

<p>The target of E-HowNet is the goal of Treebank.</p>	<p><b>Marker:</b> [P:把,將,拿,給,往,向,望,朝]</p> <p><b>target</b>   對象</p> <p>1. <b>X:</b> [-affected][+recipient] → derived from the head verb  [+objective] → derived from checking positions with respect to head verb  <b>Head:</b> [+MentalState] [+MentalAct]  [+AlterMental][+give][+infect][+incur][+influence]  <b>Marker:</b> [P:向,迎,朝,對,問,給]</p> <p>2. <b>X:</b> [-affected][+correlative] → derived from the head verb  [+objective] → derived from checking positions with respect to head verb  <b>Head:</b> [+suit][+relate][+from]  <b>Marker:</b> [P:和,與,跟]</p>
<p><b>target</b></p> <p>The target of Treebank denotes 'a direction' of E-HowNet.</p> <p><b>X:</b> [+direction] [-objective][+subjective]</p>	<p><b>direction</b></p> <p><b>X:</b> [+locative] → derived from the adjunct</p>
<p><b>beneficiary</b></p> <p><b>X:</b> [+affected][+beneficent] → derived from the head verb  [+objective] → derived from checking positions with respect to head verb  <b>Head:</b> [+benefit]  <b>Marker:</b> [P:為(了),替,幫,代,給]</p>	<p><b>beneficiary</b>   受益者</p>
<p><b>companion</b></p> <p><b>X:</b> [-affected][+co-participant] → derived from the head verb  [+objective or +subjective]  <b>Head:</b> [+AlterConnection][+communicate][+HaveContest]  <b>Marker:</b> [P:與,同,和,跟,協同,隨同,偕,偕同,連,連同]</p>	<p><b>companion</b>   同伴</p>

<p>source</p> <p><b>X:</b>[+StartPoint] → derived from the adjunct</p> <p><b>Head:</b>[+ResultFrom][+take]</p> <p><b>Marker:</b> [P:自,由,從,自從,打從,打,於,于,歸]</p>	<p>source 來源</p>
<p>comparison</p> <p><b>X:</b> [+comparative] → derived from the head verb</p> <p>[+subjective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b>[+AlterComparison][+comparison]</p> <p><b>Marker:</b> [P:像,如,似,有如,猶如,如同,一如,一似,猶若,像似,相對於,相較于,不及,比較,比起,較之,相較於,相對於,相較]</p>	<p>contrast 比較對象</p>
<p>causer</p> <p><b>X:</b> [-volition] [-perceptive] → derived from the head verb</p> <p>[+subjective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+act]</p> <p><b>Marker:</b> [P:由,為,被,受,遭(受),叫,讓,歸,挨,給,深為,備受,倍受,深受]</p> <p>Actor(Head)=X</p>	<p>causer 肇因</p> <p>cause 原因</p>
<p>topic</p> <p><b>X:</b> [+object] → derived from the head verb</p> <p>[+subjective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+act]</p> <p><b>Marker:</b> [P:針對,至於,關於,對於,就,自(由,從,在,於,于)...上(下,中,層面,角度,立場),往...上(中,下)]</p>	<p>topic 主題</p>
<p>range</p> <p>1. <b>X:</b> [+RangeValue] → derived from the head verb</p> <p>[+objective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [VG:為,當,叫,有,做,作 etc. ]</p> <p>Result(Head)=X</p> <p>2. <b>X:</b> [+extent] [+quantity] → derived from the head verb</p> <p>[+objective] → derived from checking positions with respect to head verb</p> <p><b>Head:</b> [+act or +state]</p>	<p>range 幅度</p> <p>ComparativeQuantity 比較量</p>

<b>Marker:</b> [P:自(從,由)...至(到,及至);往,向,朝]	
Adjunct [-subjective][-objective]	
aspect <b>X:</b> [+EventTime] → derived from the adjunct <b>Marker:</b> [Di: 了,著,過 etc., Dd: 已(經),尚未 etc.]	aspect 時貌
degree <b>Marker:</b> [Df: 很,非常,極了 etc.]	degree 程度
deontics <b>Marker:</b> [Dbab: 必需,應該,可以 etc.]	modality 情態 possibility 可能性 necessity 必要性
Epistemics <b>Marker:</b> [Dbaa: 一定,自當,也許 etc.]	modality 情態 possibility 可能性 necessity 必要性 truth 真假
frequency <b>X:</b> [+EventTime] → derived from the adjunct	frequency 頻率
instrument <b>X:</b> [+object] → derived from the adjunct <b>Marker:</b> [P: 由,經,經過,經由,靠,靠著,假,倚,以,用,藉由,藉(著),透過,憑(著),憑依,憑藉,拿,仗(著)]	instrument 工具
manner <b>X:</b> [+De] → derived from checking positions with respect to head verb <b>Marker:</b> [Dh etc.] → derived from POS	manner 方式 means 途徑 <b>X:</b> [+act] → derived from the adjunct <b>Marker:</b> [P: 由,經,經過,經由,靠,靠著,假,倚,以,用,藉由,藉(著),透過,憑(著),憑依,憑藉,仗(著)] → derived from preposition words method 方法
avoidance <b>Marker:</b> [Cb: 省得,免得 etc.]	avoidance 以免
addition <b>Marker:</b> [Cb: 而且,並且,反而 etc.]	addition 並且
alternative <b>Marker:</b> [Cb: 要麼,要不 etc.]	alternative 選擇
complement	story 前因後果
concession <b>Marker:</b> [Cb: 雖然,儘管 etc.]	concession 儘管
conclusion <b>Marker:</b> [Cb: 那麼,那,則 etc.]	conclusion 結論
condition	condition 條件

<p><b>Marker:</b> [Cb: 只有,唯有,除非 etc.; P: 在,於,于,往,朝,至,到]</p>	StateIni 起始狀態
<p>contrast</p> <p><b>Marker:</b> [Cb:可是,然而,不過,但 etc.]</p>	disjunctive 轉折
<p>conversion</p> <p><b>Marker:</b> [Cb: 否則 etc.]</p>	conversion 否則
<p>duration</p> <p><b>X:</b> [+temporal] → derived from the adjunct</p>	duration 歷時
<p>evaluation</p>	*attitude 態度 depend on words
<p>exclusion</p>	except 除外
<p>inclusion</p>	
<p>interjection 語法角色</p>	attitude 態度
<p>listing</p> <p><b>Marker:</b> [Cb: 首先,一來,一方面 etc.]</p>	listing 列項
<p>location</p> <p><b>X:</b> [+locative] → derived from the adjunct</p>	<p>locational 位置相關</p> <p>location 位置 <b>X:</b> [+FixedPoint]</p> <p><b>Marker:</b> [P:在,於,于,臨,當(著),靠,靠著,距離,離,距,假,倚]</p> <p>LocationIni 起始位置 <b>X:</b> [+StartPoint]</p> <p><b>Marker:</b> [P:自,由,從,打從,打]</p> <p>LocationFin 結束位置 <b>X:</b> [+EndPoint]</p> <p><b>Marker:</b> [P:至,到,直到,迄]</p> <p>LocationThru 經過位置 <b>X:</b> [+through]</p> <p><b>Marker:</b> [P:經,經過,途經,經由,歷經,順(著),沿(著),循(著),依循,依(著),挨,隔]</p> <p>toward 朝 <b>X:</b> [+toward]</p> <p><b>Marker:</b> [P:往,向,望(著),朝(著),(迎)著]</p> <p>direction 方向</p> <p>distance 距離</p> <p>source 來源 <b>X:</b> [+StartPoint]</p>
<p>hypothesis</p> <p><b>Marker:</b> [Cb: 如果,要是,假如,的話 etc.]</p>	hypothesis 假如
<p>quantity</p>	<p>quantity 數量</p> <p>range 幅度</p>
<p>reason</p> <p><b>X:</b> [-volitive] → derived from the adjunct</p> <p><b>Marker:</b> [Cb: 因為,由於,既然 etc.,P: 因(著),衝著,以,為(了)]</p>	cause 原因

rejection <b>Marker:</b> [Cb: 與其 etc.]	rejection 與其
restriction <b>Marker:</b> [Cb: 非但,不僅 etc.]	restriction 非但
result <b>Marker:</b> [Cb: 所以,以致於,是以 etc.]	result 結果 StateFin 結束狀態
selection <b>Marker:</b> [Cb: 不如,倒不如 etc.]	selection 不如
standard <b>Marker:</b> [P:順(著),沿(著),循(著),依循,依(著),以,視,論,基於,基于,本著,依照,按(著),照(著),秉(著),隨(著),據,依據,按照,根據,據以,援,援照,仿照,比照]	standard 標準
time <b>X:</b> [+temporal] → derived from the adjunct	temporal 時間相關 TimePoint 時點 <b>X:</b> [+FixedPoint] <b>Marker:</b> [P:在,於,于,當,趁,逢,值,待,趕,繼,臨,等,正當,逢,臨,趕,趁(著),乘(著),當(著),臨到,臨近,每逢,值,距離,離,距] TimeIni 起始時點 <b>X:</b> [+StartPoint] <b>Marker:</b> [P:自,由,從,自從,打從,打] TimeFin 結束時點 <b>X:</b> [+EndPoint] <b>Marker:</b> [P:至,到,直到,迄,及至,等到,待到,延至,遲至,截至,待,俟,留待] duration 歷時 <b>X:</b> [+through] <b>Marker:</b> [P:經,經過,經由,歷經,隔] TimeFeature 時間特徵 while 當 <b>X:</b> [+EventTime] aspect 時貌 <b>X:</b> [+EventTime] sequence 次序 <b>X:</b> [+EventTime]
uncondition <b>Marker:</b> [Cb: 縱使,縱然,就算 etc.]	uncondition 縱然
whatever <b>Marker:</b> [Cb: 不論,無論,不管 etc.]	whatever 不論
purpose <b>X:</b> [+beneficent] <b>Marker:</b> [Cb: 以,以便,好 etc.,T:來]	purpose 目的
particle	particle 語助
	price 價格
	speed 速度

negation <b>Marker:</b> [Dc: 不,沒,沒有,未,從不,未曾 etc.]	not 不
DUMMY DUMMY1 DUMMY2	And, or
deixis	none
imperative	none
nominal	none
head	none

### Appendix III: Event Frame of E-HowNet

edited by 2015.5.4

event type	prototypical semantic role
exist 存在	LOCATION{location},THEME: <i>thing exists</i> {theme} /*LOCATION 有可能是 topic, 但不視為 argument*/
ComeToWorld 問世	THEME{theme},LOCATION{location}
appear 出現	LOCATION{location,source},THEME: <i>thing appearing</i> {theme}
exposure 露出	THEME: <i>thing shown</i> {theme},LOCATION: <i>where THEME shown</i> {location}
happen 發生	THEME: <i>happening to</i> {theme}, GOAL: <i>accident,event</i> {content}
disappear 消失	THEME{theme}
fixed 已定	THEME{theme}
unfixed 未定	THEME{theme}
alive 活著	THEME{theme}
function 活動	THEME{theme}
pregnant 懷孕	ACTOR{agent,causer},THEME{theme}
GoOn 繼續 (dual)	ACT ACTOR{agent,causer},GOAL: <i>thing that continues</i> {content}
	STATE THEME{theme}
withstand 抗住	ACTOR{agent,causer,experiencer},GOAL: <i>thing opposed</i> {content,patient}
undergo 經受	RECEPIENT{experiencer,theme},GOAL: <i>thing RECEPIENT goes through</i> {content}
enjoy 享受	ACTOR{experiencer},GOAL{content}
suffer 遭受	RECEPIENT{theme},GOAL{content}
AptTo 易於	THEME{theme},GOAL{content}
endure 忍耐	ACTOR{experiencer},GOAL{content}
BeRecovered 復原	THEME{theme}

awake 醒	THEME{theme}
BeFull 吃飽	THEME{theme}
lucky 幸運	THEME{theme}
prosper 發達	THEME{theme}
win 獲勝	THEME{theme}
surpass 強過 (dual)	ACT ACTOR{agent},GOAL{content}
	STATE THEME:entity compared{theme},CONTRAST:THEME is equivalent to{contrast},COMPARATIVE-ATTRIBUTE: comparative content{ComparativeAttribute},COMPARATIVE-QUANTITY{range}
WellKnown 成名	THEME{theme}
succeed 成功	THEME{theme}
able 能	THEME{theme},GOAL:thing THEME is especially good at doing{content}
tired 疲乏	THEME{theme}
HungryThirsty 飢渴	THEME{theme}
ill 病態(dual)	STATE THEME{theme}
	ACT RECIPIENT{theme},GOAL{content}
wounded 受傷	THEME{theme}
disable 殘疾	THEME{theme}
labour 臨產	ACTOR{agent}
mad 瘋癲	THEME{theme}
paralyse 癱麻	THEME{theme}
painful 疼痛	THEME{theme}
dizzy 昏迷	THEME{theme}
twitch 抽搐	THEME{theme}
bleed 出血	THEME{theme}
swollen 腫脹	THEME{theme}
fever 寒熱	THEME{theme}
StomachTrouble 腹症	THEME{theme}
pant 氣喘	ACTOR{agent}
inflamed 發炎	THEME{theme}
itch 發癢	THEME{theme}
OutOfOrder 壞掉	THEME{theme}
decline 衰敗	THEME{theme}



unfortunate 不幸	THEME{theme}
fail 失敗	THEME{theme}
err 出錯	THEME{theme}
defeated 輸掉	THEME{theme}
inferior 不如	THEME,CONTRAST{contrast},COMPARATIVE-ATTRIBUTE{ComparativeAttribute},COMPARATIVE-QUALITY{range}
lack 缺少	THEME: <i>entity described</i> {theme},RANGE: <i>entity lacking</i> {range}
end 終結	ACTOR{agent,causer},GOAL: <i>thing that ACTOR ended</i> {content}
die 死	THEME{theme}
finish 完畢	ACTOR{agent,causer},GOAL: <i>thing ACTOR puts an end to</i> {content}
perish 滅亡	ACTOR{agent,causer},GOAL: <i>entity ACTOR makes perish</i> {patient}
due 到期	THEME{theme},RANGE{range}
WeatherFine 好天	THEME{theme}
WeatherBad 壞天	THEME{theme}
AtEase 安心	ACTOR{experiencer},GOAL{content}
calm 鎮靜	THEME{experiencer,theme}
joyful 喜悅	ACTOR{experiencer},GOAL{content}
satisfied 滿意	CAUSER: <i>things entity satisfied with</i> {causer},ACTOR{experiencer},GOAL: <i>entity satisfied</i> {content}
FeelNoQualms 無愧	ACTOR{experiencer},GOAL{content}
shameless 沒羞	ACTOR{experiencer},GOAL{content}
uneasy 不安	ACTOR{experiencer}
unsatisfied 不滿	ACTOR{experiencer},GOAL{content}
upset 煩惱	ACTOR{experiencer},GOAL{content}
sad 憂愁	ACTOR{experiencer},GOAL{content}
sorrowful 悲哀	ACTOR{experiencer},GOAL{content}
fear 害怕	ACTOR{experiencer},GOAL{content}
surprise 驚奇	ACTOR{experiencer},GOAL{content}
worried 著急	ACTOR{experiencer},GOAL{content}
angry 生氣	ACTOR{experiencer},GOAL{content}
disheartened 灰心	ACTOR{experiencer}
repent 懊悔	ACTOR{experiencer},GOAL{content}
shy 羞愧	ACTOR{experiencer},GOAL{target,content}
embarrassed 為難(dual)	STATE THEME: <i>people or things that made difficult for</i> {theme}

