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An Embodied-Cognitive Approach to the Abstraction of English NN Form Units---A Case Study of the Action's Component-based Type

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Abstract English NN form unit seems to have a simple form but its meaning construction is really complex and rich in features. Revelation of the laws will be beneficial to understand its essence, explore the thinking ways of English-speaking people and promote English teaching. It is revealed that its re-division can consider the conceptual structure and form structure, and is based on whether the constitution factor is abstracted when represented; the five types are ACTc1 abstractionally represented but ACTc2 non-abstractionally represented, both ACTc1 and ACTc2 are abstractionally represented, overal abstractionally represented after both ACTc1 and ACTc2 are abstractionally represented, overall abstractonally represented after ACTc1 abstractionally represented and ACTc2 non-abstractionally represented, overall abstractionally represented after both ACTc1 and ACTc2 non-abstractionally represented; its abstraction is based on the embodiment of the ACTION event and realized mainly through metonymy.

Keywords English NN Form Unit, ACTION Event, ACTION Component Element, Abstraction, Metonymy

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1. Introduction

NN form unit is a commonly used means of word construction. The traditional view admits that the NN combination generally covers NN compounds and NN phrases. In fact, compounds just have higher degree of lexicalization or habituation, and they are also restricted by phrasal rules in essence. To some extent, NN compounds and NN phrases are the same in nature. They both are language units with distinctive meaning generation but with different degrees of solidification. Li (2019) holds that they both have the centers in syntax, prosody and meaning. Besides, Liao and Xing (2022) state that they can be collectively referred to as NN complexes, or NN formal units.

In previous research, parataxis has always been regarded as the feature of Chinese Mandarin, and English is said to be syntactic. However, turning to the conceptual level, parataxis also suits for English, especially for the NN structures. According to the views of Cognitive Grammar, abstraction is the same as parataxis to some extent, since they both take the least form to express the most content. Therefore, in this paper, we take "abstraction" as a cover term and take the English NN form units as the research object, the most representative action's component-based NN form unit as the case, guided by the Action Event Conceptual Frame Theory, to explain this kind of phenomena. As a result, this paper aims at 1. clarify the definition and re-classification of English NN form unit; 2. the abstraction paths of different types of the action's component-based English NN form units.

2. Literature Review

The existing research on English NN form units mainly involves four aspects: formal structure, generative mechanism, semantic relation and application. The study of its formal structure mainly involves three facets: the judgment of its core noun, the transformation of its surface structure to its deep structure, and the division of its syntactic structure.

The judgment of its core noun originated from the syntactic structure centripetal and centrifugal dichotomies in Bloomfield (1933: 204). After that, many scholars like Lyons (1968), Bauer (1983), Adams (2001), Xu and Zhang (2011) have done a detailed study of the core nouns of NN form units, as well as the centrifugal NN form units. Lees (1970) holds that English NN form units are formed through the transforming of its underlying structure from the perspective of formal linguistics. Levi (1978) states that they originate from their corresponding relative clause or complementary structure. Besides, other scholars like Warren (1978), Bisetto (2005), Arcodia (2009), Zhou (2016) have discussed their internal syntactic structure and the types under some syntactic criteria. In addition to the deep-to-surface structure view from formal linguistics school, the functional linguistics school also did some research about their generative mechanism and meaning construction, i.e., categorization in Ungerer and Schmid (2001: 89-98), concept integration in Dirven and Verspoor (2004: 55), the integration of metaphor, metonymy and metametonymy in Benczes (2006), the independent and composite frame view from Zhou (2014), as well as some concrete studies on it. That is, Peng and Jiao (2021) provide a concrete analysis of the internal structure and subtle nuance of N+N compound from the theory of image schema. For the typical modifier-center NN compounds, several researchers have done some work, like Lin and Shi (2024) studying its prosodic processing. What's more, some other scholars like Hatcher (1960), Gleitman (1970), Lauer (1995), Packard (2001), Liu and Liu (2004), Rosario (2001) have also made an attempt to exhaustively describe the semantic relations inside the NN form units. Its application research focuses on teaching, translation and rhetoric. Parkison (2015) holds that their teaching is mainly to explore its morphological characteristics and acquisition mode. Its rhetorical value is often demonstrated in the fields of advertisements and cuisine brands, such as Zlatev (2010) and Zhou (2020). Li and Liu (2008) find its translation value exemplified in its translation skills.

