

A Specification System for Measuring Relationship among Near-synonyms of Physical Action Verbs

Hong Gao

Department of Linguistics, Lund University

1 Introduction

It seems that the linguistic expressions for the manners of physical actions in reality follow certain patterning in terms of “meaningful arrangements of stable elements” (Demers 1988: 316). On the basis of the assumption that physical action verbs are marked by the real and concrete actions, it is believed that each verb can be differentiated from one and another by the distinctive way the real action is depicted, namely, the manner of the act. According to Lyons (1995:60), synonyms are expressions with the same meaning, whereas near-synonyms are “expressions that are more or less similar, but not identical, in meaning”. The words “not identical” in his definition raise an exploratory enquiry: In which aspect and to what extent are near-synonyms, near synonyms of physical action verbs in particular, not identical? In this paper I will focus on the near-synonyms of physical action verbs that are defined as “Verbs of Cutting” (e.g. *qiē, gē, duò* etc.), “Verbs of Picking” (e.g. *cǎi, zhāi, jiǎn*, etc.), “Verbs of Putting” (e.g. *bǎi, fàng, gē*, etc.), “Verbs of Throwing” (e.g. *diū, pō, piē*, etc.), “Verbs of Touching” (e.g. *chù, pāi, pèng*, etc.), “Verbs of Lying” (e.g. *pā, tǎng, wò*, etc.), “Verbs of Pulling” (e.g. *lā, tuō, zhuài*, etc.), “Verbs of Drawing” (e.g. *huā, huá, huì*, etc.), and “Verbs of Stepping” (e.g. *cǎi, duò, tà*, etc.), and to make an illustration of the correlation between lexical semantic properties and the physical actions in reality whose manner distinctions in turn constrain their grammatical consequences. Detailed specifications that show the semantic distances between one verb and another will be given as a specification system for measuring the relationship among the near-synonyms. As part of the system, class hierarchies that show the closeness of the relationship between the class members are laid accordingly. In the end, the MARVS modules (Huang et al. 1999, 2000) will be applied to test the validity of the system.

2 Hypothesis and Perspective

To start this investigation, my working hypothesis is: Among the near-synonyms of physical action verbs the crucial semantic components that are embedded in the verb roots are in fact the specifications of their action manners, which in turn make the revelation of the slight difference between one synonym and another.

With such a hypothesis, my goal is to find links between the lexical semantic features and the real human actions, and to reinforce the MARVS theory (Huang et al. 1999, 2000) from another perspective, that is, to look at the semantic and syntactic properties of verbs from a “visual level”, at which their real actions are seen as a way of realizing their possibilities and flexibilities in linguistic expressions.

Taking the view that language construction is a reflection of an interrelated system between the mind and body, a semantically-based functional approach will be taken but more from a cognitive perspective to guide the investigation to reach the following goals:

1. to verify that a physical action described by a verb reflects its semantic properties and associations with other semantic elements.
2. to find clues from the real action described by a physical action verb to deduce its distributional possibilities of syntactic patterns.

When the semantic properties of a verb are fully elaborated, its syntactic behavior is expected to be consequently obvious in a phrase or a clause. Tests for the results will be carried out within the MARVS event modules.

3 Methodology

The method to be employed for measuring the lexical similarity in terms of synonymous relations consists of a systematic specification and a computing process. Altogether nine sub-classes of near-synonyms of physical action verbs will be analyzed for the differentiation. In the differentiation procedure several steps are to be taken. As a first step, the semantic properties of class members of the near-synonyms will be listed by category as the source data. The second step is to count the number of properties that each verb shares with other class members. And then, each member of the class is taken as the “head verb” and compared with other class members by the number of shared values. As part of the third step, hierarchical orders that reveal closeness and distance of class member relationships are arranged with each member of the class as the head verb leading its own. The last step is to give commentary specifications of the prominent features that are revealed in the process of decomposing the meaning components.