	ACT ACTOR{agent,causer},GOAL{target}
disappointed 失望	ACTOR{experiencer},GOAL{content}
FondOf 喜歡	ACTOR{experiencer},GOAL{content}
like 愛惜	ACTOR{experiencer},GOAL:entity ACTOR cherishes{content}
love 愛戀	ACTOR{experiencer},GOAL:entity ACTOR loves{content}
PayAttention 注意	ACTOR{experiencer,agent},GOAL:entity ACTOR pays attention to{content}/*除 ACTOR 與 GOAL 外，可能出現 topic，但不視為 argument*/
ParticularAbout 講求	ACTOR{experiencer,agent},GOAL:entity ACTOR lays more emphasis on{content}/*除 ACTOR 與 GOAL 外，可能出現 topic，但不視為 argument*/
respect 敬佩	ACTOR{experiencer},GOAL{content}
loyal 忠孝	ACTOR{experiencer},GOAL: people ACTOR is loyal or obey to{target}
admire 羨慕	ACTOR{experiencer},GOAL{content}
jealous 妒忌	ACTOR{experiencer},GOAL{content}
grateful 感激	ACTOR{experiencer},GOAL{content}
agree 同意	ACTOR{experiencer},GOAL{content}
ThinkOf 思念	ACTOR{experiencer},GOAL{content}
sorry 惋惜	ACTOR{experiencer},GOAL{content}
pity 憐憫	ACTOR{experiencer},GOAL{content}
disgust 厭惡	ACTOR{experiencer},GOAL{content}
stupefied 木然	ACTOR{experiencer}
blame 埋怨	ACTOR{experiencer},GOAL{content}
hate 仇恨	ACTOR{experiencer},GOAL{content}
forgive 原諒	ACTOR{experiencer},GOAL{content}
regret 抱歉	ACTOR{experiencer},GOAL{content}
despise 輕視	ACTOR{experiencer},GOAL:entity ACTOR pays no attention to{content}
doubt 懷疑	ACTOR: doubter{experiencer},GOAL:thing or person doubted{content}
cherish 心懷	ACTOR{experiencer},GOAL{content}
excited 激動	ACTOR:exciter{experiencer},GOAL: stimulus{content}
expect 期望	ACTOR{experiencer},GOAL{content}
need 需求	THEME:needer{theme},GOAL:thing needed{content}
willing 願意	ACTOR{experiencer},GOAL:thing ACTOR inclined to do{content}
grudge 不捨	ACTOR{experiencer},GOAL{content}
dare 敢於	ACTOR{experiencer},GOAL{content}

hesitate 猶豫	ACTOR{experiencer},GOAL:entity ACTOR hesitates about{content}
perception 感知	ACTOR{experiencer},GOAL{content}
know 知道	ACTOR{experiencer},GOAL:things ACTOR know{content}
understand 領會	ACTOR{experiencer},GOAL{content}
regard 認為	ACTOR{experiencer},GOAL{content}
believe 相信	ACTOR{experiencer},GOAL{content}
remember 記得	ACTOR{experiencer},GOAL:entity EXPERIENCER remembers{content}
dream 做夢	ACTOR{experiencer},GOAL{content}
ignorant 不知	ACTOR{experiencer},GOAL:things ACTOR doesn't know{content}
forget 忘記	ACTOR{experiencer},GOAL{content}
misunderstand 誤信	ACTOR{experiencer},GOAL{content}
confuse 混淆	ACTOR{agent,causer},GOAL:entity that ACTOR is confused about{content}
change 變化(dual)	ACT ACTOR{agent,causer},THEME:entity ACTOR changes or transforms{theme},STATEFIN: state of THEME after changed{result}
	STATE THEME:entity undergoing change{theme},STATEFIN: state of THEME after changing{result}
StateChange 態變(dual)	ACT ACTOR{agent,causer},GOAL:entity being changed{patient}
	STATE THEME:entity undergoing change{theme}
FormChange 形變	THEME{theme}
BecomeMore 增多	THEME:entity increasing{theme},RANGE:extent of increasing{range}{RangeIni,RangeFin}
surplus 剩餘	THEME:entity described{theme},RANGE:entity left{range}
BecomeLess 減少	THEME:entity reduced{theme},RANGE:extent of reducing{range}{RangeIni,RangeFin}
grow 成長	THEME:entity undergoing growth{theme},POSSESSION: thing THEME grows {possession}, RANGE:extent of growing{range}{RangeIni,RangeFin}
be 是	THEME:entity being predicated{theme},RANGE:predicative{range}
become 成為	THEME:entity undergoes becoming{theme},STATEFIN:THEME becomes to{result}
mean 指代	THEME: thing described{theme},RANGE:thing THEME means{range}
own 有	THEME:owner{theme},POSSESSION:entity owned{range,possession}
obtain 得到	THEME:obtainer{theme},POSSESSION:entity obtained{possession}
receive 收受	THEME{theme},POSSESSION{possession}
BelongTo 屬於	THEME{theme},SOURCE:THEME is subordinate to{source}
lose 失去	THEME:party losing stuff{theme},POSSESSION:thing lost{possession}
InDebt 虧損	THEME:loser{theme},POSSESSION:business loss incurred in{possession}
owe 欠	THEME:debtor{theme},SOURCE:creditor{source},POSSESSION:entity owed{possession}

equal 相等	<i>THEME:entity compared</i> {theme}, <i>CONTRAST:THEME is equivalent to</i> {contrast}, <i>COMPARATIVE-ATTRIBUTE: comparative content</i> {ComparativeAttribute}, <i>COMPARATIVE-QUANTITY</i> {range}
alike 似	<i>THEME:entity compared</i> {theme}, <i>CONTRAST:THEME is equivalent to</i> {contrast}, <i>COMPARATIVE-ATTRIBUTE: comparative content</i> {ComparativeAttribute}, <i>COMPARATIVE-QUANTITY</i> {range}
different 異	<i>THEME:entity compared</i> {theme}, <i>CONTRAST:THEME is equivalent to</i> {contrast}, <i>COMPARATIVE-ATTRIBUTE: comparative content</i> {ComparativeAttribute}, <i>COMPARATIVE-QUANTITY</i> {range}
deserve 值得	<i>THEME:what makes it worthwhile</i> {theme}, <i>GOAL:what is worthwhile</i> {content}
fit 適合	<i>THEME</i> {theme}, <i>GOAL:consistent with</i> {content}
ServeAsFoil 陪襯	<i>THEME</i> {theme}, <i>GOAL:thing which shows better in contrast with THEME</i> {content}
contain 包含	<i>THEME: thing including</i> {theme}, <i>GOAL:thing included</i> {content}
BeMember 隸屬	<i>THEME</i> {theme}, <i>SOURCE:THEME is subordinate to</i> {source}
relate 有關	<i>THEME</i> {theme}, <i>GOAL:THEME is relevant to</i> {content}
depend 依靠	<i>THEME:relier</i> {theme}, <i>GOAL:thing relied on</i> {target,content}
BeIndependent 獨立	<i>THEME</i> {theme}
BeOpposite 對立	<i>THEME</i> {theme}, <i>GOAL</i> {target}
ResultIn 導致	<i>CAUSER</i> {causer}, <i>STATEFIN</i> {result}
ResultFrom 緣於	<i>THEME</i> {theme}, <i>SOURCE</i> {source}
BaseOn 基於	<i>THEME</i> {theme}, <i>GOAL:based on</i> {content}
influence 影響	<i>THEME</i> {theme}, <i>GOAL: THEME has an effect on</i> {target,content}
situated 處於	<i>THEME</i> {theme}, <i>LOCATION:place THEME is located</i> {location}
facing 朝向	<i>THEME</i> {theme}, <i>GOAL:entity faced or goal THEME moves toward</i> {direction,target}
LeadTo 通往	<i>THEME</i> {theme}, <i>SOURCE:location THEME traveling from</i> {LocationIni}, <i>GOAL:location THEME leads to</i> {LocationFin}
from 相距	<i>THEME</i> {theme}, <i>RANGE:distance between members of THEME</i> {range}
BeNear 靠近	<i>THEME</i> {theme}, <i>GOAL:entity THEME is close to</i> {target,content,location}
BeAcross 相交	<i>THEME</i> {theme}, <i>COMPANION</i> {companion}
BeBeyond 越界	<i>THEME</i> {theme}, <i>GOAL:quantity THEME exceeds</i> {quantity}
DoSum 算術	<i>THEME</i> {theme}
AmountTo 總計	<i>THEME</i> {theme}, <i>QUANTITY:amount THEME totals</i> {quantity}
AbilityValue 能力值	<i>THEME</i> {theme}, <i>GOAL:thing THEME can do</i> {content}
aged 老年	<i>THEME</i> {theme}

MiddleAge 中年	THEME{theme}
adult 成年	THEME{theme}
young 青年	THEME{theme}
child 少兒	THEME{theme}
bright 明	THEME{theme}
dark 暗	THEME{theme}
spotless 潔	THEME{theme}
dirty 髒	THEME{theme}
clear 清	THEME{theme}
blurred 渾	THEME{theme}
colored 彩	THEME{theme}
plain 素	THEME{theme}
red 紅	THEME{theme}
yellow 黃	THEME{theme}
blue 藍	THEME{theme}
green 綠	THEME{theme}
purple 紫	THEME{theme}
brown 褐	THEME{theme}
white 白	THEME{theme}
black 黑	THEME{theme}
grey 灰	THEME{theme}
RedBrown 赭	THEME{theme}
BlueGreen 青	THEME{theme}
colorless 無色	THEME{theme}
austere 冷峻	THEME{theme}
tidy 整潔	THEME{theme}
sloppy 邋邇	THEME{theme}
naked 赤裸	THEME{theme}
clad 非赤裸	THEME{theme}
hardback 精裝	THEME{theme}
paperback 平裝	THEME{theme}
straight 直	THEME{theme}
curved 彎	THEME{theme}

dense 密	THEME(theme)
sparse 疏	THEME(theme)
deep 深	THEME(theme)
shallow 淺	THEME(theme)
dot 點	THEME(theme)
linear 線	THEME(theme)
planar 面	THEME(theme)
cubic 體	THEME(theme)
level 平	THEME(theme)
uneven 不平	THEME(theme)
wrinkled 皺	THEME(theme)
fat 胖	THEME(theme)
bony 瘦	THEME(theme)
fine 纖	THEME(theme)
widediameter 粗	THEME(theme)
GeoRegular 形狀規則	THEME(theme)
Geolrregular 形狀不規則	THEME(theme)
malformed 畸	THEME(theme)
hard 硬	THEME(theme)
soft 軟	THEME(theme)
crisp 脆	THEME(theme)
tender 嫩	THEME(theme)
tough 韌	THEME(theme)
high 高	THEME(theme)
low 低	THEME(theme)
NotLight 濃	THEME(theme)
light 淡	THEME(theme)
LengthLong 長	THEME(theme)
LengthShort 短	THEME(theme)
palpable 有形	THEME(theme)
impalpable 無形	THEME(theme)
fashionable 時髦	THEME(theme)

unfashionable 背令	THEME{theme}
StateLiquid 液態	THEME{theme}
StateSolid 固態	THEME{theme}
StateGas 氣態	THEME{theme}
upright 正	THEME{theme}
slanted 歪	THEME{theme}
blunt 鈍	THEME{theme}
sharp 利	THEME{theme}
square 方	THEME{theme}
round 圓	THEME{theme}
angular 角	THEME{theme}
flat 扁	THEME{theme}
protruding 凸	THEME{theme}
dented 凹	THEME{theme}
layered 疊	THEME{theme}
pointed 尖	THEME{theme}
pointless 禿	THEME{theme}
steep 陡	THEME{theme}
gradual 緩	THEME{theme}
coarse 糙	THEME{theme}
polished 光	THEME{theme}
symmetrical 勻稱	THEME{theme}
asymmetrical 不勻稱	THEME{theme}
big 大	THEME{theme}
medium 中	THEME{theme}
small 小	THEME{theme}
thick 厚	THEME{theme}
thin 薄	THEME{theme}
broad 廣	THEME{theme}
wide 闊	THEME{theme}
narrow 窄	THEME{theme}
attractive 誘人	THEME{theme}
unattractive 不誘人	THEME{theme}

gracious 雅	THEME{theme}
unaffected 落落大方	THEME{theme}
dignified 神氣	THEME{theme}
luxurious 豪華	THEME{theme}
ungracious 不雅	THEME{theme}
affected 矯揉造作	ACTOR{agent}
vulgar 俗	THEME{theme}
couth 脫俗	THEME{theme}
uncouth 土氣	THEME{theme}
westernized 洋氣	THEME{theme}
GoodLooking 好看	THEME{theme}
beautiful 美	THEME{theme}
unsightly 難看	THEME{theme}
ugly 醜	THEME{theme}
passionate 有情	ACTOR{experiencer}
ardent 熱情	THEME{theme}
passionless 無情	THEME{theme}
indifferent 冷漠	THEME{theme}
thrifty 儉	ACTOR{experiencer}
extravagant 奢	ACTOR{experiencer}
fluent 暢	THEME{theme}
nimble 捷	THEME{theme}
dexterous 巧	THEME{theme}
NotQuick 訥	THEME{theme}
flexible 活	THEME{theme}
stiff 呆	THEME{theme}
constant 恆定	THEME{theme}
changeable 易變	THEME{theme}
sociable 善交往	THEME{theme}
unsociable 不善交往	THEME{theme}
eccentric 僻	THEME{theme}
mischievous 淘	THEME{theme}
BadTemper 壞脾氣	THEME{theme}



overt 公開	THEME(theme)
covert 隱秘	THEME(theme)
frank 直率	THEME(theme)
NotFrank 不直率	THEME(theme)
tactful 婉	THEME(theme)
direct 直接	THEME(theme)
indirect 間接	THEME(theme)
severe 嚴厲	THEME(theme)
lenient 寬大	THEME(theme)
proper 當	THEME(theme)
improper 不當	THEME(theme)
diligent 勤	THEME(theme)
lazy 懶	THEME(theme)
free 自由	THEME(theme)
controlled 受限	THEME(theme)
strict 嚴格	THEME(theme)
benevolent 仁	THEME(theme)
wicked 歹	THEME(theme)
selfish 自私	THEME(theme)
unselfish 無私	THEME(theme)
sensible 講理	THEME(theme)
NotSensible 不講理	THEME(theme)
autocratic 霸道	THEME(theme)
acquisitive 貪心	THEME(theme)
unacquisitive 不貪心	THEME(theme)
broadminded 心胸開闊	THEME(theme)
narrowminded 心胸狹 窄	THEME(theme)
generous 慷	THEME(theme)
miser 吝	THEME(theme)
earnest 誠心	THEME(theme)
frivolous 無誠心	THEME(theme)
amiable 友善	THEME(theme)

unfriendly 不友善	THEME{theme}
gentle 柔	THEME{theme}
fierce 暴	THEME{theme}
faithful 忠	THEME{theme}
treacherous 逆	THEME{theme}
polite 有禮	THEME{theme}
impolite 無禮	THEME{theme}
disciplined 有紀律	THEME{theme}
undisciplined 無紀律	THEME{theme}
restrained 有涵養	THEME{theme}
unrestrained 無涵養	THEME{theme}
ambitious 有志氣	THEME{theme}
unambitious 沒志氣	THEME{theme}
resolute 堅決	THEME{theme}
irresolute 不堅決	THEME{theme}
docile 恭順	THEME{theme}
stubborn 倔強	THEME{theme}
brave 勇	THEME{theme}
composed 沈著	THEME{theme}
timid 怯	THEME{theme}
active 積極	THEME{theme}
inactive 消極	THEME{theme}
passive 被動	THEME{theme}
endurant 有耐性	THEME{theme}
eager 急切	THEME{theme}
voluntary 自願	ACTOR{experiencer},GOAL{content}
compulsory 強制性	THEME{theme}
intentional 特意	ACTOR{experiencer},GOAL:thing ACTOR makes efforts to ensure{content}
unintentional 無意	ACTOR{experiencer},GOAL:thing ACTOR doesn't intend to do{content}
accidental 偶發	THEME{theme}
attentive 專注	ACTOR{experiencer},GOAL:thing ACTOR pay attentions{content}
absentminded 心不在焉	THEME{theme}
creative 有創意	THEME{theme}

uninventive 無創意	THEME{theme}
ready 有準備	THEME{theme}
unready 無準備	THEME{theme}
arrogant 傲	THEME{theme}
modest 謙	THEME{theme}
careful 細心	THEME{theme}
careless 粗心	THEME{theme}
perceptive 深刻	THEME{theme}
unperceptive 不深刻	THEME{theme}
cautious 慎	ACTOR{experiencer},GOAL:entity ACTOR is careful about{content}
flighty 浮	THEME{theme}
rash 莽	THEME{theme}
strong 強	THEME{theme}
weak 弱	THEME{theme}
alone 獨自	THEME{theme}
collective 集體的	THEME{theme}
respective 分別的	THEME{theme}
EachOther 相互	THEME{theme}
together 共同	THEME{theme}
moral 有道德	THEME{theme}
noble 高尚	THEME{theme}
immoral 不道德	THEME{theme}
despicable 卑劣	THEME{theme}
vicious 罪惡	THEME{theme}
lascivious 淫	THEME{theme}
decent 正經	THEME{theme}
honest 誠實	THEME{theme}
dishonest 不誠實	THEME{theme}
trusty 可信	THEME{theme}
untrusty 不可信	THEME{theme}
sly 狡	THEME{theme}
chaste 貞潔	THEME{theme}
unchaste 不貞	THEME{theme}