Zhou (2014) holds that NN form units are abstracted in nature, in which it keeps the primary framework while discarding the secondary framework, and he also clarifies the two different levels of abstraction of the NN form units. Zhou and Wang (2010) start from the perspective of frame semantics and points out that when the overall composite framework on which the NN form unit rests is metaphorized or metonymized, the concept will come into focus and manifests itself as an abstraction center. However, their discussion of the abstraction of NN form units still sticks to the traditional division of hypotaxis and parataxis, especially taking predicate deletion, preposition deletion and verb nominalization as the basic ways of abstraction. Their findings only explain the appearance but without exploring the abstraction mechanism behind it. In fact, the essence of abstraction is to try to use the least form to express the most complex concept. It is just like to make sentences at the conceptual level. Abstraction is not only the connecting way of language form units but also a conceptualization way, which is dependent on the experience basis, that is, the

thing, relation or event conceptual frame. Liao (2019) holds that it takes the operating mechanisms like metonymy, metometaphor, hiding and profiling.

3. Data and Methods

To mention that, the action's component-based NN form unit is large in its quantity. Thus, the corpus is chosen mainly from the internet, especially the American new words website---*Wordspy* and the *Phrasefinder,* as well as some English annual hot words presented by the global language monitoring agency, and the corpus' choosing is according to the principles of nature, daily and novelty. The corpus is dealt with the manual screening.

Form Unit Conceptual Frame theory was first proposed by Liao (2016), which has several sub-category theories, among which the Action Event Conceptual Frame Theory is the most typical one. Up to now, it has emerged as a quite suitable theory for most language expression, thus giving rise to the importance of its methodological description. According to theory, THINGs and EVENTs are the way the world exists. THINGs can be divided into concrete THING and abstract THING, while EVENT can be divided into ACTION EVENT, POSSESSION EVENT, APPEARANCE EVENT and STATE EVENT. Based on the THING concept and EVENT concept, the Thing Conceptual Frame Theory and the Event Conceptual Frame Theory have been proposed by Liao (2015). The two kinds of theories are composed of its sub-conceptual frame theories, among which, the Action Event Conceptual Frame Theory is described as follows:

"The structure of the action event is logical. The first level generally contains three elements: agent, action and patient, at least two elements: agent and action, and at most four elements: agent, action, patient and object. The second level includes the constituent knowledge elements about agent, action, patient and object, such as attributes and characteristics of agent, patient and object. The constituent elements of action include the action itself, purpose, time point, time period, place, mode, tool, process, state, accompanying event, result, starting point, end point, etc. The third level includes the knowledge elements about the attributes and characteristics of agent, patient, object and the constituent elements of action. Taking the constituent elements of action as an example, it includes the specific content of the purpose, the types of places, and the constituent elements of accompanying events. Action event and its agent, action, patient and object are the relationship between the whole and the part. Liao (2019) holds that the whole can be the whole action event, or the sum of the components and event elements of two or more events, while the part is the constituent elements of the event".

As for the method, our research takes some qualitative methods, that is, systematic literature review, content analysis, thematic analysis and case study. Concretely speaking, besides the directly representing way, indirect ways like utilizing the metaphor and metonymy are also very important to explain the abstraction mechanism of English NN form units. Yin and Lei (2021) analyzes how metonymy makes changes to the modifier noun. Actually, metaphor and metonymy can not only happen in the modifier part but also in the center part, as well as other types of English NN form units. Therefore, this paper mainly takes the direct representing, metaphor, metonymy, and their combination as the way to explain the abstraction paths of our research object.