4 Componential Decomposition

Near-synonyms of several classes are examined in the following sections. Differences between the members of each class are identified systematically by detailed investigation of meaning components. They are respectively marked as concrete realizations of different notions found in the verbs of physical action, such as Bodypart Contact, Instrument, Force, Motion Direction, Speed, Effect, and

Intention. These notions will be taken as the principles in projecting the lexical semantic prominence in the classifications of a word's meaning components among near-synonyms.

Taking one class of the near-synonyms, Verbs of Cutting, for example, the meaning components of these verbs involve notions of Contact, Instrument, Force, Motion Direction, and Effect. As Contact is seen as the basic notion in all verbs of physical action (Gao 1999b, 2000, 2001a), contact for these verbs should be understood in the same way as any other verbs in the category, that is, between a certain physical bodypart and the Patient object, even though in practice the contact is between hand and instrument. Force, specified mainly as being violent and energetic, is an obviously dominant feature in this class of verbs. Motion direction is characteristically defined as downward motion. Due to the sharpness of the instruments and the force quality applied, all class members can be seen as revealing one or the other, or possibly both, type(s) of effect information: Cut Open or Cut Apart, which should be considered as corresponding to what Hale and Keyser (1987) call a "separation in material integrity".

As can be seen, in most of the cases the difference between the members of the class can not be clearly distinguished within one, or two, or even more meaning specifications. In such a case, further classification and identification of meaning components from other aspects will be carried on until indistinctness disappears. With such a method, a semantic link between members of each class is organized and manifested in a hierarchical order (see the hierarchical orders given in Demos 4.1-4.5).

One thing that needs mentioning about the classification method is that the features listed under each notion are given on the basis of not only dictionaries² and corpora but also on the inquiry of five native speakers of Mandarin. The way of checking with the native speakers is: whenever there exists indistinctiveness in certain aspects of meaning components between two synonyms, native speakers of Mandarin (three adults and two teenagers at the age of thirteen and fifteen) were asked to tell the differences of the two synonyms according to their understanding.

4.1 Near-synonyms of Verbs of Cutting

Class members:

剁 duò	'chop, cut'	切 qiē	'cut'
割 gē	'cut, sever'	削 xiāo	'pare, peel'
砍 kǎn	'chop, hack, cut'	宰 zǎi	'butcher'
劈 pī	'hack, split'	铡 zhá	'cut up with a hay cutter'
剖 pōu	'cut open'		

Table 4.1 Specification of Semantic Properties Encoded in the Verb Root

Class Members			剁 duò	割 gē	砍 kǎn	劈 pī	剖 pōu	切 qiē	削 xiāo	宰 zǎi	铡 zhá
I.	Agent's bodypart information for the action	hand(s)	x	x	x	x	x	x	x	x	x
II.	A. Size	a. usually big			x	x					x
		b. usually small					x	x	x		
		c. usually about the size of a hand	x	x			x	x		x	
	B. Shape	a. handle	x	x	x	x	x	x	x	x	x
		b. flat blade	x	x	x	x	x	x	x	x	x
		c. thin sharp edge	x	x	x	x		x	x	x	x
		d. sharp point		x	x	x	x	x		x	
III.	A. Force	a. effectively	x	x	x	x	x	x	x	x	x
		b. violently	x		x	x				x	x
		c. forcefully					x	x			
		d. energetically		x					x		
	B. Motion Directions	a. downward					x	x			
		b. hand raising high and then moving downward	x		x						x
		c. levelly		x						x	
		d. vertically lengthwise				x					
		e. downward at an angle			x				x		
	C. Speed	a. abruptly	x		x	x					x
		b. quickly						x	x		
		c. gradually		x			x			x	
	D. Duration	a. instantaneous	x	x	x	x	x	x	x	x	x
b. non-instantaneous			x								
IV.	A. Animate	a. human	x	x	x	x	x	x	x	x	x
		b. animal	x	x	x	x	x			x	
	B. Inanimate	a. hard object	x		x	x		x	x		x
		b. soft object	x	x			x			x	
V.	A. Cut Open	a. burst open	x		x		x	x			
		b. sliced open		x		x	x			x	
		c. killed	x		x					x	x
	B. Cut Apart	a. into parts and pieces	x					x			x
		b. off in strips or flakes				x			x		
		c. removed from the root			x						
		d. killed	x		x	x					x