fair 公正	THEME(theme)
biased 不公正	THEME(theme)
righteous 正義	THEME(theme)
unrighteous 非正義	THEME(theme)
glorious 榮	THEME(theme)
disgraced 辱	THEME(theme)
WellBred 有教養	THEME(theme)
PoorlyBred 沒教養	THEME(theme)
erudite 有學問	THEME(theme)
unscholarly 沒學問	THEME(theme)
clever 靈	THEME(theme)
naif 不精明	THEME(theme)
potty 糊塗	THEME(theme)
clearheaded 清醒	THEME(theme)
wise 智	THEME(theme)
foolish 愚	THEME(theme)
watery 稀	THEME(theme)
concentrated 稠	THEME(theme)
dried 乾	THEME(theme)
wet 溼	THEME(theme)
waterless 旱	THEME(theme)
waterlogging 滂	THEME(theme)
male 男	THEME(theme)
female 女	THEME(theme)
sudden 驟然	THEME(theme)
stepwise 漸進	THEME(theme)
surname 姓	THEME(theme)
GivenName 名	THEME(theme)
SpeBrand 特定牌子	THEME(theme)
fragrant 香	THEME(theme)
stinky 臭	THEME(theme)
automatic 自動	THEME(theme)
manual 非自動	THEME(theme)

convenient 便	THEME(theme)
inconvenient 不便	THEME(theme)
wieldy 好用	THEME(theme)
cumbersome 不好用	THEME(theme)
cheap 賤	THEME(theme)
expensive 貴	THEME(theme)
FreeOfCharge 免費	THEME(theme)
magnificent 燦爛	THEME(theme)
bewitching 妖媚	THEME(theme)
grand 壯觀	THEME(theme)
unimpressive 失色	THEME(theme)
exuberant 茂	THEME(theme)
desolate 荒	THEME(theme)
threatening 險	THEME(theme)
stately 莊	THEME(theme)
fast 快	THEME(theme)
prompt 旋即	THEME(theme)
slow 慢	THEME(theme)
unhurried 從容	THEME(theme)
hasty 倉促	THEME(theme)
euphonious 好聽	THEME(theme)
cacophonous 難聽	THEME(theme)
loud 高聲	THEME(theme)
LowVoice 低聲	THEME(theme)
shrill 尖聲	THEME(theme)
hoarse 沙啞	THEME(theme)
silent 無聲	THEME(theme)
talking 有聲	THEME(theme)
married 已婚	THEME(theme)
unmarried 未婚	THEME(theme)
divorced 離異	THEME(theme)
widowed 喪偶	THEME(theme)
LineageValue 血統值	THEME(theme)

wellborn 高貴	THEME{theme}
humble 卑微	THEME{theme}
sticky 黏	THEME{theme}
nonadhesive 不黏	THEME{theme}
GoodTaste 好吃	THEME{theme}
PoorTaste 難吃	THEME{theme}
tasteful 有味	THEME{theme}
tasteless 無味	THEME{theme}
TasteLight 味淡	THEME{theme}
TasteStrong 味濃	THEME{theme}
sour 酸	THEME{theme}
sweet 甜	THEME{theme}
bitter 苦	THEME{theme}
peppery 辣	THEME{theme}
salty 鹹	THEME{theme}
cold 冷	THEME{theme}
hot 熱	THEME{theme}
chilly 涼	THEME{theme}
warm 溫	THEME{theme}
loose 鬆	THEME{theme}
tight 緊	THEME{theme}
heavy 重	THEME{theme}
NotHeavy 輕	THEME{theme}
advantageous 有利	THEME:thing described{theme},GOAL:entity THEME benefits{content}
disadvantageous 有弊	THEME:thing described{theme},GOAL:entity THEME affects{content}
unconcrete 抽象	THEME{theme}
concrete 具體	THEME{theme}
ProperName 專	THEME{theme}
ordinary 普通	THEME{theme}
extraordinary 不凡	THEME{theme}
unique 獨特	THEME{theme}
special 特別	THEME{theme}
general 共通	THEME{theme}

specific 特定	THEME(theme)
substantial 充實	THEME(theme)
insubstantial 空洞	THEME(theme)
profound 深奧	THEME(theme)
superficial 淺薄	THEME(theme)
popular 通俗	THEME(theme)
classic 經典	THEME(theme)
lucid 清晰	THEME(theme)
vague 含糊	THEME(theme)
interesting 趣	THEME(theme)
boring 乏	THEME(theme)
detailed 詳	THEME(theme)
concise 扼要	THEME(theme)
simple 簡	THEME(theme)
complicated 繁	THEME(theme)
pure 純	THEME(theme)
mixed 雜	THEME(theme)
neat 齊	THEME(theme)
disorder 亂	THEME(theme)
unattached 散	THEME(theme)
trivial 瑣	THEME(theme)
balanced 均衡	THEME(theme)
logical 合邏輯	THEME(theme)
illogical 不合邏輯	THEME(theme)
consistent 有條理	THEME(theme)
inconsistent 沒條理	THEME(theme)
scientific 科學	THEME(theme)
unscientific 不科學	THEME(theme)
correct 正確	THEME(theme)
wrong 誤	THEME(theme)
reasonable 合理	THEME(theme)
unreasonable 不合理	THEME(theme)
accurate 精確	THEME(theme)

roughly 大概	THEME{theme}
inaccurate 不精確	THEME{theme}
reliable 可靠	THEME{theme}
unreliable 不可靠	THEME{theme}
classified 機密	THEME{theme}
declassified 解密	THEME{theme}
continuous 連續	THEME{theme}
spasmodic 陣發性	THEME{theme}
interrupted 間斷	THEME{theme}
easy 易	THEME{theme}
difficult 難	THEME{theme}
effective 有效	THEME{theme}
LowEffective 效果差	THEME{theme}
ineffective 無效果	THEME{theme}
effortful 費力	THEME{theme}
effortless 不費力	THEME{theme}
familiar 熟悉	ACTOR{experiencer},GOAL{content}
unfamiliar 不熟悉	ACTOR{experiencer},GOAL{content}
fertile 沃	THEME{theme}
barren 瘠	THEME{theme}
always 總是	THEME{theme}
never 從不	THEME{theme}
often 經常	THEME{theme}
rarely 偶爾	THEME{theme}
again 再	THEME{theme}
regular 定期	THEME{theme}
habitual 習慣性	ACTOR{experiencer,causer},GOAL{content}
BestQuality 最佳	THEME{theme}
flawless 無疵	THEME{theme}
HighQuality 優質	THEME{theme}
fantastic 非常好	THEME{theme}
nice 良好	THEME{theme}
atoxic 無毒	THEME{theme}



worse 劣質	THEME{theme}
bad 壞	THEME{theme}
refined 精	THEME{theme}
crude 陋	THEME{theme}
mediocre 可	THEME{theme}
great 偉	THEME{theme}
negligible 渺	THEME{theme}
durable 牢	THEME{theme}
poisonous 有毒	THEME{theme}
important 重要	THEME{theme}
unimportant 不重要	THEME{theme}
new 新	THEME{theme}
used 舊	THEME{theme}
valueless 無價值	THEME{theme}
precious 珍	THEME{theme}
primary 主	THEME{theme}
secondary 次	THEME{theme}
branch 支	THEME{theme}
positive 正面	THEME{theme}
negative 反面	THEME{theme}
progressive 先進	THEME{theme}
regressive 落後	THEME{theme}
promising 前景佳	THEME{theme}
dismal 前景差	THEME{theme}
hopeful 有望	THEME{theme}
hopeless 無望	THEME{theme}
optimistic 樂觀	THEME{experiencer}
pessimistic 悲觀	THEME{experiencer}
extensive 泛	THEME{theme}
nonextensive 狹	THEME{theme}
all 全	THEME{theme}
pieced 片	THEME{theme}
HighRank 高等	THEME{theme}

intermediate 中等	THEME{theme}
LowRank 低等	THEME{theme}
elementary 初等	THEME{theme}
famous 著名	THEME{theme},CAUSE{cause}
Notwellknown 無名	THEME{theme}
infamous 臭名	THEME{theme}
useful 有用	THEME{theme}
useless 無用	THEME{theme}
wasted 廢	THEME{theme}
feminine 與女性相關	THEME{theme}
masculine 與男性相關	THEME{theme}
simultaneous 同步	THEME{theme}
asynchronous 異步	THEME{theme}
InSequence 有序	THEME{theme}
first 首次	THEME{theme}
preceding 上次	THEME{theme}
next 下次	THEME{theme}
last 最後	THEME{theme}
GoodSocial 好風氣	THEME{theme}
BadSocial 壞風氣	THEME{theme}
normal 正常	THEME{theme}
abnormal 不正常	THEME{theme}
GreaterThanNormal 高於正常	THEME{theme},CONTRAST{contrast},COMPARATIVE-QUANTITY{range}
LessThanNormal 低於正常	THEME{theme},CONTRAST{contrast},COMPARATIVE-QUANTITY{range}
formal 正式	THEME{theme}
informal 非正式	THEME{theme}
qualified 合格	THEME{theme}
unqualified 不合格	THEME{theme}
orthodox 正統	THEME{theme}
unorthodox 非正統	THEME{theme}
lawful 合法	THEME{theme}

unlawful 非法	THEME(theme)
guiltless 無罪	THEME(theme)
guilty 有罪	THEME(theme)
powerful 有威力	THEME(theme)
powerless 無威力	THEME(theme)
suitable 適宜	THEME(theme)
unsuitable 不宜	THEME(theme)
true 真	THEME(theme)
fishy 疑似	THEME(theme)
fake 偽	THEME(theme)
meritorious 有功勞	THEME(theme)
unmeritorious 無功勞	THEME(theme)
extreme 極	THEME(theme)
more 較	THEME(theme)
ish 稍	THEME(theme)
least 無	THEME(theme)
very 很	THEME(theme)
fortunate 好運	THEME(theme)
misfortunate 倒霉	THEME(theme)
auspicious 吉祥	THEME(theme)
inauspicious 不祥	THEME(theme)
full 滿	THEME(theme)
empty 空	THEME(theme)
healthy 康健	THEME(theme)
unhealthy 不健	THEME(theme)
animated 有生命	THEME(theme)
inanimated 無生命	THEME(theme)
happy 幸福	THEME(theme)
miserable 悲慘	THEME(theme)
harmonious 和諧	THEME(theme)
inharmonious 不和諧	THEME(theme)
busy 忙	THEME(theme)
idle 閒	THEME(theme)

rich 富	THEME(theme)
poor 窮	THEME(theme)
bustling 鬧	THEME(theme)
cheerless 冷清	THEME(theme)
lonely 孤	THEME(theme)
crowded 擠	THEME(theme)
uncrowded 不擠	THEME(theme)
noisy 嘈雜	THEME(theme)
quiet 靜	THEME(theme)
stuffy 悶	THEME(theme)
cosy 愜	THEME(theme)
peaceful 寧	THEME(theme)
chaotic 紛亂	THEME(theme)
sturdy 健壯	THEME(theme)
frail 單弱	THEME(theme)
processed 已加工	THEME(theme)
unprocessed 未加工	THEME(theme)
unripe 未成熟	THEME(theme)
ripe 成熟	THEME(theme)
flourishing 興	THEME(theme)
wane 衰	THEME(theme)
safe 安	THEME(theme)
dangerous 危	THEME(theme)
serious 嚴重	THEME(theme)
noncritical 輕微	THEME(theme)
steady 穩固	THEME(theme)
shaky 不穩	THEME(theme)
urgent 急	THEME(theme)
relax 弛	THEME(theme)
accordant 一致	THEME(theme)
discordant 不一致	THEME(theme)
complete 整	THEME(theme)
incomplete 缺	THEME(theme)

central 歸屬中央	THEME{theme}
local 歸屬地方	THEME{theme}
public 共	THEME{theme}
private 私	THEME{theme}
civil 民事	THEME{theme}
criminal 刑事	THEME{theme}
martial 軍用	THEME{theme}
civilian 民用	THEME{theme}
forward 正向	THEME{theme}
backward 反向	THEME{theme}
intimate 親密	THEME{theme}
distant 疏遠	ACTOR{experiencer},GOAL{content}
friend 友	THEME{theme}
enemy 敵	THEME{theme}
antagonistic 不容	THEME{theme}
various 多種	THEME{theme}
certain 某	THEME{theme}
other 另	THEME{theme}
queer 怪	THEME{theme}
OnSite 現場	THEME{theme}
vertical 縱	THEME{theme}
horizontal 橫	THEME{theme}
OutOfTheWay 偏僻	THEME{theme}
far 遠	THEME{theme}
near 近	THEME{theme}
original 原	THEME{theme}
alien 外來	THEME{theme}
native 本土	THEME{theme}
foreign 外國	THEME{theme}
international 國際	THEME{theme}
RelatingToCountry 與特 定國家相關	THEME{theme}
artificial 人為	THEME{theme}

natural 天然	THEME{theme}
innate 先天	THEME{theme}
acquired 後天	THEME{theme}
relevant 相關	THEME{theme},COMPANION{companion}
irrelevant 不相關	THEME{theme},COMPANION{companion}
start 開始(dual)	ACT ACTOR{agent,causer},THEME:entity described{theme},GOAL:thing started{content}
	STATE THEME{theme}
do 做	ACTOR{agent},THEME:entity described{theme},GOAL{patient,content}
try 嘗試	ACTOR:trier{agent},GOAL:thing tried{content}
endeavour 賣力	ACTOR{agent},THEME:thing ACTOR makes efforts in{theme},GOAL:thing ACTOR fulfils{content}
VieFor 快幹	ACTOR{agent},GOAL:thing engaged in{content}
RashlyAct 蠻幹	ACTOR{agent}
venture 冒險	ACTOR:risk taker{agent},GOAL:thing ACTOR takes risk in{content}
cooperate 合作	ACTOR:co-operators{agent},COMPANION{companion},GOAL:project, etc.{content}
repeat 重複	ACTOR:{agent,causer},GOAL:thing ACTOR causes to repeat{content}
CatchUp 補做	ACTOR:{agent},GOAL{content}
pretend 假裝	ACTOR:person described{agent},GOAL:state ACTOR pretends to be in{content}
engage 從事	ACTOR{agent},GOAL:profession etc.{content}
bear 承擔(dual)	ACT ACTOR:responsibility bearer{agent},GOAL:responsibility{content}
	STATE THEME:thing described{theme}
undertake 擔任	ACTOR:position holder{agent},GOAL:position{content}
conduct 實施	ACTOR:implementer{agent},GOAL:measure adopted{content}
prepare 準備	ACTOR:planner{agent},GOAL:entity ACTOR prepares{content}
respond 回應(dual)	ACT ACTOR:responder{agent},GOAL-TARGET:target responding to{target}, GOAL-CONTENT: content of the response{content}
	STATE THEME:fact, phenomenon{theme}, GOAL:thing reflected{content}
DoNot 不做	ACTOR{agent},GOAL{content}
refuse 拒做	ACTOR{agent}, GOAL:things refused{content}
evade 迴避	ACTOR{agent}, GOAL:entity ACTOR avoids{content}
slack 偷懶	ACTOR:agent who wanders around{agent}
cease 停做	ACTOR{agent,causer}, GOAL:entity ACTOR puts on hold{content}
GiveUp 戒除	ACTOR{agent}, GOAL:entity taken precaution against{content}
rest 休息	ACTOR:entity resting/closed{agent}