Embodied-Cognitive linguistics appears as the modification of Cognitive Linguistics. Wang (2021) stresses its interactive experience and cognitive processing, and also holds that language is formed according to the reality-cognition-language principle. Liao (2019) holds that utterance is formed according to sequence of the embodiment-cognition-utterance. Based on the methods above, the following steps were taken to analyze our qualitative corpora:

1. Guided by the FUFR theory and abstraction laws, a working definition and new classification model have been proposed for the analysis;

2. According to the newly standard, the research object will have a new classification pattern suiting the research;

3. For each type of the research object, methods like metaphor, metonymy, and direct representing, as well as their mixtures, were used to explain their abstraction paths and conceptualization mechanism;

4. Finally, the abstraction laws of English NN form unit can be revealed.

4. Analysis

Although there have been significant research achievements, English NN form units still have problems such as diverse categories, low semantic transparency, and unclear concept generation process due to its complex internal semantic relations, and there is a lack of discussion generation basis and embodied-cognitive operation of its abstraction. Under the guidance of the Form Unit Conceptual Theory, this paper tries to solve the problems above.

4.1 Redefinition and Classification of the Action's component-based NN Unit Form

The formal structure of the English NN form unit is mostly a neutral structure or an appositional structure composed of two nouns, which is derived from the law of attributive postposition in English, and its central component is mostly the latter noun. However, the internal relations of its conceptual structure are complicated, and the classification under a single standard cannot clarify its attributes and characteristics, nor can it solve the problem of numerous categories. From the conceptual level, according to the Action-Event Conceptual Framework Theory, the defining component and the central component of a NN from the unit can represent any two elements of the same or different levels of the logical structure of the action event conceptual framework respectively, and these two elements can be associated by certain embodied-cognitive operations. Thus, we define the English action's component-based NN form unit as those whose defining component and central component represent the elements at the second level of its action event conceptual frame. Take "finger wave" as an example, "finger" and "wave" represent the action element and result element in the DESIGN (HAIRSTYLE) action event conceptual frame respectively. In view of the action event's core position among all the events and action element's core position among all the action event conceptual frames, it can be inferred that English action's component-based NN form unit can best embody the essence of English NN form unit representing the action event concept.

Though research like Zhao and Hong (2015) have used the cognitive mechanism of English ambiguous NN compounds, they still fail to clarify its classification problem. In this paper, the classification of the English NN form unit generally extends from the form level and semantic level, referring to the internal structure, grammatical function and semantic relation criteria. But categories under such standards can not solve its problems like multiple types, ambiguous structures and overgenerality. This paper takes into account both the form level and the conceptual level, and tries to reclassify English action's component-based NN form unit under the guidance of the Action Event Conceptual framework theory.

4.1.1 Standard of Classification

Liao (2016: 105) holds that conceptual metonymy is a basic way of conceptualization based on the conceptual proximity of components of things, relations, or events, in the same thing, relationship, or event conceptual domain matrix or conceptual domain matrix, by highlighting one conceptual component to provide a mental access to another less prominent conceptual component. The connection between the whole and the part is realized through metonymy, which can refer to the part as the whole, or the part as the whole, or the part as the part, such as referring to each other among the constituent elements of the act, referring to the result, the place instead of the action plus the place, the tool instead of the way. According to Liao (2019), referring to the number of steps in which metonymy occurs, metonymy can be divided into simple metonymy (single metonymy), compound metonymy (double metonymy), and complex metonymy (triple metonymy or more). Liao and Xing (2022) state that abstraction is mainly achieved through metonymy mechanism.

Therefore, taking the actions constituent elements at the second level of the action event conceptual frame as parameters, whether the cognitive operations such as metonymy are involved when a parameter is represented as a defining or central component, i.e., whether it is abstractionalied, as the standard, this paper reclassifies the English action's component-based NN form unit.