Note: x = the semantic property decomposed from the verb root

Demon 4.1 Hierarchies of the Semantic Distance between the Class Members of Verbs of Cutting
(Note: the number after each verb refers to the number of the same features each verb has with the verb on the top of the order)

剃 duò -> kǎn 15

> zhá 14

> pī 12, zǎi 12

> qiē 11

> gē 10

> pōu 9

> xiāo 8

割 gē -> zǎi 14

> pōu 11

> duò 10, pī 10

> kǎn 9, qiē 9

> xiāo 8

> zhá 7

砍 kǎn -> duò 15

> pī 14, zhá 14

> zǎi 11

> gē 9, pōu 9, xiāo 9

> qiē 8

劈 pī -> kǎn 14

> zhá 13

> duò 12

> zǎi 11

> gē 10

> pōu 9, qiē 9

> xiāo 8

剖 pōu -> qiē 12

> gē 11

> zǎi 10

> duò 9, kǎn 9, pī 9

> xiāo 7

> zhá 6

切 qiē -> pōu 12

> duò 11

> xiāo 10

> gē 9, pī 9, zǎi 9

> kǎn 8, zhá 8

削 xiāo -> qiē 10

> kǎn 9, zhá 9

> duò 8, pī 8

> gē 8

> pōu 7, zǎi 7

宰 *zǎi* -> *gē* 14
 > *duò* 12
 > *kǎn* 11, *pī* 11
 > *pōu* 10
 > *qiē* 9, *zhá* 9
 > *xiāo* 7

铡 *zhá* -> *duò* 14, *kǎn* 14
 > *pī* 13
 > *xiāo* 9, *zǎi* 9
 > *qiē* 8
 > *gē* 7
 > *pōu* 6

Comments: The hierarchies given on the basis of the semantic properties of each verb reveal the closeness and distance between the members of the class. Based on the number of properties that the class members are grouped into, the verbs *duò* and *kǎn* are found to cover the most features of all the class members. But this does not indicate that these two verbs are most representative of the class, nor does it indicate that they are the basic verbs of the class. It only shows that these two verbs have a closer distance by sharing more common properties compared with other class members. However, compared with the hierarchies led by each verb it appears that the hierarchical order of the verb *duò* (*duò* -> *kǎn* -> *zhá* -> *pī*, *zǎi* -> *qiē* -> *gē* -> *pōu* -> *xiāo*) not only reveals its own distance to other verbs, but also serves most effectively as a slide rule of distance relation among all members of the class.

However, as has been shown from the property classifications, the relation between the members of the class may change in terms of property prominence. For instance, when we look at force application, which is the typical feature of this class of verbs, we find that *duò*, *kǎn*, *pī*, *zǎi*, *zhá* are closest synonyms in this sense, though a sense of violence, strong or weak, is felt in all members of the class. But when we turn to look at motion directions of the verbal actions, *pī*, *zǎi*, disappear from the group. This shows a prominent characteristic in dealing with a number of near-synonyms. Some features are more crucial for some verbs but not for others; some features are more complex than others; and some features overlap. However, if the first step goal is set to draw distance between all the members of the class, all these features have to be treated basically equally and features have to be specified and listed until all the members of the class are distinguished from one and another. This is because the closeness that two verbs hold usually makes it difficult to tell the difference between them.

Take *duò*, and *kǎn* for example, they are not found distinguishable with all the classifications in the common categories such as Force, Motion Direction, and Speed, etc. until we come to see the possible effect that may cause to the Patient objects. With a result of “Cut Apart”, the verb *duò* has an implicational sense that the object may be cut into pieces (e.g. *duò suāncài* ‘cut pickled Chinese cabbage’),

while *kǎn* may cause the object to be removed from its root (e.g. *kǎncái* ‘cut wood’). These near-synonyms are typical representatives of Verbs of Cutting in Chinese. They are seen as having the semantically equal features of the English verbs defined also as Verbs of Cutting by Levin (Levin 1993: 157).