sleep 睡	<i>ACTOR:entity sleeping{agent}</i>
pause 暫停	<i>ACTOR{agent,causer}, GOAL:thing suspended{content}</i>
wait 等待	<i>ACTOR:entity waiting{agent,causer}, GOAL:thing or entity waited for{content}</i>
control 控制	<i>ACTOR:controller{agent,causer}, GOAL:thing controlled{content}</i>
manage 管理	<i>ACTOR:entity in charge{agent}, GOAL:in charge of{content}</i>
handle 處理	<i>ACTOR{agent}, GOAL:entity dealt with{content}</i>
arrange 安排	<i>ACTOR:arranger{agent}, GOAL:thing arranged{content}</i>
stabilize 使不變	<i>ACTOR:{agent,causer}, GOAL:thing that ACTOR stabilizes{content}</i>
alter 改變	<i>ACTOR{agent,causer}, THEME:entity undergoing change{theme},STATEFIN:result of change{result}</i>
take 取	<i>ACTOR{agent}, THEME:entity taken{theme},SOURCE:taken from{source}</i>
seek 謀取	<i>ACTOR{agent}, THEME:entity ACTOR tries to obtain{theme},SOURCE:taken from{source}</i>
beg 乞求	<i>ACTOR{agent}, THEME:entity ACTOR begs for{theme},SOURCE: entity ACTOR begs THEME from{source}</i>
steal 偷	<i>ACTOR{agent}, THEME:entity ACTOR steals{theme},SOURCE: entity ACTOR steals from{source}</i>
rob 搶	<i>ACTOR{agent,causer}, THEME:entity ACTOR steals{theme},SOURCE: entity ACTOR steals from{source}</i>
cheat 騙	<i>ACTOR{agent},GOAL-TARGET:entity ACTOR deceive{target},GOAL-CONTENT: entity ACTOR gains from TARGET by deception{content}</i>
earn 賺	<i>ACTOR{agent,causer},THEME: money/profit ACTOR makes{theme}</i>
buy 買	<i>ACTOR:buyer{agent},THEME: commodity{theme},SOURCE:seller{source},GOAL:beneficiary{target}</i>
collect 收	<i>ACTOR{agent}, SOURCE: entity ACTOR collects from{source},THEME:thing collected{theme}</i>
deprive 剝奪	<i>ACTOR:remover{agent,causer},GOAL-TARGET: person removed of rights, privilege{target}, GOAL-CONTENT:right,privilege {content}</i>
levy 徵收	<i>ACTOR{agent},THEME: thing ACTOR collects/buys{theme},SOURCE: person who is imposed on{source}</i>
borrow 借入	<i>ACTOR:borrower{agent},THEME: entity borrowed/loaned{theme},SOURCE: borrowing from{source}</i>
gather 採集	<i>ACTOR:collector{agent},THEME: thing ACTOR collects{theme}/*除 ACTOR 與 THEME 外，可能出現 topic，但不視為 argument*/</i>
occupy 佔領	<i>ACTOR:{agent},THEME:entity ACTOR occupies/owns{theme}</i>
MarryFrom 娶	<i>ACTOR:{agent},THEME:person ACTOR takes in as wife{theme}</i>
TakeBack 取回	<i>ACTOR:receiver{agent},THEME:thing taken back{theme},SOURCE: taken back from{source}</i>
redeem 贖	<i>ACTOR{agent},THEME: entity ACTOR redeems{theme},SOURCE: redeem from{source}</i>
give 給	<i>ACTOR:giver{agent}, THEME:thing given or predicate{theme},GOAL:receiver{target}</i>
provide 供	<i>ACTOR:provider{agent}, THEME:thing provided or predicate{theme},GOAL:providing to{target}/*除 ACTOR,THEME 與 GOAL 外，可能出現 topic，但不視為 argument*/</i>

GiveAsGift 贈	<i>ACTOR:giver{agent}, THEME:thing given{theme},GOAL:recipient{target}</i>
grant 賜	<i>ACTOR:giver{agent}, THEME:thing granted{theme},GOAL:recipient{target}</i>
donate 捐	<i>ACTOR:donator{agent}, THEME:thing donated{theme},GOAL:recipient{target}</i>
submit 交	<i>ACTOR:sender{agent}, THEME:thing sent{theme},GOAL:receiver{target}</i>
return 還	<i>ACTOR:returner{agent}, THEME:thing returned{theme},GOAL:returning to{target}</i>
recompense 補償	<i>ACTOR{agent}, THEME:things compensated/offset{theme},GOAL: person or thing recompense for{target,content}</i>
issue 分發	<i>ACTOR:distributor{agent}, THEME:thing distributed{theme},GOAL:distributing to{target}</i>
sell 賣	<i>ACTOR:peddler{agent}, THEME:merchandise{theme},GOAL:selling to{target},PRICE{price}</i>
lend 借出	<i>ACTOR:lender{agent}, THEME:thing lent{theme},GOAL:borrower{target}</i>
pawn 押給	<i>ACTOR{agent}, THEME:thing ACTOR mortgages{theme},GOAL{target}</i>
PassOn 留給	<i>ACTOR{agent,causer}, THEME:entity ACTOR leaves behind{theme},GOAL:entity THEME is left behind for{target}</i>
pay 付	<i>ACTOR:payer{agent}, THEME:fund, things paid{theme},GOAL:payee{target}</i>
MarryTo 嫁	<i>ACTOR:marrying person{agent},GOAL:married and moved to{target}</i>
abandon 放棄	<i>ACTOR{agent},THEME:thing given up{theme}</i>
exchange 交換	<i>ACTOR:exchanger{agent},COMPANION{companion},THEME:thing exchanged{theme}/*除 ACTOR,COMPANION 與 THEME 外，可能出現 topic，但不視為 argument*/</i>
OnCredit 賒	<i>ACTOR:person buy things on credit{agent},THEME:thing bought on credit{theme}</i>
RegardAs 當作	<i>ACTOR: considerer{agent}, THEME: thing considered{theme},GOAL:considered as{content}</i>
naming 稱作	<i>ACTOR:name giver{agent}, THEME:name receiver{theme},GOAL:name given{content}</i>
appoint 任命	<i>ACTOR:appointer{agent}, THEME:appointee{theme},GOAL:post{content}</i>
dismiss 罷免	<i>ACTOR{agent}, THEME:person ACTOR lays off{theme},GOAL:post{content}</i>
replace 代替	<i>ACTOR{agent,causer}, THEME:thing replaced{theme},GOAL:replaced with{content}</i>
CompareTo 比擬	<i>ACTOR{agent},THEME:entity ACTOR compares{theme},CONTRAST:entity THEME is compared to{contrast}</i>
MakeEqual 使相等	<i>ACTOR:comparer{agent},THEME:thing described{theme},CONTRAST:compared entity{contrast},COMPARATIVE-ATTRIBUTE{ComparativeAttribute},COMPARATIVE-QUANTITY{range}</i>
obey 遵循	<i>ACTOR{agent},GOAL:thing ACTOR follows{content,target}/*除 ACTOR 與 GOAL 外，可能出現 topic，但不視為 argument*/</i>
surrender 屈服	<i>ACTOR{agent},GOAL:entity surrender to {content,target}</i>
coordinate 協調	<i>ACTOR{agent,causer},GOAL:entities coordinated{content}</i>
disobey 違背	<i>ACTOR{agent,causer},GOAL:thing violated/run counter to{content}</i>
include 納入	<i>ACTOR{agent},THEME:entity put{component},LOCATION:location put into{whole}</i>



discharge 開除	ACTOR{agent},THEME:entity ACTOR dismisses{component},LOCATION:where THEME is dismissed from{whole}
withdraw 退出	ACTOR{agent},THEME:entity backing out{component},LOCATION:entity back out from{whole}
classify 分類	ACTOR:classifier{agent,causer},THEME:thing classified{component},LOCATION:thing THEME is classified as{whole}
tie 關聯	ACTOR{agent},THEME:thing ACTOR tying{theme},COMPANION: THEME is tied to{companion}
connect 連接	ACTOR:connector{agent,causer},THEME:thing ACTOR connecting{theme},COMPANION: THEME is connected to{companion}
fasten 拴連	ACTOR{agent,causer},THEME:thing ACTOR fastening{theme},COMPANION: THEME is fastened to{companion,location}
mix 混合	ACTOR:mixer{agent,causer},THEME:thing mixed up{theme},COMPANION: THEME is mixed with{companion}
merge 合併	ACTOR:mixer{agent,causer},THEME:thing mixed up{theme},COMPANION: THEME is mixed with{companion},LOCATION{whole}
associate 交往	ACTOR{agent},COMPANION: party interacts with{companion}
ally 結盟	ACTOR{agent},COMPANION: entities ACTOR causes to form alliance{companion}
collude 勾結	ACTOR{agent},COMPANION: party that ACTOR collude with{companion}
reconcile 講和	ACTOR{agent},COMPANION: parties who reconcile{companion}
SeekRefuge 投靠	ACTOR{agent},COMPANION: entity ACTOR goes to and depends on{companion}
meet 會面	ACTOR{agent},COMPANION: entities that meet with{companion}
GetMarried 結婚	ACTOR{agent},COMPANION: person who marry to{companion}
mating 交配	ACTOR{agent},COMPANION: person who mates with{companion}
separate 分離	ACTOR{agent,causer},THEME:thing separated{theme},COMPANION: THEME is separated from{companion}
disconnect 脫離	ACTOR{agent,causer},THEME:entity disconnected{theme},COMPANION: THEME is disconnected from{companion}
divorce 離婚	THEME{theme},COMPANION: entity ACTOR is divorced from{companion}
farewell 離別	THEME{theme},COMPANION: people saying good-bye to{companion}
infect 傳染	ACTOR{causer},THEME:disease passes on to GOAL{theme},GOAL{target}
incur 招惹	ACTOR:attractor{agent,causer},THEME:entity attracted{theme},GOAL:action{content}
AlterLocation 變空間位置	ACTOR{agent,causer},THEME:entity moved{theme},LOCATION:location THEME is moved to{location}{LocationIni,LocationFin}
SelfMove 自移	THEME:entity moved{theme},LOCATION{location}
roam 流浪	THEME:entity moved{theme},LOCATION{location}
walk 走	THEME:entity moved{theme},LOCATION{location}

run 跑	THEME:entity moved{theme},LOCATION{location}
jump 跳	THEME:entity moved{theme},LOCATION{location}
crawl 爬	THEME:entity moved{theme},LOCATION{location}
slide 滑	THEME:entity moved{theme},LOCATION{location}
roll 滾	THEME:entity moved{theme},LOCATION{location}
swim 游	THEME:entity moved{theme},LOCATION{location}
flow 流	THEME:entity moved{theme},LOCATION{location}
fly 飛	THEME:entity moved{theme},LOCATION{location}
float 漂	THEME:entity moved{theme},LOCATION{location}
VehicleGo 駛	THEME:entity moved{theme},LOCATION{location}
circulate 循環	THEME:entity circulating{theme}
SelfMoveInDirection 方向性自移	THEME:entity moved{theme},LOCATION{location}
ToAndFro 來回	THEME:entity moved{theme},LOCATION{location}
come 來	THEME:entity moved{theme},LOCATION{location}
go 去	THEME:entity moved{theme},LOCATION{location}
LeaveFor 前往	THEME:entity moved{theme},LOCATION{LocationFin}
GoUp 上去	THEME:entity moved{theme},LOCATION{location}
rise 上升	THEME:thing rising{theme},LOCATION{location}
climb 攀登	THEME:entity moved{theme},LOCATION{location}
GoDown 下去	THEME:entity moved{theme},LOCATION{location}
fall 掉下	THEME:entity moved{theme},LOCATION{location}
sink 下沉	THEME:entity moved{theme},LOCATION{location}
GoForward 前進	THEME:entity moved{theme},LOCATION{location}
GoBackward 後退	THEME:entity moved{theme},LOCATION{location}
GoInto 進入	THEME:entity moved{theme},LOCATION{location}
GoOut 出去	THEME:entity moved{theme},LOCATION{location}
leak 漏出	THEME:entity moved{theme},LOCATION{location}{LocationIni,LocationThru,LocationFin}
jet 噴出	THEME:entity moved{theme},LOCATION{location}
spill 溢出	THEME:entity moved{theme},LOCATION{location}
leave 離開	THEME:entity moved{theme},LOCATION{location}
flee 逃跑	THEME:entity moved{theme},LOCATION{location}
escape 躲避	ACTOR:hider{agent},GOAL:thing hiding from{content},LOCATION:hiding place{location}

approach   接近	THEME:entity moved{theme},GOAL:thing being approached{target,location}
chase   追趕	ACTOR:chaser{agent},GOAL:entity ACTOR chases{target}
disperse   散開	THEME:entity moved{theme},LOCATION{location}
ComeTogether   集聚	THEME:entity moved{theme},LOCATION{location}
GoThrough   經過	THEME:entity moved{theme},LOCATION{LocationThru}
cross   越過	THEME:entity moved{theme},LOCATION{LocationThru}
GoBack   返回	THEME:entity moved{theme},LOCATION{LocationIni,StateIni}
GoRound   圍繞	THEME:entity moved{theme},GOAL:entity THEME revolves around/centers on{location,content}
TurnRound   拐彎	THEME:entity moved{theme},DIRECTION{direction}
circle   盤旋	THEME:entity moved{theme},LOCATION{location}
MoveInFixedPosition   定位自移	THEME:entity moved{theme}
wave   擺動	THEME:entity moved{theme}
shiver   顫動	THEME:entity moved{theme}
rotate   轉動	THEME:entity moved{theme}
twine   打結	THEME:entity twined{theme}
PartSelfMove   部件自移	THEME:entity moved{theme}
stand   站立	THEME:entity moved{theme}
arise   起身	THEME:entity moved{theme}
sit   坐蹲	THEME:entity sitting{theme},LOCATION{location}
LieDown   躺臥	THEME:entity lying{theme},LOCATION{location}
FallDown   跌倒	THEME:entity falling{theme}
tilt   傾斜	THEME:entity tilting{theme}
lean   倚靠	THEME:entity described{theme},GOAL:entity THEME leans against{target}
upmove   翹聳	THEME:entity raising{theme}
CeaseSelfMove   終止自移	THEME:entity stopped{theme}
stay   停留	THEME:entity staying{theme},LOCATION{location}
arrive   到達	THEME:entity arriving{theme},LOCATION{location}
reside   住下	THEME:entity residing{theme},LOCATION{location}
CauseToMove   他移	ACTOR{agent},THEME{theme}
CauseToMoveInManner   方式性他移	ACTOR{agent},THEME{theme}
release   釋放	ACTOR{agent,causer},THEME:entity released{theme}