4.1.2 Result of Classification

With reference to the above classification criteria, the modifying and central components of English action's component-based NN form unit represent the two constituent elements of action factor in its action event conceptual framework, respectively. The two factors are mostly named after their traditional conceptual roles or semantic cases, such as tool, way, time, purpose, result, cause, premises, material, unit, etc. Besides, elements of an action also include its companion event, as well as its sub-constituent elements. In the deep conceptual level of the English action's component-based NN form unit, the two parameters, that is, the constituent elements of the action event can achieve the result of manipulating the degree of abstractionality of NN form unit through either abstractionally representing or non-abstractionally representing.

Thus, the English action's component-based NN form unit can be roughly divided into five types. To make it more convenient, the short form ACTc is used for ACTION component. The modifying component and central component respectively represent the ACTc1 and ACTc2. Accordingly, the five types are listed as follow: ACTc1 abstractionally represented but ACTc2 non-abstractionally represented; both ACTc1 and ACTc2 are abstractionally represented,

overal abstractionally represented after both ACTc1 and ACTc2 are abstractionally represented, overal abstractonally represented after ACTc1 abstractionally represented and ACTc2 non-abstractionally represented, overall abstractionally represented after both ACTc1 and ACTc2 non-abstractionally represented.

4.2 The Abstraction Ways of English Action's Component-Based NN Form Unit

To clarify the intrinsic correlation between the conceptual components represented by English NN form unit and to eliminate ambiguities, it is necessary to analyze the abstraction process of their form structure meaning, and then to obtain the general patterns of such language form unit's producing laws. The abstraction of the English NN form unit is restricted by some internal and external factors through language. Internally speaking, English NN form units are mostly made close to their internal syntactic constructions. Externally speaking, its generation is based on embodiment. It is the result of experience, cultural patterns, objective salience, subjective attention, metaphor, metonymy, meta-metonymy, as well as economy, context, and prosody working together. There are five kinds of situation for the abstraction of English action's component based NN form unit.

4.2.1 Modifying Component Metonymized and Central Component Directly Represent or Metaphorized

When ACTc1 represented as the modifying component is abstractionalized and ACTc2 represented as the central component is non-abstractionalized, there are two kinds of ways: the modifying component is metonymized and the central component is directly represented; the modifying component is metonymized and the central component is metaphorized.

1) Modifying component metonymized while central component directly represented

(1) In the wintertime, he used to turn on the *gas stove* and close all the doors, so it got real hot in there. (*NEWYORKER: We Are Alive*)

(2) Didn't mention anyone in my last *diss tweet*. But hey, if the shoe fits. (*Wordspy*)

"Gas stove" in example (1) is an abstractional expression, in which "gas" means "a gas used as a fuel" and "stove" means "a tool for providing heat for warm cooking". Gas stove refers to a tool that uses flammable gases as fuel to provide heat energy, whose non-abstractional or direct stated representation is "stove absorbing heat from gas". The abstraction of gas stove is relied on MAKING A FIRE action event, among which the modifying component representing action's constituent element material GAS experienced compound metonymy: firstly, in the MAKING A FIRE action event conceptual frame, through metonymy, the action's constituent element "gas" represented by the modifying component is replaced by usage marker plus material "by gas"; secondly, the prepositional phrase "by gas" is replaced by the companion action plus the v-ing form maker plus the prepositional phrase "providing hear by gas; then, the material experienced metonymy combined with the directly represented central component, that is, the tool "stove", to represent the concept "a tool for providing heat". "Diss tweet" in (2) is an abstractional expression, in which "diss" means rude remarks while "tweet" means in its literal sense, then expand to the meaning "a short social post on Twitter". Diss tweet refers to disrespectful or insulting tweets, whose non-abstractional or directly stated representation is "tweet about dissing". The abstraction of diss tweet is relied on the POST action event: through metonymy, the concrete content of action, i.e., "diss" represented as the defining component is replaced by the related form marker plus the verb nominalization marker plus action's content "about dissing", accordingly, combined with the directly represented result "tweet" to represent the above concept. The abstraction of such a concept is based on the embodiment of action event and realized by the metonymy method.