4.2 Near-synonyms of Verbs of Putting

Class members:

摆 *bǎi* ‘put, place, arrange, set’

放 *fàng* ‘put, place’

搁 *gē* ‘put’

Table 4.2 Specification of Semantic Properties Encoded in the Verb Root

Class Members			<i>bǎi</i>	<i>fàng</i>	<i>gē</i>
I. Agent’s bodypart information for the action		hand(s)	x	x	x
II. Agent’s manner distinctions	A. Force	a. moderately	x	x	x
		b. effectively	x	x	x
	B. Motion directions	a. from hand level to ground level	x	x	x
		b. from higher than hand level down to ground level		x	
		c. parallel to hand level	x		
	C. Speed	a. moderately	x	x	x
		b. slowly	x		
	D. Duration	a. instantaneous		x	x
b. non-instantaneous		x			
III. Agent subject’s possible intention	A. deliberately & cautiously	a. put in a particular state		x	
		b. put in or as if in a particular place			x
		c. put into a proper order or suitable relationship, or adjustment	x		
IV. Patient objects’ possible properties	a. any unstable object that hands can hold up		x	x	x
	b. possibly big enough to need more hands			x	
V. Possible results caused to Patient objects	a. moved to a new location			x	x
	b. set in order or position		x	x	
	c. set in position			x	
	d. displayed		x		
	e. put in and mixed with other items			x	x

Demo 4.2 Hierarchies of the Semantic Distance between the Class Members of Verbs of Putting

摆 *bǎi* -> *fàng* 7

> *gē* 6

放 *fàng* -> *gē* 9

> *bǎi* 7

搁 *gē* -> *fàng* 9

> *bǎi* 6

Comments: Of the three synonyms *fàng* links itself closest to both of the other verbs. There is one extra category given as in III called “Agent subject’s possible intention”. The three features listed under this category distinguish the three verbs from each other. As Huang et al. (1999: 22) state, *bǎi* entails that the act of putting follows certain planning, or “positioning with structural/spatial design”, while *fàng* denotes simple location. Due to this crucial difference, the possible results caused to the Patient objects are specified differently as well. For instance, the act of *bǎi* causes its object not only to be moved to a new location but also set in such an order that a resultant state may appear as part of the result, which may or may not be the Agent subject’s intention for a display.

On the other hand, the act of *fàng* may also entail the Agent’s intention of putting something in position, but it is always one simple act or seen as one nucleus event (cf. Huang & Ahrens 1999) for both purposes, as specified by (V. b.) in Table 4.2: “set in order or position”. This difference can be better exemplified by a sentence such as: *Xiān bǎ shū fàng xià, ránhòu zài bǎi hǎo* ‘Put the books down first and then arrange them well.’. Although we may say that these two verbs are interchangeable in most of cases, the verb *bǎi* is not as free as the verb *fàng* in this case, since *fàng* can be moved to the position of *bǎi*, but not vice versa. If we only focus ourselves upon semantic analysis, this can be explained with “Motion distinctions”, specified particularly as “Motion directions” of the agent’s hand movement. For *bǎi* the act is restricted to a certain space that is parallel to hand’s level, while the act of *fàng* is broadly framed within a vertical range that is from higher than the hand level down to ground level (see B.2. b. & c. in Table 4.2). See the syntactic difference between the two verbs in Huang et al. (1999).

Also, there is not much found that makes a distinction between *fàng* and *gē*. However, from the perspective of the Agent’s intention, it seems that the position that something is put by the act of *gē* is not so much emphasized or specified as the act of *fàng* does as “in a particular state or position”. The idea of a particular position is fairly rough and weak compared with the implication of the act of *fàng*.