TakeAway 搬動	<i>ACTOR:mover</i> {agent}, <i>THEME:people, thing moved</i> {theme}, <i>LOCATION</i> {LocationFin}
put 放置	<i>ACTOR</i> {agent}, <i>THEME:entity put</i> {theme}, <i>LOCATION</i> {location}
pile 堆放	<i>ACTOR</i> {agent}, <i>THEME:entity piled</i> {theme}, <i>LOCATION</i> {location}
store 保存	<i>ACTOR:keeper</i> {agent}, <i>THEME:thing kept</i> {theme}, <i>LOCATION</i> {location}
SetAside 留存	<i>ACTOR:keeper</i> {agent,causer}, <i>THEME:thing kept</i> {theme}, <i>LOCATION</i> {location}
install 安裝	<i>ACTOR:installer</i> {agent}, <i>THEME:thing installed</i> {theme}, <i>LOCATION</i> {location}
dismount 拆卸	<i>ACTOR</i> {agent}, <i>THEME:thing ACTOR tears downs and removes</i> {theme}
load 裝載	<i>ACTOR</i> {agent}, <i>THEME:thing loaded</i> {theme}, <i>LOCATION:thing carrying THEME</i> {location}
unload 卸載	<i>ACTOR</i> {agent}, <i>THEME:thing unloaded</i> {theme}, <i>LOCATION:unloaded from</i> {location}
drive 駕駛	<i>ACTOR:driver</i> {agent}, <i>GOAL:vehicle</i> {patient}
CauseToMoveInDirection  方向性他移	<i>ACTOR</i> {agent}, <i>THEME</i> {theme}
pull 拉	<i>ACTOR</i> {agent}, <i>THEME:entity ACTOR pulls</i> {theme}
push 推	<i>ACTOR</i> {agent}, <i>THEME:entity ACTOR pushes</i> {theme}
MoveItUp 上移	<i>ACTOR</i> {agent}, <i>THEME:entity ACTOR moves</i> {theme}
lift 提升	<i>ACTOR</i> {agent}, <i>THEME:entity promoted</i> {theme}
hang 懸掛	<i>ACTOR</i> {agent}, <i>THEME:thing hung</i> {theme}, <i>LOCATION:location THEME is hung</i> {location}
MoveItDown 下移	<i>ACTOR</i> {agent}, <i>THEME:thing moved</i> {theme}
spray 灑下	<i>ACTOR</i> {agent}, <i>THEME:thing ACTOR sprays</i> {theme}, <i>LOCATION:entity THEME is sprayed from/on</i> {LocationIni,LocationFin}
swallow 嚥下	<i>ACTOR</i> {agent,causer}, <i>THEME:thing swallowed</i> {theme}
drop 投下	<i>ACTOR</i> {agent,causer}, <i>THEME:thing dropped</i> {theme}, <i>LOCATION:THEME drops to</i> {LocationFin}
MoveItBack 回移	<i>ACTOR</i> {agent,causer}, <i>THEME:thing withdrawn</i> {theme}, <i>LOCATION:THEME moved to/from</i> {LocationFin,LocationIni}
MoveItInto 內移	<i>ACTOR</i> {agent,causer}, <i>THEME:thing moved</i> {theme}, <i>LOCATION:THEME moveback to/from</i> {LocationFin,LocationIni}
inhale 吸入	<i>ACTOR</i> {agent}, <i>THEME:thing inhaled</i> {theme}, <i>LOCATION:location THEME is inhaled into</i> {LocationFin}
insert 插入	<i>ACTOR</i> {agent}, <i>THEME:thing inserted</i> {theme}, <i>LOCATION:location THEME is inserted into</i> {LocationFin}
soak 浸入	<i>ACTOR</i> {agent}, <i>THEME:thing inserted</i> {theme}, <i>LOCATION:place where ACTOR put THEME in</i> {location}
inlay 嵌入	<i>ACTOR</i> {agent}, <i>THEME:thing inserted</i> {theme}, <i>LOCATION:location of the insertion</i> {location}
fill 填入	<i>ACTOR</i> {agent}, <i>THEME:thing filled in</i> {theme}, <i>LOCATION:location THEME is filled in</i> {location}
bury 埋入	<i>ACTOR</i> {agent}, <i>THEME:entity ACTOR buries</i> {theme}, <i>LOCATION:place THEME is buried into</i> {location}
MoveItOut 外移	<i>ACTOR</i> {agent}, <i>THEME:thing moved</i> {theme}, <i>LOCATION:location THEME is moved from/to</i> {LocationFin,LocationIni}

drain   排出	ACTOR{agent},THEME:thing discharged{theme},LOCATION:location THEME is discharged from/into{LocationIni,LocationFin}
vomit   吐出	ACTOR{agent},THEME:thing ACTOR spits out{theme},LOCATION:THEME is spit from/to{LocationFin,LocationIni}
exhale   呼出	ACTOR{agent},THEME:thing ACTOR spits out{theme},LOCATION:THEME is spit from/to{LocationFin,LocationIni}
dump   倒出	ACTOR{agent},THEME:thing poured{theme},LOCATION:THEME is poured from/to{LocationFin,LocationIni}
PickOut   拔出	ACTOR{agent},THEME:thing picked out{theme},LOCATION:THEME is squeezed out from{LocationIni}
SqueezeOut   擠出	ACTOR{agent},THEME:thing squeezed out{theme},LOCATION:THEME is picked out from{LocationIni}
MoveItAway   遠移	ACTOR{agent},THEME:thing moved{theme},LOCATION:location THEME is moved from/to{LocationFin,LocationIni}
throw   扔	ACTOR{agent},THEME:thing thrown{theme},LOCATION:location THEME is thrown from/to{LocationFin,LocationIni}
send   發送	ACTOR{agent,causer},THEME:things ACTOR sends out{theme},LOCATION:location THEME is sent from/to{LocationFin,LocationIni}
shoot   發射	ACTOR:shooter{agent},THEME:thing launched{theme},LOCATION:location THEME is shot from/to{LocationFin,LocationIni}
transmit   傳送	ACTOR{agent},THEME:things ACTOR transmits{theme},LOCATION:THEME is transmitted from/to{LocationFin,LocationIni}
transport   運送	ACTOR{agent},THEME:things transported{theme},LOCATION:THEME is transported from/to{LocationFin,LocationIni}
post   郵寄	ACTOR:sender{agent},THEME:things mailed{theme},GOAL:receiver{target}
expel   驅趕	ACTOR:expeller{agent},THEME:expellee{theme},LOCATION:THEME is expelled from/to{LocationFin,LocationIni}
exile   流放	ACTOR:expeller{agent},THEME:person exiled{theme},LOCATION:THEME is exiled from/to{LocationFin,LocationIni}
spread   撒	ACTOR{agent},THEME:thing ACTOR throws out{theme},LOCATION:entity THEME is thrown on{location}
assemble   聚集	ACTOR{agent},THEME:thing gathered{theme},LOCATION:location THEME gathers{location}
CauseToMoveInFixedPosition   定位他移	ACTOR{agent},THEME:thing moved{theme},LOCATION:location THEME is moved from/to{LocationFin,LocationIni}
shake   搖動	ACTOR{agent,causer},THEME:thing shook{theme}
reverse   顛倒	ACTOR{agent,causer},THEME:thing reversed{theme}
turn   扭轉	ACTOR{agent,causer},THEME:thing turned around{theme}
coil   纏繞	THEME:thing described{theme},GOAL:entity THEME winds around{target}

surround   包圍	<i>THEME:thing described</i> {theme}, <i>GOAL:entity THEME surrounds</i> {target}
CausePartMove   部件他移	<i>ACTOR</i> {agent}, <i>THEME:thing moved</i> {theme}
open   打開	<i>ACTOR</i> {agent}, <i>THEME:thing open up</i> {theme}
shut   關閉	<i>ACTOR</i> {agent}, <i>THEME:thing open up</i> {theme}
CeaseCauseTOMove   終止他移	<i>ACTOR</i> {agent}, <i>THEME</i> {theme}
hold   拿	<i>ACTOR</i> {agent}, <i>THEME:thing hold</i> {theme}
pick   拾起	<i>ACTOR</i> {agent}, <i>THEME:thing ACTOR picks up</i> {theme}
HoldWithHand   攙扶	<i>ACTOR</i> {agent}, <i>THEME:thing ACTOR holds with</i> {theme}
PropUp   支撐	<i>ACTOR:buttress</i> {agent,causer}, <i>THEME:thing buttressed</i> {theme}
bring   攜帶	<i>ACTOR</i> {agent,causer}, <i>THEME:entity taken along</i> {theme}, <i>GOAL:receptient</i> {target}, <i>LOCATION:destination</i> {LocationFin}
HoldInMouth   銜起	<i>ACTOR</i> {agent}, <i>THEME:thing held</i> {theme}
HoldInArm   摟抱	<i>ACTOR</i> {agent}, <i>THEME:thing held</i> {theme}
CarryOnBack   背起	<i>ACTOR</i> {agent}, <i>THEME:thing carried</i> {theme}
TakeOutOfWater   撈起	<i>ACTOR</i> {agent}, <i>THEME:thing taken</i> {theme}
catch   捉住	<i>ACTOR</i> {agent}, <i>THEME:thing caught</i> {theme}
detain   扣住	<i>ACTOR</i> {agent,causer}, <i>THEME:thing caught</i> {theme}
block   攔住	<i>ACTOR</i> {agent,causer}, <i>THEME:thing blocked</i> {theme}
fix   定住	<i>ACTOR</i> {agent,causer}, <i>THEME:thing fixed</i> {theme}
SupportWeight   托住	<i>ACTOR</i> {agent,causer}, <i>THEME:thing being supported</i> {theme}
AimAt   定向	<i>ACTOR</i> {agent,causer}, <i>THEME:thing ACTOR points</i> {theme}, <i>GOAL:entity THEME is pointed at</i> {target,location}
pass   度過	<i>THEME</i> {theme,experiencer}, <i>TIME</i> {duration}
add   增加	<i>ACTOR</i> {agent,causer}, <i>THEME:entity increased</i> {theme}, <i>RANGE:extent of increase</i> {range,quantity}
subtract   削減	<i>ACTOR</i> {agent,causer}, <i>THEME:thing cut</i> {theme}, <i>RANGE:extent of reduction</i> {range,quantity}
exhaust   損耗	<i>ACTOR</i> {agent,causer}, <i>THEME:thing consumed</i> {theme}, <i>RANGE:extent of exhausted</i> {range,quantity}
economize   節省	<i>ACTOR</i> {agent,causer}, <i>THEME:thing saved</i> {theme}
AlterState   變狀態	<i>ACTOR</i> {agent,causer}, <i>THEME</i> {theme}
create   創造	<i>ACTOR:generator, creator</i> {agent,causer}, <i>THEME:thing created, generated</i> {theme,PatienceProduct}
reproduce   生殖	<i>ACTOR:entity giving birth</i> {agent}, <i>THEME:entity ACTOR gives birth to</i> {theme}
produce   製造	<i>ACTOR:producer</i> {agent}, <i>THEME:thing produced</i> {PatienceProduct}, <i>MEANS</i> {instrument}
cook   烹調	<i>ACTOR</i> {agent}, <i>THEME:thing ACTOR cooks</i> {PatienceProduct}, <i>MEANS</i> {instrument}

compile 編輯	<i>ACTOR:editor</i> {agent}, <i>THEME:publication</i> {ContentProduct}
build 建造	<i>ACTOR:builder</i> {agent}, <i>THEME:thing built</i> {PatientProduct}, <i>MEANS:material or instrument</i> {instrument}
forming 形成	<i>ACTOR</i> {agent,causer}, <i>THEME:thing formed</i> {ContentProduct,PatientProduct}
establish 建立	<i>ACTOR:establisher</i> {agent,causer}, <i>THEME:establishment</i> {PatientProduct,theme}
forge 偽造	<i>ACTOR</i> {agent}, <i>THEME: thing counterfeited/forged</i> {PatientProduct,ContentProduct}
CauseToAppear 顯現	<i>ACTOR:establisher</i> {agent,causer}, <i>THEME:entity described</i> {theme}, <i>STATEFIN:state THEME appears to be in</i> {result}
reveal 揭露	<i>ACTOR:discloser</i> {agent,causer}, <i>THEME:thing disclosed</i> {theme}
StripOff 剝去	<i>ACTOR</i> {agent}, <i>THEME:thing ACTOR peels</i> {theme}
MakeLiving 謀生	<i>ACTOR</i> {agent}
ProvideFor 供養	<i>ACTOR:provider</i> {agent}, <i>GOAL:entity ACTOR supports</i> {patient}
foster 飼養	<i>ACTOR</i> {agent}, <i>GOAL:entity ACTOR raises</i> {patient}
planting 栽植	<i>ACTOR</i> {agent}, <i>GOAL: thing ACTOR plants/grows</i> {patient}
CauseToGrow 使成長	<i>ACTOR</i> {agent,causer}, <i>GOAL: thing ACTOR grows</i> {patient}
metabolize 代謝	<i>ACTOR</i> {agent}, <i>GOAL</i> {patient}
digest 消化	<i>ACTOR</i> {agent}, <i>GOAL: thing ACTOR digests</i> {patient}
absorb 吸收	<i>ACTOR</i> {agent}, <i>GOAL: thing drawn</i> {patient}
eat 吃	<i>ACTOR: eater</i> {agent}, <i>GOAL: food</i> {patient}
drink 喝	<i>ACTOR</i> {agent}, <i>GOAL:thing ACTOR drinks</i> {patient}
feed 餵	<i>ACTOR</i> {agent}, <i>GOAL-TARGET:entity fed</i> {target}, <i>GOAL-PATIENT:thing TARGET is fed with</i> {patient}
excrete 排泄	<i>ACTOR</i> {agent}, <i>GOAL:entity ACTOR excretes</i> {patient}
respire 呼吸	<i>ACTOR</i> {agent}, <i>GOAL:air</i> {patient}
WhileAway 消閒	<i>ACTOR</i> {agent}, <i>GOAL:thing played</i> {content}
exercise 鍛鍊	<i>ACTOR</i> {agent}
tour 旅遊	<i>ACTOR</i> {agent}, <i>LOCATION</i> {location}
recreation 娛樂	<i>ACTOR</i> {agent}
addict 嗜好	<i>ACTOR</i> {agent}, <i>GOAL:thing ACTOR enjoys doing as a hobby</i> {content}
SeekPleasure 尋歡	<i>ACTOR</i> {agent}
keep 保持	<i>ACTOR</i> {agent,causer}, <i>THEME:thing kept</i> {theme}, <i>STATEFIN:status,momentum,level</i> {result}
maintain 保養	<i>ACTOR:maintainer</i> {agent}, <i>GOAL</i> {patient}
protect 保護	<i>ACTOR:protector</i> {agent}, <i>GOAL:thing protected</i> {patient}
TakeCare 照料	<i>ACTOR</i> {agent}, <i>GOAL:patient being taken care of</i> {patient}

cultivate 培養	ACTOR{agent,causer},GOAL:entity cultivated{patient}
help 幫助	ACTOR:helper{agent,causer},GOAL:party helped{patient},STATEFIN{result}
rescue 救助	ACTOR:helper{agent},GOAL{patient}
KeepOn 使繼續	ACTOR:{agent,causer},GOAL:thing ACTOR carries on{patient}/*除 ACTOR 與 GOAL 外，可能出現 topic，但不視為 argument*/
benefit 便利	ACTOR:{agent,causer},GOAL-TARGET{beneficiary}, GOAL-CONTENT: thing that ACTOR make convenient {content}
MakeBetter 優化	ACTOR:{agent,causer},GOAL:thing that ACTOR make convenient{content}
adjust 調整	ACTOR:adjuster{agent,causer},GOAL:thing adjusted{content}
PutInOrder 整理(dual)	ACT ACTOR{agent},GOAL:thing put in order{patient}
	STATE THEME:entities described{theme},RANGE:place THEME stands side by side{range}
improve 改良	ACTOR{agent,causer},GOAL:thing improved{patient}
enrich 充實	ACTOR{agent,causer},THEME:thing added{theme}
fulfil 實現	ACTOR{agent,causer},GOAL:thing fulfilled{content}
resume 恢復	ACTOR:restorer{agent,causer},THEME:thing restored{theme},STATEINI:restored state{StateIni}
doctor 醫治	ACTOR{agent},GOAL-PATIENT:person illded{patient},GOAL-CONTENT:disease{content}
repair 修理	ACTOR{agent},GOAL:entity ACTOR repairs{patient}
amend 改正	ACTOR{agent},GOAL:thing corrected{patient}
MakeBad 加害	ACTOR{agent,causer},GOAL:person ACTOR tortures{patient}
MakeTrouble 搗亂	ACTOR{agent,causer},GOAL:entity ACTOR makes a mess of{patient}
damage 損害	ACTOR{agent,causer},GOAL:entity harmed{patient}
attack 攻打	ACTOR{agent,causer},GOAL:thing attacked{patient}
punish 處罰	ACTOR:punisher{agent},GOAL:party punished{patient},RANGE:accusation{range}
revenge 報復	ACTOR{agent},GOAL:entity ACTOR revenges on{patient}
HaveContest 較量	ACTOR{agent},COMPANION:entity challenged{companion}
compete 比賽	ACTOR{agent},COMPANION{companion},GOAL:thing ACTOR and COMPANION competes to win{content}
gamble 賭博	ACTOR:gambler{agent},COMPANION{companion},GOAL:thing ACTOR gamble on{content}
fight 爭鬥	ACTOR{agent},COMPANION:party that ACTOR fights{companion}
uprise 暴動	ACTOR:entity rioting{agent}
resist 反抗	ACTOR{agent},GOAL:person or thing ACTOR resists{target,content}
defend 防守	ACTOR{agent,causer},GOAL:person, place or thing ACTOR defends{target,content,location}
defeat 戰勝	ACTOR{agent,causer},GOAL:person or thing ACTOR defeats{target,content}
kill 殺害	ACTOR{agent,causer},GOAL:entity ACTOR kills{patient}