2) Modifying component metonymized while central component metaphorized

(3) *Finger wave* are similar to Marcel Wave in appearance and are hence easily confused. (*Wikipedia Online Dictionary*)

(4) Police video footage showed how officers stealthily approached a swimming pool while hiding behind walls before pouncing on Moran as he relaxed in red *swimming trunks*. (*NPR: British Fugitive Caught Sunbathing In Spain*)

"Finger wave" in (3) is an abstractional expression, in which "finger" means a part at the front of one's arm, and "wave" when used as a noun means "a movement like that of a sudden occurrence or increase in a specified phenomenon". Finger wave refers to the curly hair style made with fingers, whose non-abstractional or directly representing form is "wavelike hair style designed with fingers". The abstraction of finger wave is based on the DESIGN hairstyle action event, in which the action's constituent element instrument represented as the defining

component through compound metonymy while the action's constituent element result represented as the central component hairstyle through metaphor. Concretely speaking, in the DESIGN hairstyle action event conceptual frame, under the compound metonymy: firstly, instrument is replaced by instrument plus noun's plural marker -s; secondly, instrument plus noun's plural form marker is replaced by the way marker plus instrument plus plural maker [with finers]; next, the way phrase is replaced by action plus verb infinite form marker plus way phrase [design with finer]. What's more, based on the similarity between hair style and wave's shape, that is, through metaphor, to compare the central component representing result [hairstyle] as the wave. Finger wave's abstraction is based on embodiment and cognition. Its embodiment is based on action event, the two action's constituent factors---instrument and result has configurability at the conceptual level. Its abstraction is mainly realized through metonymy, which is a type of emboded-cognitive method. In the abstraction process, image appears with the help of metaphor. "Swimming trunk" in (4) is an abstractional expression, in which "swimming" means a kind of sport through water, and "trunk" means the main stem of a tree; usually covered with bark; the bole is usually the part that is commercially useful for lumber. Swimming trunk refers to a piece of clothing worn by men on the lower part of the body for swimming, whose non-abstractional or directly represented form is underwear for swimming men. The abstraction of swimming trunk is based on SWIM action event, in which, firstly the action's constituent factor purpose represented as the defining component experienced simple metonymy: purpose is replaced by the preposition marker plus purpose "for swimming"; the action's constituent factor instrument represented as the central component "trunks" experienced metaphor, i.e., based on the similarity between knee breeches and tree trunk.

4.2.2 Both Modifying Component and Central Component Metonymized

The abstraction way of the type both ACTc1 and ACTc2 abstractionally represented is both the two components experienced metonymy.

(5) Mr Clare said he used props to add colour to his talks, including a pair of *beer goggles*, from the Cornwall and Isles of Scilly Health Authority's Health Promotion department, which show how drink can affect visual impairment. (*BBC: Former publican teaches pupils dangers of alcohol*)

(6) I picked up a *scratch sheet* from Lucky Louie and proceeded to lay down my life's savings on a horse named Felicity Anne. (*NTC's Dictionary of American Slang and Colloquial Expressions*)