4.3 Near-synonyms of Verbs of Throwing

Class members:

丢 diū	‘throw, cast, toss’	摔 shuāi	‘cast; throw; fling’
抛 pāo	‘throw, toss, fling’	甩 shuǎi	‘throw, fling, toss’
撇 piē	‘cast, throw’	投 tóu	‘throw, fling, hurl, put in, drop’
撇 piě	‘throw, fling, cast’	掷 zhì	‘throw, cast’
扔 rēng	‘throw, toss, cast’		

Table 4.3 Specification of Semantic Properties Encoded in the Verb Root

Class Members		丢 diū	抛 pāo	撇 piē	撇 piě	扔 rēng	摔 shuāi	甩 shuǎi	投 tóu	掷 zhì		
I.	Agent's bodypart information for the action	hand and arm	x	x	x	x	x	x	x	x		
II.	Agent's manner distinctions	A. Force	a. vigorously		x		x			x		
			b. extremely				x			x	x	
			c. violently						x			
			d. forcefully		x					x	x	
			e. lightly	x							x	
			f. quickly							x		
	B. Motion directions	a. mainly downward	x		x		x	x		x		
		b. backward and then forward above the head		x			x			x	x	
		c. forward			x		x	x				
		d. upward and then downward or outward			x			x	x			
		e. backward and then forward at an even level				x						
	C. Speed	a. abruptly				x			x	x	x	
		b. leisurely	x	x			x					
		c. swiftly			x					x		
		d. unceremoniously							x			
	D. Duration	Instantaneous	x	x	x	x	x	x	x	x	x	
	II.	Agent's mental effect that gets the act done	a. impetuous		x			x				
			b. casual and random	x		x		x				
			c. callously				x		x			
d. disdainfully disregarding									x			
e. objectionable					x		x		x			
f. discontented					x		x					
g. attacking, or hostile, or destructive						x		x				
h. strong-willed for the goal of distance						x					x	
i. strong-willed for the goal of location										x	x	
g. strong-willed in a certain direction				x			x		x			
IV.	Implied intention in the act	a. to get rid of	x		x		x		x			
		b. to cause the Patient object to move swiftly through space by a propulsive movement				x						
		c. to cause the Patient object to reach a level high enough so as to fly across something before landing at a specific position		x								
		d. to cause the Patient object to reach a specific distance				x				x	x	
		e. to destroy the Patient object						x				
		f. to be caught by another human		x		x	x					
V.	a. light and small	x	x	x	x	x	x	x	x	x		

Patient objects' possible properties	b. relatively big and heavy								x	x
	c. something that can be easily broken or that may cause a sound effect						x			
VI. Possible results caused to Patient objects	a. thrown to another location	x	x	x	x	x	x	x	x	x
	b. moving up through the air and then falling		x		x				x	x
	c. gaining whirling momentum				x			x		
	d. broken						x			
	e. thrown into a kind of container	x				x			x	

Demo 4.3 Hierarchies of the Semantic Distance between the Class Members of Throwing Verbs