suicide 自殺	ACTOR{agent}
CauseToBeHidden 使消失	ACTOR{agent,causer},GOAL:entity ACTOR put out{patient}
remove 消除	ACTOR{agent,causer},GOAL:thing removed{patient}
destroy 消滅	ACTOR{agent,causer},GOAL:thing destroyed{patient,content}
hide 藏匿	ACTOR{agent},THEMEL:thing hidden{theme},LOCATION{location}
cover 遮蓋	ACTOR:people covers or thing covered with{agent,causer},THEME:thing covered{theme}
PutOn 穿戴	ACTOR{agent},THEME:clothing{theme},LOCATION:bodypart{position}
wrap 包紮	ACTOR{agent},GOAL:thing wrapped{patient,location}/*thing ACTOR wraps GOAL with{instrument}*/
MakeHigher 提高	ACTOR{agent,causer},THEME:thing moved up{theme}
MakeLower 降低	ACTOR{agent,causer},THEME:thing moved down{theme}
AlterAppearance 變外觀	ACTOR{agent,causer},GOAL{patient}/*變外觀及其下位詞，句中 instrument 常被視為是 causer*/
AlterForm 變形狀	ACTOR{agent,causer},GOAL{patient}
touch 觸	ACTOR{agent},GOAL:entity ACTOR touches{patient}
stroke 撫	ACTOR{agent,causer},GOAL:entity ACTOR strokes{patient}
stab 扎	ACTOR:person or instrument stabs{agent,causer},GOAL:entity ACTOR stabs into{patient,location}
sting 叮	ACTOR{agent},GOAL:entity ACTOR stings{patient}
beat 打	ACTOR{agent},GOAL:entity ACTOR beats{patient}
bump 撞	ACTOR{agent,causer},GOAL:entity ACTOR bumps into{patient}
kick 踢踩	ACTOR{agent},GOAL:entity ACTOR kicks{patient,location}
firing 射擊	ACTOR{agent,causer},GOAL:entity ACTOR fires at{patient,location}
break 折斷	ACTOR{agent,causer},GOAL:entity ACTOR breaks{patient,content}
rub 摩擦	ACTOR{agent},GOAL:entity ACTOR rubs{patient}
scratch 抓撓	ACTOR{agent},GOAL:entity ACTOR scratches{patient}
press 按壓	ACTOR{agent,causer},GOAL:entity ACTOR presses{patient}
unfold 鋪攤	ACTOR{agent,causer},THEME:entity unfolded{theme}
grind 研磨	ACTOR{agent,causer},GOAL:entity ACTOR grinds{patient}
split 破開	ACTOR{agent,causer},GOAL:thing split{patient}
cut 切削	ACTOR{agent,causer},GOAL:thing cut{patient}
bite 啃咬	ACTOR{agent,causer},GOAL:thing bitten{patient}
masticate 咀嚼	ACTOR{agent,causer},GOAL:thing ACTOR chews on{patient}
fold 折疊	ACTOR{agent,causer},GOAL:thing folded{patient}
PlayWith 揉弄	ACTOR{agent,causer},GOAL:thing kneaded{patient}

weave  辯編	ACTOR{agent,causer},GOAL:thing weaved{patient}
dig  挖掘	ACTOR{agent,causer},GOAL:entity ACTOR digs or digs out{patient}
clean  使淨	ACTOR{agent,causer},GOAL:entity ACTOR cleans{patient}
wash  洗滌	ACTOR{agent,causer},GOAL:entity ACTOR washes{patient}
wipe  擦拭	ACTOR{agent,causer},GOAL:entity ACTOR wipes{patient}
pollute  使髒	ACTOR{agent,causer},GOAL:entity ACTOR pollutes{patient}
apply  塗抹	ACTOR{agent,causer},GOAL:entity ACTOR smears{patient}
beautify  美化	ACTOR{agent,causer},GOAL:entity ACTOR beautifies{patient}
decorate  裝飾	ACTOR{agent,causer},GOAL:entity ACTOR decorates{patient}
MakeUp  化妝	ACTOR{agent,causer},GOAL:person ACTOR does make-up for{patient}
uglify  醜化	ACTOR{agent,causer},GOAL:entity uglified{patient}
illuminate  照射	ACTOR{agent,causer},GOAL:entity uglified{patient}
AlterColor  變色	ACTOR{agent,causer},GOAL:entity ACTOR changes color{patient}
brighten  使亮	ACTOR{agent,causer},GOAL:entity brightened{patient}
straighten  拉直	ACTOR{agent,causer},GOAL:entity straightened{patient}
bend  折彎	ACTOR{agent,causer},GOAL:entity bent{patient}
sharpen  使鋒利	ACTOR{agent,causer},GOAL:entity sharpened{patient}
filter  濾清	ACTOR{agent,causer},GOAL:entity filtered{patient}
lubricate  潤滑	ACTOR{agent,causer},GOAL:entity lubricated{patient}
WarmUp  加熱	ACTOR{agent,causer},GOAL:entity warmed up{patient}
lighting  點燃	ACTOR{agent,causer},GOAL:entity lightened{patient}
burn  焚燒	ACTOR{agent,causer},GOAL:entity burned{patient}
cool  製冷	ACTOR{agent,causer},GOAL:thing ACTOR freezes{patient}
moisten  加溼	ACTOR{agent,causer},GOAL:entity moistened{patient}
irrigate  澆灌	ACTOR{agent,causer},GOAL:entity irrigated{patient}
dry  乾燥	ACTOR{agent,causer},GOAL:entity dried{patient}
enlarge  擴大	ACTOR{agent,causer},THEME:entity enlarged{theme},RANGE{RangeIni,RangeFin}
shrink  縮小	ACTOR{agent,causer},THEME:entity shrunk{theme},RANGE{RangeIni,RangeFin}
tighten  勒緊	ACTOR{agent,causer},GOAL:entity tightened{patient}
loosen  放鬆	ACTOR{agent,causer},GOAL:entity loosened{patient}
SpeedUp  加快	ACTOR:accelerator{agent,causer},THEME:thing accelerated{theme}
SlowDown  減慢	ACTOR{agent,causer},THEME:thing slowing down{theme}
MakeHeavier  加重	ACTOR{agent,causer},GOAL{patient}

deepen 加深	ACTOR{agent,causer},GOAL{patient}
MakeEarlier 提早	ACTOR{agent,causer},THEME:thing ACTOR moves ahead of schedule(theme), RANGE:amount THEME is moved ahead(range)
delay 拖延	ACTOR{agent,causer},THEME:thing delayed(theme), RANGE:amount THEME is delayed(range)
thicken 加濃	ACTOR{agent,causer},GOAL{patient}
dilute 沖淡	ACTOR{agent,causer},GOAL{patient}
strengthen 加固	ACTOR{agent,causer},GOAL{patient}
weaken 削弱	ACTOR{agent,causer},GOAL{patient}
dredge 疏通	ACTOR{agent,causer},GOAL:thing ACTOR unblocks(patient)
BlockUp 堵塞	ACTOR{agent,causer},GOAL:thing ACTOR blocks(patient)
upgrade 升級	ACTOR{agent,causer},THEME:entity going to a higher grade(theme),RANGE{range}
degrade 降級	ACTOR{agent,causer},THEME:entity going to a lower grade(theme),RANGE{range}
PlayUp 鼓吹	ACTOR:propagandist(agent,causer),GOAL:propaganda(content)
PlayDown 貶低	ACTOR{agent,causer},THEME(theme),RANGE:place/position ACTOR demotes GOAL to(range)
slander 誹謗	ACTOR{agent,causer},GOAL:entity ACTOR slanders(patient)
delimit 劃定	ACTOR:restriction imposer(agent,causer),THEME:restrictions imposed on(theme),RANGE{range}
refine 純化	ACTOR{agent,causer},THEME:thing refined(PatientProduct)
ize 變性態	ACTOR{agent,causer},THEME(theme)
CauseToDo 使動	ACTOR{agent,causer},GOAL-PATIENT:thing affected(patient),GOAL-COTENT:action(content)
request 要求	ACTOR:requester(agent,causer),GOAL-TARGET:requestee(target),GOAL-CONTENT: action(content)
call 召喚	ACTOR:caller(agent),GOAL-TARGET:entity ACTOR calls forth(target),GOAL-CONTENT: action(content)
invite 邀請	ACTOR:inviter(agent),GOAL-TARGET:invitee(target),GOAL-CONTENT: action(content)
dispatch 差遣	ACTOR:sender(agent),GOAL-TARGETL:thing sent(target),GOAL-CONTENT:action,predicate(content)
order 命令	ACTOR:order giver(agent),GOAL-TARGET:order receiver(target),GOAL-CONTENT:action,predicate(content)
entrust 委託	ACTOR{agent},GOAL-TARGET:proxy(target),GOAL-CONTENT:action,predicate(content)
urge 促使	ACTOR:entity prodding(agent,causer),GOAL-TARGET:party prodded(target),GOAL-CONTENT:action(content)
force 強迫	ACTOR{agent,causer},GOAL-TARGET:entity ACTOR forces(target),GOAL-CONTENT:thing GOAL is forced to do(content)
guide 引導	ACTOR:guider(agent,causer),GOAL-TARGET:entity guided(target),GOAL-CONTENT:activity or final result(content)
persuade 勸說	ACTOR{agent,causer},GOAL-TARGET: people persuaded(target),GOAL-CONTENT:thing persuaded to do(content)

mediate 調解	ACTOR{agent},GOAL:conflict{content}
mobilize 發動	ACTOR:conductor{agent,causer},GOAL:activity or patient{content,patient,location}
incite 指使	ACTOR:conductor{agent},GOAL-TARGET:person ACTOR orders{target},GOAL-CONTENT: thing ACTOR orders TARGET to do{content}
entice 勾引	ACTOR{agent,causer},GOAL-TARGET:person ACTOR lures{target},GOAL-CONTENT: thing ACTOR lures TARGET into doing{content}
indulge 放縱	ACTOR{agent,causer,experiencer},GOAL-TARGET:person being indulged{target}, GOAL-CONTENT: thing being indulged{content}
TurnOn 啟動	ACTOR{agent,causer},GOAL:entity being turned on{patient}
restrain 制止	ACTOR:preventer{agent,causer},GOAL:thing prevented{content}
obstruct 阻止	ACTOR:preventer{agent,causer},GOAL:activity prevented{content}
prohibit 禁止	ACTOR:forbidder{agent,causer},GOAL:activity{content}
TurnOff 止動	ACTOR{agent,causer},GOAL:entity being turned off{patient}
exempt 免除	ACTOR{agent,causer},THEME: thing ACTOR makes to exempt from GOAL{theme}, GOAL:THEME exempts from{content}
use 利用	ACTOR: utilizer{agent,causer},GOAL-PATIENT:thing utilized{patient},GOAL-CONTENT:thing THEME is used for{content}
TakeVehicle 搭乘	ACTOR: passenger{agent},GOAL:means of transportation{patient}
employ 僱用	ACTOR: employer{agent},GOAL:employee{patient}
spend 花費	ACTOR: spender{agent},THEME:thing spent{theme},GOAL:spending on{content}
lavish 浪費	ACTOR{agent,causer},THEME:thing wasted{theme}
soothe 安慰	ACTOR{agent,causer},GOAL: entity ACTOR comforts{target}
excite 感動	ACTOR{causer},GOAL: entity excited{target}
please 取悅	ACTOR{agent,causer},GOAL:person ACTOR pleases{target}
tease 取樂	ACTOR{agent,causer},GOAL:person ACTOR teases{target}
irritate 激怒	ACTOR:infuriater{agent,causer},GOAL:entity infuriated{target}
frighten 嚇唬	ACTOR:entity that frightens others{agent,causer},GOAL:entity being frightened{target}
discourage 潑冷水	ACTOR:entity that discourages others{agent,causer},GOAL:entity being discouraged{target}
offend 得罪	ACTOR{agent,causer},GOAL:entity ACTOR offends{target}
disappoint 辜負	ACTOR{agent},GOAL:expectation, etc.{content}
MakeWorried 困擾	ACTOR{agent,causer},GOAL{target}
attract 吸引	ACTOR:attractor{agent,causer},GOAL:thing attracted{target}
treat 對待	ACTOR{agent},GOAL{target}
ShowInterest 理睬	ACTOR{agent},GOAL:entity ACTOR pays attention to{target,content}

laugh 笑	ACTOR{agent}
ShowLove 示愛	ACTOR{agent},GOAL:entity ACTOR pursues{target,content}/*ACTOR 可能是 topic，但不視為 argument*/
praise 誇獎	ACTOR{agent},GOAL:person ACTOR praises or thing ACTOR praises for{target,content}
reward 獎勵	ACTOR{agent},GOAL-TARGET:person ACTOR rewards{target}, GOAL-CONTENT: thing ACTOR rewards for{content},MEANS:reward{instrument}
congratulate 祝賀	ACTOR{agent},GOAL:thing celebrated{content}
thank 致謝	ACTOR:people thanking{agent},GOAL-TARGET:people thanked{target}, GOAL-CONTENT: entity ACTOR thanks for{content}
apologize 道歉	ACTOR:apologizer{agent},GOAL-TARGET:apologizing to {target}, GOAL-CONTENT: apologizing for{content}
SayHello 問候	ACTOR{agent},GOAL:entity ACTOR sends greetings to{target}
visit 看望	ACTOR:visitor{agent},GOAL:person or place visited{target}
welcome 歡迎	ACTOR:entity extending welcome{agent},GOAL-TARGET:welcome to {target}, GOAL-CONTENT: welcome for{content}
salute 致敬	ACTOR{agent},GOAL:entity ACTOR salutes{target}
permit 允許	ACTOR:allower{agent},GOAL-TARGET:allowed party{target}, GOAL-CONTENT:predicate {content}
accept 接受	ACTOR:accepter{agent},GOAL:thing/action accepted{content}
endorse 擁護	ACTOR{agent},GOAL-TARGET:person supported {target}, GOAL-CONTENT:entity supported{content}
guarantee 保證	ACTOR:ensurer{agent,causer},GOAL-TARGET: party to whom the promise is made{target}, GOAL-CONTENT: thing ensured{content}
WellTreat 善待	ACTOR{agent},GOAL{target}
entertain 招待	ACTOR{agent},GOAL{target}
commemorate 示思念	ACTOR:commemorator{agent},GOAL-TARGET:person commemorated {target}, GOAL-CONTENT: thing commemorated{content}
IllBehave 胡鬧	ACTOR{agent}
sigh 嘆氣	ACTOR{agent}
condole 致哀	ACTOR{agent},GOAL-TARGET:people condoled {target}, GOAL-CONTENT: thing condoled{content}
weep 哭泣	ACTOR{agent}
ExpressDissatisfaction  示不滿	ACTOR{agent},GOAL:express to{target},CAUSE: person or thing dissatisfied{cause}
protest 抗議	ACTOR:protester{agent},GOAL-TARGET{target},GOAL-CONTENT:entity protested against{content}
ExpressAgainst 譴責	ACTOR:condemner{agent},GOAL-TARGET:person condemned{target},GOAL-CONTENT: thing condemned{content}
satirize 諷刺	ACTOR{agent},GOAL-TARGET:person ACTOR satirizes{target},GOAL-CONTENT:thing ACTOR