"Beer goggle" in (5) is an abstractional expression, in which "beer" means a liquid for human drinking and "goggle" means special eye glasses. *Beer goggle* in its literal sense means beer's eye, while in its extended meaning means, whose non-abstractional or directly represented form is beer effect, i.e., a kind of feeling that people or things become more attractive after drinking alcohol or goggles because of overdue beer drinking. Its abstraction is based on the DRINK action event. Through metonymy, firstly, the action's constituent factor instrument represented as the defining component is replaced as the action plus instrument "drink beer", then to be replaced by the instrument plus action plus degree "over-drinking beer". Next, the action's constituent factor part of the result represented as the central component experienced simple metonymy, that is, the "goggles" are referred as "better eyesight". The abstraction of such concept is based on the embodiment of action event, to realize the abstraction through metonymy. "Scratch sheet" in (6) is an abstractional expression, in which the "scratch" means "the track made by scratching" and "sheet" means a kind of paper used for recording the results of some sports. *Scratch sheet* refers to a daily horse-racing news letter at the race track, whose non-abstractional or directly represented form is sheet used for recording horse-racing results. The abstraction of *scratch sheet* is based on WRITE action event, both the two action's constituent factors way and place represented as the defining component and central component respectively experienced metonymy. In the WRITE action event conceptual frame, through metonymy, way is replaced as action, that is, the "sheet" is replaced as game's result.

4.2.3 Both Modifying Component and Central Component Metonymized then Overall Metonymy

The abstraction way of the type that overall abstractionally represented after both ACTc1 and ACTc2 are abstractionally represented is overall metonymy after both the components experienced metonymy.

(7) According to Mr. Norman's website, he reached into his *bottom drawer* for a song he had already written for an aborted musical called "A House For Mr. Biswas, " based on the novel by V. (*WSJ: Why Men Bond with the 007 Theme*)

(8) He and his wife send their kids to private school and a costly *summer camp*. (*Collins Online Dictionary*)

"Bottom drawer" in (7) is an abstractional expression, which has the extended meaning, that is "a place storing precious things" or "wedding clothing". "Bottom" refers to "the lowermost" and "drawer" means "a boxlike container in a piece of furniture". "Bottom drawer" has the non-abstractional or direct stated form representation demonstrating as "things in the drawer at bottom". The abstraction relies on "STORE" event, among which the action constituent represented as the modifying element metonymized and the one represented as the core element also metonymized, then the whole combination metonymized. Concretely speaking, via metonymy, place ("bottom") stands for place plus place marker ("at bottom"), then stands for agent (things to be stored) plus place plus place marker (things at bottom). Next, the tool ("drawer") as a whole stands for its part (drawer for clothing or important things). Finally, the metonymized place ("bottom") plus tool ("drawer") represent the concept "important things" in a metonymized way. The concept's abstraction is based on the experience of action event, realized through the abstraction mechanism---metonymy. "Summer camp" in (8) is an abstractional expression, in which "summer" refers to the third season in a year and "camp" means a place where a group of people lodges temporarily. When combined together, "summer camp" refers to a set of supervised but educational activities for children and adolescents during the summer vacation", with its non-abstractional form representation "camp-activity held for young people in summer". The abstraction of "summer camp" relies on "ATTEND" action event, in the way that the action constituent (time) represented as the modifying element ("summer") experiences compound metonymy while the place factor represented as the core element ("camp") experiences complex metonymy, then the combination of "summer" and "camp" experiences the complex metonymy. Concretely speaking, in the framework of the action event of "ATTEND", via compound metonymy, it is the time ("summer") stands for time plus time adverbial marker ("in summer"), then to stands for time maker plus time plus action plus action's infinite form marker ("held in summer"). Following, place ("camp") experiences complex metonymy: place ("camp") stands for place plus place marker (at camp), then stands for abject plus the place phrase ("activity at camp"). The abstraction of "summer camp" is based on embodiment and cognition, roots in the "ATTEND" action event, among which the time factor and place factor are abstractionized through metonymy mechanism and overall metonymy.

4.2.4 Overall Metonymy After Modifying Component Metonymized and Central Component Directly Stated

When ACTc1 is abstractionalized when represented as the modifying component and ACTc2 is non-abstractional representing as the core component, then overall abstractionalized, there are two kinds of abstraction ways: modifying component metonymized, core component directly states, then overall metonymy; modifying component metonymized, core component metaphorized, then overall metonymy.