丢 diū -> rēng 8

> piē 7, tóu 7

> pāo 5, shuāi 5, shuǎi 5

> piě 4, zhì 4

抛 pāo -> rēng 8

> tóu 7

> zhì 6

> diū 5, shuǎi 5

> piē 4, piě 4, shuāi 4

撇 piē -> rēng 11

> diū 7, > shuāi 7, shuǎi 7, tóu 7

> pāo 4, piě 4, zhì 4

撇 piě -> zhì 9

> tóu 8

> rēng 5, shuāi 5, shuǎi 5

> diū 4, pāo 4, piē 4

扔 rēng -> piē 11

> diū 8, pāo 8, tóu 8

> shuāi 6

> shuǎi, 5 zhì 5

> piě 4

摔 shuāi -> piē 7

> rēng 6

> diū 5, piě 5, shuǎi 5, tóu 5

> pāo 4, zhì 4

甩 shuǎi -> piē 7

> shuāi 6, tóu 6, zhì 6

> diū 5, pāo 5, piě 5, rēng 5

投 tóu -> zhì 10

> piě 8, rēng 8

> diū 7, pāo 7, piē 7

> shuǎi 6

> shuāi 5

擲 zhì -> tóu 10

> piě 9

> pāo 6, shuǎi 6

> rēng 5

> diū 4, piē 4, shuāi 4

Comments: Judged by its position in each verb's hierarchical order with other class members, the hierarchical link of the verb *tóu* (*tóu* -> *zhì* > *diū*, *pāo*, *piě*, *rēng* > *piē* > *shuǎi* > *shuāi*) appears to relate the members of the class more demonstratively and contrastively. A comprehensive study done by Liu et al (1999) of the four verbs, *diū*, *rēng*, *tóu*, and *zhì*, shows that *diū* and *rēng* form a close synonymous group and *tóu* and *zhì* form another. Their findings of the closer relation between *tóu* and *zhì* are verified by the hierarchies given here. However, when the verb *piē* is added to the class, we find that *diū*, the closest synonym of *rēng*, according to Liu et al (1999: 65-67), goes down to the second rank, since between *diū* and *rēng* there are 8 shared features, while between *piē* and *rēng* there are 11, (see the hierarchies of these 4 verbs above).

On the other hand, some of the members in this class do not show a clear distance between certain members of the class, though they are generally viewed as belonging to the same semantic field. As a result, a contrast set that is supposed to hold between the closely related verbal pairs (Grandy 1992) is not clearly verified by every hierarchy. This may be seen as the fault of this approach compared with a purely corpus-based approach taken by Huang & Ahrens (1999), and Liu et al (1999). Take the three members, *piē*, *shuāi* and *shuǎi* for instance. Their distance hierarchies show fewer levels and thus have the least to reveal the distance between each two members of the class. Such members are usually those that share less common features of the class. Nevertheless, they should be considered as “marginal” synonyms in the class.

Besides, as mentioned previously, the nature of synonymous relation between one verb and another is dynamic and may be changed from condition to condition. It is assumed that when condition is changed it is the “marginal” synonyms that are more likely to change their relations.

4.4 Near-synonyms of Verbs of Touching

Class members:

触 chù ‘touch, contact’

拍 pāi ‘clap, tap’

碰 pèng ‘touch’

Table 4.4 Specification of Semantic Properties Encoded in the Verb Root

Class Members			触 chù	拍 pāi	碰 pèng
I. Agent's bodypart information for the action	a. hand		x	x	x
	b. mainly hand and arm but possible for any part of the body		x		x
II. Agent's manner distinctions	A. Force	a. gently or lightly		x	x
		b. sharply	x		
		c. forcefully		x	
	B. Motion direction	a. downward		x	x
		b. forward		x	x
		c. any direction that the hand may easily move			x
	C. Speed	a. slowly		x	
		b. quickly			x
		c. abruptly	x		
	D. Duration	a. instantaneous		x	x
III. Patient objects' possible properties	A. Animate	a. animal		x	x
		b. human		x	x
	B. any object that is touchable		x	x	
IV. Implied intention in the act	a. showing appreciation or sympathy			x	
	b. drawing attention			x	x
	c. by accident		x		
V. Possible results caused to the Patient objects	A. To animate Patient object	a. perceived, understood or appreciated as tactile, gentle or sympathetic touch		x	x
		b. might be slightly harmed or feel pain	x		
	B. To non-human Patient object	a. no result can be seen	x	x	x
		b. sound effect		x	
		c. moved slightly			x
		d. activated	x	x	

Demo 4.4 Hierarchies of the Semantic Distance between the Class Members of Verbs of Touching

触 chù -> pèng 7

> pāi 6

拍 pāi -> pèng 10

> chù 6

碰 pèng -> pāi 10

> chù 7

Comments: These three verbs are defined as Touching Verbs from the perspective of physical manner in real action. This is why verb *mō* 'touch, caress', which was discussed by Huang et al (1999:23) as a near-synonym to *pèng*, was not included here. The three verbs in this class are seen as closest in meaning as reflected by the physical action contour. Following the description given by Huang et al (1999: 24),

these three verbs all “denote an instantaneous activity with its motional path ending with focus on one impact point”. The manner fractions that make them different from each other can be seen by the speed on the motional path of the hand toward the touching target - slow motion for *pāi*, quick motion for *pèng*, and abrupt motion for *chù*. Assumed from the aspect of the possible mental effect of the human agent subject, these actions depicted by the verbs may also be regarded as carrying different intentions (see IV. in Table 4.4), which in turn may cause a different effect to the Patient objects (see V. above).