	<i>satirizes</i> {content}
LaughAt 笑話	<i>ACTOR:people laughing</i> {agent}, <i>GOAL-TARGET:person ACTOR laughs at</i> {target}, <i>GOAL-CONTENT:thing ACTOR laughs at</i> {content}
IllTreat 慢待	<i>ACTOR</i> {agent}, <i>GOAL</i> {target}
reject 回絕	<i>ACTOR:entity rejecting</i> {agent}, <i>GOAL-TARGET:refused person</i> {target}, <i>GOAL-CONTENT: refused object</i> {content}
betray 背叛	<i>ACTOR</i> {agent}, <i>GOAL-TARGET:person ACTOR betrays</i> {target}, <i>GOAL-CONTENT:thing ACTOR betrays</i> {content}
ExpressAnger 示怒	<i>ACTOR</i> {agent}, <i>GOAL-TARGET:person ACTOR expresses anger</i> {target}, <i>GOAL-CONTENT:thing ACTOR expresses anger</i> {content}
sense 感覺	<i>ACTOR</i> {agent}, <i>GOAL</i> {content}
look 看	<i>ACTOR</i> {agent}, <i>GOAL: entity ACTOR looks at</i> {content}
listen 聽	<i>ACTOR</i> {agent}, <i>GOAL: entity ACTOR listens</i> {content}
smell 聞	<i>ACTOR</i> {agent}, <i>GOAL: entity ACTOR smells</i> {content}
feel 摸	<i>ACTOR</i> {agent}, <i>GOAL: entity ACTOR feels</i> {content}
savor 舔	<i>ACTOR</i> {agent}, <i>GOAL: entity ACTOR feels</i> {content}
TryToKnow 弄懂	<i>ACTOR</i> {agent}, <i>GOAL: entity ACTOR tries to know</i> {content}
read 讀	<i>ACTOR</i> {agent}, <i>GOAL: entity ACTOR reads</i> {content}
ask 問	<i>ACTOR</i> {agent}, <i>GOAL-TARGET: person ACTOR asks</i> {target}, <i>GOAL-CONTENT: thing ACTOR asks</i> {content}
interrogate 審問	<i>ACTOR</i> {agent}, <i>GOAL-TARGET: person ACTOR interrogates</i> {target}, <i>GOAL-CONTENT: thing ACTOR interrogates</i> {content}
LookFor 尋	<i>ACTOR</i> {agent}, <i>GOAL: entity looked for</i> {content}
check 查	<i>ACTOR</i> {agent}, <i>GOAL: entity checked</i> {content}
scout 偵察	<i>ACTOR</i> {agent}, <i>GOAL:thing ACTOR detects</i> {content}
diagnose 診察	<i>ACTOR</i> {agent}, <i>GOAL:thing ACTOR diagnoses</i> {content}
supervise 監察	<i>ACTOR:monitor</i> {agent}, <i>GOAL:thing monitored</i> {content}
investigate 調查	<i>ACTOR:investigator</i> {agent}, <i>GOAL:thing investigated</i> {content}
exam 考試	<i>ACTOR:examinee</i> {agent}, <i>GOAL:entity tested</i> {content}, <i>RANGE:score</i> {range}
calculate 計算	<i>ACTOR:entity doing calculation</i> {agent}, <i>GOAL:thing calculated</i> {content}, <i>RANGE</i> {range}
count 計數	<i>ACTOR</i> {agent}, <i>GOAL:thing counted</i> {content}, <i>RANGE</i> {range}
measure 測量	<i>ACTOR</i> {agent,causer}, <i>GOAL:entity ACTOR measures</i> {content}
distinguish 分辨	<i>ACTOR</i> {agent,causer}, <i>GOAL: thing discerned</i> {content}
think 思考	<i>ACTOR</i> {agent}, <i>GOAL: thing reflected on</i> {content}

deduce 推理	ACTOR{agent},SOURCE: <i>deduce from</i> {source},GOAL: <i>thing deduced</i> {content}
guess 猜測	ACTOR{agent},GOAL: <i>thing guessed</i> {content}
predict 預料	ACTOR{agent},GOAL: <i>thing predicted</i> {content}
LookBack 回想	ACTOR{agent},GOAL: <i>thing ACTOR looks back at</i> {content}
study 學習	ACTOR{agent},GOAL: <i>entity ACTOR studies/learns</i> {content}, SOURCE: <i>institution ACTOR studies at or person ACTOR learns from</i> {source}
drill 練習	ACTOR{agent},GOAL: <i>thing ACTOR practices</i> {content}
imitate 模仿	ACTOR: <i>imitator</i> {agent},SOURCE: <i>imitates from</i> {source},GOAL: <i>thing ACTOR imitates</i> {content}
research 研究	ACTOR: <i>imitator</i> {agent},GOAL: <i>entity studied/researched</i> {content}
compare 比較	ACTOR{agent},THEME: <i>entity compared</i> {theme},CONTRAST: <i>THEME is compared to</i> {contrast},COMPARATIVE-ATTRIBUTE: <i>comparative content</i> {ComparativeAttribute},COMPARATIVE-QUANTITY{range}
analyze 分析	ACTOR: <i>analyzer</i> {agent},GOAL: <i>thing analyzed</i> {content}
experiment 實驗	ACTOR{agent},GOAL: <i>thing experimented</i> {content}
prove 證明	ACTOR{agent,causer},GOAL: <i>thing ACTOR proves/testifies</i> {content}
decide 決定	ACTOR: <i>decider</i> {agent},GOAL: <i>thing decided/determined</i> {content}
judge 裁定	ACTOR: <i>decider</i> {agent},GOAL: <i>verdict</i> {content}
MakeAppointment 約定	ACTOR{agent},GOAL-TARGET: <i>people who date</i> {target}, GOAL-CONTENT: <i>agreement</i> {content}
estimate 評估	ACTOR{agent},GOAL: <i>thing evaluated</i> {content}
plan 計劃	ACTOR: <i>planner</i> {agent},GOAL: <i>thing planned</i> {content}
choose 選擇	ACTOR{agent},GOAL: <i>entity chosen</i> {content}
select 選拔	ACTOR{agent},GOAL: <i>persons or works ACTOR selects</i> {target}
express 表示	ACTOR{agent,causer},GOAL-TARGET: <i>party receiving the message</i> {target}, GOAL-CONTENT: <i>message expressed</i> {content}
mention 提及	ACTOR{agent,causer},GOAL: <i>entity ACTOR mentions</i> {content}
MakeSound 發聲	ACTOR{agent,causer},GOAL: <i>entity ACTOR mentions</i> {content}
cry 喊	ACTOR{agent},GOAL{content}
recite 誦讀	ACTOR{agent},GOAL: <i>thing ACTOR recites</i> {content}
sing 唱	ACTOR: <i>singer</i> {agent},GOAL: <i>song</i> {content}
speak 說	ACTOR: <i>speaker</i> {agent},GOAL: <i>thing said</i> {content}
boast 誇大	ACTOR{agent},GOAL: <i>thing exaggerated</i> {content}
swear 發誓	ACTOR: <i>person making the promise</i> {agent},GOAL: <i>promise or make promise to</i> {content}
propose 提出	ACTOR: <i>person making the promise</i> {agent},GOAL: <i>thing put forward</i> {content}
quote 引用	ACTOR{agent},GOAL: <i>thing quoted</i> {content}

explain 說明	ACTOR{agent,causer},GOAL:thing made clear{content}
emphasize 著重	ACTOR{agent,causer},GOAL:thing emphasized{content}
tell 告訴	ACTOR:message conveyer{agent,causer},GOAL-TARGET:message receiver{target},GOAL-CONTENT: message{content}
describe 描寫	ACTOR{agent,causer},GOAL:entity ACTOR describes{content}
announce 發表	ACTOR{agent,causer},GOAL-TARGET: audience{target},GOAL-CONTENT:thing announced{content}
disseminate 傳播	ACTOR:diseminator{agent,causer},GOAL-TARGET: disseminate to {target}, GOAL-CONTENT: thing disseminated{content}
accuse 控告	ACTOR:accuser{agent},GOAL-TARGET:accused {target},GOAL-CONTENT:offense{content}
recommend 推薦	ACTOR{agent},GOAL-TARGET: recommend to{target}, GOAL:entity recommended {content}
reply 答	ACTOR:replier{agent},GOAL-TARGET:person ACTOR answers{target},GOAL-CONTENT:question or answer ACTOR gives{content}
refute 反駁	ACTOR{agent},GOAL-TARGET{target},GOAL-CONTENT{content}
admit 承認	ACTOR:acknowledger{agent},GOAL:acknowledged fact{content}
deny 否認	ACTOR:denier{agent},GOAL:thing denied{content}
write 寫	ACTOR{agent},GOAL:thing written{content}
copy 抄寫	ACTOR{agent},GOAL:thing copied{content}
sign 題寫	ACTOR{agent},GOAL:thing signed{content},LOCATION:where GOAL signed{LocationFin}
translate 翻譯	ACTOR:translator{agent},GOAL: thing translated{content},SOURCE:source language{source},STATEFIN: target language{result}
record 記錄	ACTOR{agent},GOAL:thing recorded{content},LOCATION:where GOAL recorded{LocationFin}
TakePicture 拍攝	ACTOR{agent},GOAL:entity ACTOR takes a picture of{target}
draw 畫	ACTOR{agent},GOAL:thing ACTOR draws{content},LOCATION:where GOAL drawn{LocationFin}
carve 雕刻	ACTOR{agent},GOAL:thing ACTOR carves{content},LOCATION:where GOAL carved{LocationFin}
print 印刷	ACTOR{agent},GOAL:thing ACTOR prints{content},LOCATION:where GOAL printed{LocationFin}
publish 出版	ACTOR{agent},GOAL:publication{content},LOCATION:where GOAL published{LocationFin}
show 表現	ACTOR:demonstrator{agent,causer},GOAL:thing demonstrated{content},LOCATION:where GOAL demonstrated{LocationFin}
perform 表演	ACTOR:performer{agent},GOAL:role or thing performed{content},LOCATION:where GOAL performed{LocationFin}
display 展示	ACTOR:demonstrator{agent},GOAL:thing demonstrated{content},LOCATION:where GOAL demonstrated{LocationFin}
ShowOff 炫耀	ACTOR:demonstrator{agent,causer},GOAL:entity ACTOR shows off{content}
teach 教	ACTOR:teacher{agent,causer},GOAL-TARGET:student{target}, GOAL-CONTENT: subject{content}
communicate 交流	ACTOR:communicator{agent},COMPANION:communicate to{companion},GOAL: thing



	<i>communicated</i> {content}
talk   談話	<i>ACTOR:people talking</i> {agent}, <i>COMPANION:talk to</i> {companion}, <i>GOAL: conversation</i> {content}
discuss   商討	<i>ACTOR</i> {agent}, <i>COMPANION</i> {companion}, <i>GOAL: thing discussed</i> {content}
debate   辯論	<i>ACTOR</i> {agent}, <i>COMPANION</i> {companion}, <i>GOAL:thing debated</i> {content}
quarrel   爭吵	<i>ACTOR</i> {agent}, <i>COMPANION</i> {companion}, <i>GOAL:thing ACTOR fights over</i> {content}
HideTruth   瞞	<i>ACTOR</i> {agent,causer}, <i>COMPANION</i> {companion}, <i>GOAL:thing hidden</i> {content}
KeepSilence   不說	<i>ACTOR</i> {agent}, <i>GOAL:thing kept silence</i> {content}
MakeMisunderstand   使誤知	<i>ACTOR</i> {agent,causer}, <i>GOAL:entity misled</i> {content}
TalkNonsense   瞎說	<i>ACTOR</i> {agent}, <i>GOAL</i> {content}
deceive   欺騙	<i>ACTOR</i> {agent}, <i>GOAL-TARGET: person ACTOR deceives</i> {target}, <i>GOAL-CONTENT:thing ACTOR deceives</i> {content}

## Appendix IV: Semantic Relations and Features of Prepositions

edited by 2014.11.6

Preposition & Semantic Feature	Sense Definition: determined by head verb and X
自, 指出範圍的起點 +StartPoint(起源)	<p><b>Location</b>ni 我也歡天喜地<b>自</b>北京南下</p> <p><b>Time</b>ni 原以為<b>自</b>公職退下來後, 生活會比較悠閒</p> <p><b>source</b> 我朋友仍尚未<b>自</b>離婚的傷痛復元</p> <p><b>Range</b>ni 這些服務包括<b>自</b>讀書、寫字到舉辦職業訓練班次</p> <p><b>topic</b> 自資訊運用的層面來看</p>
由, 指出行為或事物的起點(包括時空起點、範圍啟始、來源) +StartPoint(起源)	<p><b>Time</b>ni 薪水<b>由</b>年初到年尾即大幅降落</p> <p><b>Location</b>ni 曾碰到幾個<b>由</b>大陸出來的石油工人</p> <p><b>source</b> 這次演出的製作和呈現觀點都是<b>由</b>布農族人的觀念出發由產品面切入</p> <p><b>Range</b>ni <b>由</b>一天三、四百人成長為一千五百人</p> <p><b>component</b> 塑合板係<b>由</b>木屑經高壓處理成型</p> <p><b>agent</b> 考大學的優待標準, <b>由</b>教育部酌情核定</p> <p><b>instrument</b> 把油脂集中, 並<b>由</b>一個管子接到戶外</p> <p><b>由</b>日記的筆跡便可判斷他當時的心情</p> <p><b>reason</b> <b>由</b>此台灣與大陸的南管社團都未應加入</p> <p><b>theme</b></p> <p><b>condition</b></p>
從, 指出起點(包括時空、範圍或來源) +StartPoint(起源)	<p><b>Location</b>ni 若<b>從</b>桃園上車, 就要採議價方式付費</p> <p><b>Time</b>ni 他們<b>從</b>黎明盼到白晝</p> <p><b>Range</b>ni 價位<b>從</b>5 4 0 0 至 1 3 0 0 0 美元</p>

	<p>source 都<b>從</b>一個小小的想法開始</p> <p><b>從</b>帳面上很難估算</p> <p>從軍事角度觀察</p>
<p><b>自從</b>，指出時間的起點</p> <p>+StartPoint(起源)</p>	<p>TimeIni 這是<b>自從</b>韓戰結束南北韓分立三十七年以來的頭一遭</p>
<p><b>打從/打</b>，指出時間和空間的起點</p> <p>+StartPoint(起源)</p>	<p>LocationIni 茶主人開始介紹茶葉<b>打</b>哪兒來</p> <p>TimeIni 電影這種媒介<b>打從</b>發明就注定是悲傷的</p>
<p><b>至/到</b>，指出終點（包括時空、範圍或狀態）</p> <p>+EndPoint(終點)</p>	<p>LocationFin 她們打算以八天的時間橫跨澳洲雪梨<b>至</b>墨爾本</p> <p>TimeFin 從民國三十六年<b>至</b>現今七十九年</p> <p>RangeFin 從東<b>到</b>西一千多里</p> <p>condition 開始自亂陣腳終<b>至</b>一敗塗地</p>
<p><b>直到/迄</b>，指出時間和空間的終點</p> <p>+EndPoint(終點)</p>	<p>LocationFin 我們的分佈僅限於雲貴高原以東，南<b>迄</b>越南</p> <p>TimeFin <b>直到</b>1988年才完工發電</p> <p>有關證管會的決定<b>迄</b>昨一無所知</p>
<p><b>及至</b>，指出終點（包括時間和範圍）</p> <p>+EndPoint(終點)</p>	<p>TimeFin <b>及至</b>元十三限大軍遭困，他才全力發動</p> <p>RangeFin 家庭、社會<b>及至</b>各階層都應全力配合</p>
<p><b>等到/待到/延至/遲至/截至/待/俟/留待</b>，指出時間的終點</p> <p>+EndPoint(終點)</p>	<p>TimeFin 不要<b>等到</b>中毒才去找解藥</p>
<p><b>在</b>，指出定點（包括時空、範圍和特定條件）</p> <p>+FixedPoint(定點)</p>	<p>TimePoint <b>在</b>高喊愛鄉土、寶惜地方資源之際</p> <p>location 使台灣成為荷人<b>在</b>東方貿易的據點</p> <p>condition <b>在</b>外在環境逼迫下重建</p> <p>duration 台灣地區<b>在</b>這20年來，也由農業文明走入工業文明</p> <p>topic 或可<b>在</b>理論探討及例證舉述方面更加強化</p>
<p><b>於/于</b>，指出定點（包括時空、範圍、來源、條件、比較對象）</p> <p>+FixedPoint(定點)</p>	<p>TimePoint 將<b>於</b>近日內提出可行的執行辦法</p> <p>location <b>於</b>皇冠小劇場上演</p> <p>contrast 地方稅優先<b>於</b>國稅</p> <p>topic 於法於理都不能成立</p> <p>source 主動權操之<b>於</b>我</p> <p>這種主張也必不能見容<b>於</b>國法</p> <p>詩賦文章也要取典<b>於</b>中國</p> <p>condition 能否維持<b>於</b>高檔不墜/數年前死<b>于</b>雪崩</p> <p>與會者<b>於</b>法師帶領下依序向國旗及國父遺像行三鞠躬禮</p> <p>goal 往往加諸<b>於</b>兒子身上</p> <p>日後運用<b>於</b>汽車製造上</p>
<p><b>當<sup>1</sup> (著)</b>，值、面對，指出事件發生當下的時空定點+FixedPoint(定點)</p> <p><b>當<sup>2</sup></b>，當作，指出範圍</p>	<p>TimePoint <b>當</b>她開始細細打量我們軍艦</p> <p>location 在大街上被一個小流氓<b>當</b>胸開了一槍</p> <p>range 我們從來不把她<b>當</b>女性(看待)</p>