1) Modifying component metonymized, core component directly states, then overall metonymy

(9) Spending too much time in the office may contribute to *computer neck*. (*Collins Online Dictionary*)

(10) But while creating that *bucket list*, my pain, aloneness, and fears were replaced with the gift of forgetting. (*BBC News: The Bloom of Cancer*)

"Computer neck" in (9) is an abstraction expression, which actually means a kind of disease called cervical spondylosis, that is, a kind of neck disease caused by excessive use of computer. Its non-abstractional form representation is "shaped neck resulting from frequent computer using". Its abstraction relies on the USE action event in that the factor tool ("computer") represented as the modifying component has experienced complex metonymy while the factor result (disease) is unrepresented, then the combination has experienced the overall metonymy. Concretely speaking, in the USE action event conceptual framework, via compound metaphor, part of the reason ("computer") stands for the verb's infinite form maker plus action plus tool ("using computer"), then, the infinite form marker plus action plus tool stands for cause-result marker plus infinite form marker plus action plus tool ("for using computer"). Followingly, the tool ("computer") experienced complex metonymy combined with part of the result ("neck"), via overall metonymy to represent the concept. Abstraction of the "computer neck" is based on embodiment and cognition, rooted in the USE action event, via the metonymy of tool and its combination with result, then experiences the overall abstraction. "Bucket list" in (10) is abstractional, and refers to a list of things that a person wants to experience or achieve before they die. However, according to the dictionary, "bucket" and "list" only can not represent the concept with the above meaning①. The concept has its non-abstractional form representation: things-to-do list before dying, such a abstraction relies mainly on the DIE action event, that is, the action constituent factor tool ("bucket") represented as the modifying component experiences complex metonymy while the result

① "kick the bucket" is an English slang, which has the same meaning with "die".

factor experiences simple metonymy. Concretely speaking, it is the tool that stands for usage maker plus action plus gerund marker plus tool plus result ("death by kicking the bucket①"). Next, the core component ("list") representing the result factor stands for the possession structure "things' list" in a part for whole way. The abstraction of this concept is based on cognition and embodiment, which roots in the action event and is realized through the metonymy mechanism.

2) Modifying component metonymized, core component metaphorized, then overall metonymy

(11) Robots could fill the jobs of 3.5 million people in Japan by 2025, a *think tank* says, helping to avert worker shortages as the country's populations shrinks. (*www.hxen.com*)

(12) Beware of the regulatory *speed trap* that exists for those who do not timely disclose reportable events. (*www. forbes. com*)

"Think tank" in (11) is an abstractional expression, among which "thing" means "thoughts" as a noun and "tank" refers to a container, while the combination of them refers to "a group of specialists" with the non-abstractional or directly stated form representation: tank used for holding thoughts. The abstraction of "think tank is based on the HOLD action event, among which the action constituent factor, i.e., the action content which represented as the modifying element ("thoughts") experienced the complex metonymy. On the other hand, the factor tool represented as the core element ("tank") is metaphorized. Concretely speaking, in the conceptual framework of HOLD action event, via metonymy, the action itself ("think") stands for the factor represented as the modifying element (content---thoughts). Next, action content stands for action plus content ("hold thoughts/think") while action stands for content plus verb's indefinite marker plus content ("holding thoughts/think"), then to stand for the usage phrase marker plus verb's indefinite marker plus action plus content ("for holding thoughts/think"). Meanwhile, via metaphor, to compare "tank" as "brain". The abstraction of "think tank" is based on embodiment and cognition, rooting in the HOLD action event. The modifying element and core element are integrated and abstractionalized through metonymy and metaphor respectively, with a final overall metaphor. "Speed trap" in (12) is an abstractional expression with the meaning of a section of road on which the police check the speed of vehicles, often using radar, which can not be predicted from its literal sense. The expression has its non-abstractional form representation: trap for excessive speed of driving car. The abstraction of "speed trap" relies on the DRIVE action event, the action constituent factor speed experienced complex metonymy while the factor represented as the core element experienced metaphor, then the combined together to experience the overall metonymy. Concretely speaking, in the DRIVE action event conceptual framework, via metonymy, action's attribute speed stands for its possession, i.e., speed stands for the upper limit of speed. Meanwhile, the result of this metonymy experienced another metonymy in its companying EXCESS action event, that is, the patient stands for companying action plus patient ("excess the upper limit of speed"). In addition, via metaphor, part of the result represented as the core element ("punishment") is compared as "trap", in other words, to compare "receiving traffic penalty" as "falling into a trap". The concept is abstractionalized according to embodiment and cognition, which refers to the action event and metaphor/metonymy mechanism.