+RangeValue(範圍值)	
趁(著)/乘(著)/逢/值/趕/正當/每逢，指出事件發生當下的時間定點 +FixedPoint(定點)	TimePoint 逢高減碼為宜 趁對方投手不穩頻頻搶分 當日正值寒流來襲 趕明兒個我再去替你辦這件事 待吃到一半始抬起頭來
繼，指出接續的時間定點 +FixedPoint(定點)	TimePoint={TimeAfter({event 事件})}山水畫繼人物畫之後興起
臨/臨到/臨近，指出逼近的時空定點 +FixedPoint(定點)	TimePoint 只有在臨戰前降低水庫水位 location 位於市場大街臨海灣的渡輪大廈
距/離/距離，指出相距的起點(包括時空) 視為動詞	{from 相距:LocationIni={}} 只行進到距釣魚台六海里處;馬槽離市區可以用近在咫尺形容 {from 相距:TimeIni={}} 距今142年前 離成熟卻還有一段距離
隔，指出造成相距的中間物(包括時空) +through(過程)	{from 相距:LocationThru={}} 河東堂隔海與龜山島遙遙相對 {from 相距:duration={}} 一直到隔了一天之後的早晨，才再度進食
就，指出所針對的範圍 +topic(主題)	topic 謹就下列各點對後勢發展加以分析 也只能就局部設備改善
有，指出存在的事物或其屬性值 視為動詞	Theme(value) 這條路約有七百里長 有客人來訪 有錄影帶為證
經/經過/經由，指出經歷的時空或事件過程 ①+through(過程) ②+means(途徑) or +instrument(工具)	duration 導盲犬平均需經約十七個月的密集訓練 LocationThru 白色毒水流經之處，草木枯乾 似乎也沒有任何一種經口傳染的疾病 condition 經間談中發現其組織成員涉入其中 伊朗外長維拉雅提今天未經宣布地訪問伊拉克 means 經檢討修正而定案 最後經外科醫師建議
歷經，指出經歷的地方或時間 +through(過程)	duration 歷經十年餘仍未徵收 LocationThru 歷經湖、杭又回到幕府之中
順/(著)沿(著)/循(著)/依循/依(著)，指出經歷的地方或事件 ①+through(過程) ②+standard(標準)	LocationThru 順著彎曲的山路前進 公路依山盤旋 standard 順著這個心理變化程序加以掌握就沒錯了 循著小石子的記號走回家去
途經，指出經歷的地方 +through(過程)	LocationThru 經常有上班族途經該里便隨意亂丟垃圾
往，指出朝向的對象(包括方向、地點、物體或範圍)	direction 將行情更往上推 location 兩人就往土城試運氣

<p>+toward(朝)</p>	<p>goal 她的棍子馬上就<b>往</b>我頭上敲</p> <p>topic <b>往</b>民間習俗、傳統偏方或各種新發現中設想</p> <p>condition 業者不得不<b>往</b>良性發展</p> <p>TimePoint 但因有時無水，拜拜也必須<b>往</b>後延</p>
<p>向，指出朝向的對象（包括方向或物體）</p> <p>+toward(朝)</p>	<p>direction 讓小鷹自己<b>向</b>山下飛</p> <p>target 也<b>向</b>第一名拍手祝賀</p> <p>所以都樂意<b>向</b>他買</p>
<p>迎(著)，指出朝向的對象</p> <p>+toward(朝)</p>	<p>location 我<b>迎</b>著她走過去</p> <p>target 髮絲<b>迎</b>風搖擺</p>
<p>望(著)/朝(著)，指出朝向的對象（包括方向、物體或方式）</p> <p>+toward(朝)</p>	<p>goal 軍人在後頭<b>朝</b>她開槍</p> <p>direction 每隻腳<b>朝</b>反方向各作五回</p> <p>他抬頭<b>望</b>前看</p> <p>他毫不猶豫的<b>望</b>媽媽走去</p> <p>condition 其規劃將<b>朝</b>全面推動佛教教育</p>
<p>對，指出行為的目標</p> <p>+goal(目標)</p>	<p>target 爸爸轉過身<b>對</b>我們說</p> <p>content 國際好手為爭取好成績<b>對</b>積分頗為重視</p>
<p>針對，指出行為的對象</p> <p>+topic(主題)</p>	<p>topic 可以<b>針對</b>其弱點加以預防</p> <p><b>針對</b>考試總是很盡責地準備</p>
<p>問，指出行為的對象</p> <p>+target(對象)</p>	<p>target 朝廷束手無策時<b>問</b>他要錢</p>
<p>替/幫/代，指出行為的受益者</p> <p>+beneficiary(受益者)</p>	<p>benefactor 請你<b>替</b>我向姑父、姑母請安</p> <p><b>替</b>漢字作註解</p> <p>我真想拿彩筆<b>幫</b>操場塗上顏色</p> <p>我<b>代</b>東尼向妳道歉</p>
<p>做/作/為<sup>1</sup>又ㄟˊ做，指出行為的範圍</p> <p>+RangeValue(範圍值)</p>	<p>range 拜漢學家曹秋圃<b>為</b>師</p> <p>要<b>做</b>一個誠實的人</p>
<p>為<sup>2</sup>(了)又ㄟˋ助，指出行為的理由或受益者</p> <p>①+cause(原因)</p> <p>②+beneficiary(受益者)</p>	<p>reason 之後二十多年都<b>為</b>情所困</p> <p>不<b>為</b>口腹操刀殺生</p> <p>beneficiary 希索·趙並不反對別人<b>為</b>他冠上「花花公子」的名號</p> <p>更<b>為</b>名山勝境增色不少</p>
<p>因，指出行為的理由</p> <p>+cause(原因)</p>	<p>reason 我的第一次婚姻<b>因</b>丈夫車禍過世而結束</p>

<p>為<sup>1</sup>/被/受/遭/遭受/叫/讓/承/蒙/歸/承蒙 /深為/備受/倍受/深受，指出行為的主體</p> <p>+agent(主事者)</p> <p>+experiencer(經驗者)</p>	<p>agent 張艾嘉始終為廣大的朋友所喜愛</p> <p>才知道嬌嬌被車子撞傷了</p> <p>少數不受景氣榮枯影響的真正有錢人</p> <p>昨晚就遭跳球打中</p> <p>一定遭受人們所唾棄</p> <p>他的文章叫人批評得體無完膚</p> <p>我會讓他瞧不起啊</p> <p>希望讓正在烘烤、滾動的熱狗正面迎向顧客</p> <p>家裡的錢都歸我管</p> <p>experiencer 承蒙上天厚愛</p>
<p>挨<sup>1</sup>，指出行為的主體</p> <p>+agent(主事者)</p> <p>挨<sup>2</sup>，指出靠近的對象</p> <p>+FixedPoint(定點)</p>	<p>agent 他以為會挨母親罵</p> <p>location 於是人們開始挨家查訪</p> <p>日本人習慣排隊，一個挨著一個</p>
<p>靠<sup>1</sup>/靠著<sup>1</sup>，依靠，指出憑藉的對象</p> <p>+means(途徑) or +instrument(工具)</p> <p>靠<sup>2</sup>/靠著<sup>2</sup>，靠近，指出靠近的對象（包括物體或方位）</p> <p>+FixedPoint(定點)</p>	<p>means 其造化全靠自己修持得來</p> <p>光靠賣鹽不可能讓臺鹽存活</p> <p>instrument 單靠雙腿走完這些展場</p> <p>location 我們選了靠窗的位子</p> <p>direction 紐西蘭屬於靠左邊行車的國家</p>
<p>假，指出憑藉的事物、方法或地方</p> <p>①+means(途徑) or +instrument(工具)</p> <p>②+FixedPoint(定點)</p>	<p>means 只是讓別有用心者得以假整修店面逃避政府檢驗</p> <p>instrument 這是人類假其天才的幻想而達到的不朽</p> <p>location 於九月十五日假科技大樓舉行</p>
<p>倚，指出憑藉的事物或地方</p> <p>①+instrument(工具)</p> <p>②+FixedPoint(定點)</p>	<p>instrument 資本家倚政權為後盾</p> <p>location 弘公轉身倚牆而臥</p>
<p>以，用，指出行為所憑藉的依據（包括理由、目的、範疇和方式）</p> <p>①+theme(客體)</p> <p>②+standard(標準)</p> <p>③+means(途徑) or +instrument(工具)</p> <p>④+cause(原因)</p> <p>⑤+purpose(目的)</p>	<p>theme 其中以霧社事件最為壯烈</p> <p>standard 在根本上仍宜以使用人的立場來討論</p> <p>時間以三分鐘為限</p> <p>instrument 一位擺攤以咬鳥卦為人算命看相的江湖人</p> <p>means 中國人都以登高來慶祝這個日子</p> <p>reason 他常以考不到一百分跟家人嘔氣</p> <p>purpose 可以推著走以避免一些死角</p>
<p>用/藉/透過/藉由/藉著/憑(著)/憑依/憑藉/仗(著)，指出憑藉的工具或方式</p> <p>+means(途徑) or +instrument(工具)</p>	<p>instrument 書生用顫抖的手接過銀子</p> <p>藉畫筆賦予真實性</p> <p>Means 她決定用無痛分娩來做自然生產</p> <p>藉歌詠石灰來描寫自己對人生的看法</p>

<p>視/論/基於/本著/按(著)/照(著)/秉(著)/隨(著)/據/依據/按照/根據/以/基于/依照/據以/援/援照/仿照/比照，指出憑藉的依據</p> <p>+standard(標準)</p>	<p><b>standard</b> 價格<b>視</b>大小新舊而定</p> <p>一人一天五百元，<b>論</b>日計費</p> <p>義工們<b>本著</b>回饋社會的理念熱心推廣垃圾分類</p> <p>只有百分之十五的企業<b>按</b>規定在中信局開了帳戶</p> <p>我一定<b>照</b>你們的意思辦</p> <p>空氣的味道可以<b>隨</b>個人喜好調整</p> <p>一向<b>秉</b>理性原則和市政府進行溝通</p> <p><b>基於</b>安全性、資金籌措不易等多方考慮</p> <p>每個人都是<b>根據</b>什麼理財的</p> <p><b>據</b>法國人說沒有硬性的規定</p> <p>朝野兩黨可以<b>按照</b>自己立場解釋</p> <p>至於快速道路部分，<b>比照</b>其他縣市另闢路線施工</p> <p>無法<b>比照</b>一般公務人員領取退休金</p>
<p>衝著，指出憑藉的理由</p> <p>+cause(原因)</p>	<p><b>reason</b> 觀眾多是<b>衝著</b>林志玲來參加</p> <p>媽媽<b>衝著</b>中獎機率高硬是拖著我去排隊</p>
<p>把/將，指出處置的對象（包括經驗者、物體或抽象概念等）</p> <p>+patient(受事者)</p>	<p><b>experiencer</b> 這種情景<b>把</b>我嚇壞了</p> <p><b>goal</b> 九月一日起<b>把</b>費用下降為五十元</p> <p>我<b>把</b>藥一口吞下</p> <p><b>把</b>台北市攪得一團紊亂</p>
<p>拿，指出論述的對象或工具</p> <p>①+theme(客體)</p> <p>②+instrument(工具)</p>	<p><b>theme</b> 你要<b>拿</b>他怎麼樣</p> <p>這好比<b>拿</b>國片和好萊塢大成本、精心製作的電影相比</p> <p>不要再<b>拿</b>犀牛牛角當藥材了</p> <p><b>instrument</b> 我故意<b>拿</b>話套他</p>
<p>逐，指出依序處置的對象</p> <p>+InSequence(有序)</p>	<p><b>goal</b> 以<b>逐</b>層拆除的方式展開救援</p> <p>經費<b>逐</b>年追加</p>
<p>管，指出命名的對象</p> <p>+theme(客體)</p>	<p><b>goal</b> 從此人們就<b>管</b>時間叫光陰</p>
<p>至於/關於/至于/關於，指出論述的範圍</p> <p>+topic(主題)</p>	<p><b>topic</b> <b>至於</b>雲、嘉、屏東等偏遠一點的區位</p> <p><b>至於</b>實施與否，視當時情況再作決定</p> <p>使我們得到許多<b>關於</b>魚類的知識</p>
<p>對於，指出論述的範圍</p> <p>+topic(主題)</p>	<p><b>topic</b> <b>對於</b>他愛不愛台灣則不得而知</p> <p>我們<b>對於</b>這個北非國家非常陌生</p>
<p>給<sup>123</sup>，指出用某行為對待某人或某物（常為受益者或被處置對象，即把、被句的被處置者）</p> <p>①+agent(主事者)</p> <p>②+patient(受事者)</p> <p>③+beneficiary(受益者)</p>	<p><b>agent</b> 大門像<b>給</b>一對無形的手推著，向內掩了進去</p> <p><b>goal</b> 這房子毛病一大堆，你先<b>給</b>它賣掉再說</p> <p><b>beneficiary</b> 快<b>給</b>他道謝</p>

<p>與/和/跟，指出相關事物(包括同一範疇的事物、同一領屬者的事物、共同參與某事件的成員或參與比較的對象)</p> <p>+co-participant(共同參與者)</p>	<p>listing 展覽區分為幼兒區、青春區與中老年區</p> <p>他的作品與生活情形被拍成了電影</p> <p>partner 老師要我七點半與他在龐德羅莎見面</p> <p>我們與一切外物相遇</p> <p>起初我沒有想到這種病狀跟避孕丸有關</p> <p>contrast 宣傳手法與少林寺如出一轍</p> <p>新財長上任後採取與過去完全不同的低價策略</p>
<p>同，指出相關事物(包括共同參與某事件的成員或參與比較的對象)</p> <p>+co-participant(共同參與者)</p>	<p>partner 把耶穌同日本扯上了關係</p> <p>contrast 他的感情世界同其學術生涯一樣豐富多彩</p>
<p>連/偕/偕同/連同/協同/隨同，指出共同參與某事件的成員</p> <p>+co-participant(共同參與者)</p>	<p>partner 軟片連罐心放回罐內</p> <p>要連同女兒一起帶走</p> <p>拎著輕便行李偕其夫婿正準備動身</p>
<p>等<sup>1</sup>，指出相關事物</p> <p>+co-participant(共同參與者)</p> <p>等<sup>2</sup>，指出時間定點</p> <p>+FixedPoint(定點)</p>	<p>listing 教海倫洋娃娃、坐下、帽子等字</p> <p>TimePoint 一定要等你接觸到它才知道</p>
<p>比/較/似/像/如/有如/猶如/如同/一如/一似/猶若/像似/相對於/相較于/不及/比起/較之/相較於/相對於/相較，指出比較對象</p> <p>+contrast(比較對象)</p>	<p>contrast 造拱橋比造拱門困難多了</p> <p>海水較西海岸要乾淨許多</p> <p>樹叢間遍布似綠絨般柔軟的苔蘚及野蘭</p>
<p>像/如，指出比較對象、譬喻內容或相關事物</p> <p>①+contrast(比較對象)</p> <p>②+apposition(同位語)</p>	<p>contrast 把修法過程像錄影帶般倒帶</p> <p>野草被吹得如波浪起伏</p> <p>Apposition 許多老牌的海鮮餐廳像九八八、八八八陸續成立</p> <p>許多國家遵辦了，如日、加、澳、法</p>
<p>比方/比如/比如說/譬如/譬如說/比方說/例如/例如說/諸如/例/諸如說，指出譬喻內容</p> <p>+apposition(同位語)</p>	<p>apposition 比方女方搶著要付帳，他會認為失了裡子也失了面子</p> <p>有的社運團體脫穎而出，譬如婦女、環保、教育等</p> <p>你在避暑雪竇寺記中說山路難走，譬如求學一樣</p>
<p>除/除了/除去/除開，指出排除對象</p> <p>+except(除外)</p>	<p>except 除親人外一律不准會客接見</p> <p>除去手塑、手雕的技巧之外，並賦予人物或動物的表情</p>