4.2.5 Both the Modifying Element and Core Element Overall Metonymized

(13) Nothing is quite as satisfying on a hot summer day as a dip of *ice cream*. (*www.forbes.com*)

"Ice cream" in example (13) belongs to the type in which ACTc1 and ACTc2 both are non-abstractional. It is known than ice and cream both are the two kinds of material used to make the special food which is made up of the mixture of ice and cream. Its non-abstractional form representation is "cold sweet food made from ice and cream". The abstraction of "ice cream" relies on MAKE (ice cream) action event, in whose framework ACTc1 and ACTc2 that respectively represented as the modifying component and core component experiences overall metonymy. Concretely speaking, via metonymy, the combination of the two action constituent factors, i.e., material stands for material1 plus coordination marker plus material2. Next, material plus coordination marker plus material as the patient of the action event stands for preposition marker plus patient ("by ice and cream"). Then, the preposition phrase representing the manner ("by ice and cream") stands for the v-ed marker plus action plus manner ("by ice and cream"). At last, via the overall metonymy, combination of the kinds of material stands for the result factor[food], that is, material standing for result. To sum up, the abstraction of "ice cream" is based on embodiment and cognition, lying at the basis of action event.

5. Results and Discussion

The English NN form unit is multiple in its type and complicated in its meaning. This paper conducts a new analysis to its categorization and deeps into its concrete abstraction ways under the guidance of the action event framework theory. The research can be helpful in analyzing the general laws of English NN phrases' meaning production, and then be beneficial to language application and language teaching.

Compared with its traditional classification simply from its form structure and semantic relation, this paper takes the form and concept into consideration. Then under the criterion whether the two action constituent factors represented as the modifying component and core component, abstractionalized, the English NN form unit is re-classified. Such a criterion is critical and practical to some extent that it can solve the generality and complexity problems resulting from the traditional classification criteria in terms of its form structure, grammatical function, semantic role, etc. The new criterion can be applied to solve English NN phrases' most essential problem, that is, how to demonstrate abstractionality and how abstraction is realized. In addition, through the research of its five kinds of abstraction way, it can be found that the abstraction of the action component-based English NN phrases rely on embodiment and cognition, that is, the action events and cognitive mechanisms like metonymy and metaphor. This is due the fact that the factors in a same action event can be collocated to some extent. Meanwhile, via cognitive mechanisms like metonymy and metaphor, the modifying or core component of the NN phrases can be replaced by some other elements representing different factors. Finally, in the process of the abstraction, metonymy of the modifying components is more than that of the core components.

However, there are still some problems with this research, that is, the number of different types of NN form unit is unbalanced, which may cause some challenges for their abstraction community. Thus, the further research could try to solve the two following questions: what effects will the studies on the abstraction of the action constituent factor-based English NN phrase have on the other types of NN phrases? What are the cross-language differences and similarities of NN phrases?

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Appendix

① English NN in this paper refers to those expressions with two nouns' juxtaposition regardless of their internal semantic relationship.

② ACT c in this paper is the short form of Action Component, which refers to the noun constituting the English NN form unit.

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