4.5 Near-synonyms of Verbs of Lying

Class members:

趴 pā	‘lie on one's stomach, bend over, lean on’
躺 tǎng	‘lie’
卧 wò	‘lie’

Table 4.5 Specification of Semantic Properties Encoded in the Verb Root

Class Members		趴 pā	躺 tǎng	卧 wò	
I. Agent's bodypart information for the action	Whole body	x	x	x	
II. Agent's manner distinctions	A. Force	a. unobservable force flow	x	x	x
		b. effectively	x	x	
		c. quickly			x
	B. Speed	a. inactive	x	x	x
		b. moderately	x	x	
		c. quickly			x
	C. Motion directions	a. motionless	x	x	x
		b. downward	x	x	x
	D. Duration	a. non-instantaneous	x	x	x
		b. instantaneous	x	x	x
	E. Static body postures	a. with one's stomach downward	x		
		b. with one's stomach upward		x	
		c. any manner of lying			x
	F. Final state of the physical body	a. fall with one's stomach downward	x		
		b. lie with one's stomach upward		x	
c. lie with a manner of or (a) or (b).				x	

According to Viberg (1993, 1999), verbal semantic fields are likely to have one or at most a few “nuclear verbs” that are dominant within their fields in relation to frequency of occurrence, the number of secondary senses and the range of constructions they can be organized into. Following Viberg’s (1993) claim and the recent research work on Chinese lexical semantics done by Cheng (2001) and (Huang 2001), what is intended to do next is to take one class of the near-synonyms, Verbs of Cutting, as an experiment case and have a re-examination of these verbs that belong to one semantic category and check out the status of the basic verb among its class members.

Firstly, let us have a look at Table 4.6, in which Near-synonyms of Verbs of Cutting are listed with their number of senses, number of types of constructions they may enter into, and number of occurrences in the Sinica Corpus.

Table 4.6 Verbs of Cutting – senses, types of constructions and frequency of Occurrence

Verbs	Senses	Types of Constructions	Frequency of Occurrence
切 <i>qiē</i> ‘cut’	3	12	94
砍 <i>kǎn</i> ‘chop, hack, cut’	3	10	80
割 <i>gē</i> ‘cut, sever’	3	7	47
宰 <i>zǎi</i> ‘butcher’	1	7	30
剁 <i>duò</i> ‘chop, cut’	1	11	5
劈 <i>pī</i> ‘hack, split’	3	11	13
剖 <i>pōu</i> ‘cut open’	2	2	3
削 <i>xiāo</i> ‘pare, peel’	2	4	17
铡 <i>zhá</i> ‘cut up with a hay cutter’	1	10	0

Note: The number of senses and constructions are checked with several dictionaries (see Lü et al. 1998).

From the table we can see that the verb *qiē* ranks the top in its frequency of occurrence as well as number of constructions. Its number of senses is the highest, which is often the case that the most commonly used verbs are very often polysemous as well. Thus, seen from these three aspects, the verb *qiē* ‘cut’ is the basic verb of Verbs of Cutting. It represents the most prototypical meaning of “Cutting” within all the members of the class.

6 Tests in and a Link to MARVS Theory

After the detailed lexical-semantic descriptions, differentiations are made clear between the members of each verb class. Now let us go to MARVS theory and test

the results with this pure lexical-semantic differentiation to see if they can be fitted into the event modules of MARVS theory.

The following tests will be given in a simple way by which the semantic features that are seen as supporting properties by which certain verbs fit into a particular module will be listed and commented on.

6.1 Event Modules

Four of the five stand-alone event modules:

- *Boundary* – A verb that has a boundary event structure is mainly specified by the semantic property: instantaneous under the category of “Duration”, which is seen as a feature of “Manner Distinction” of physical action. “Speed” and “Possible Results” are also the supporting features for verbs to fit into this module. (e.g. *cāo* ‘grasp’, *ná* ‘take’, ‘grasp’, *biāo* ‘mark’)

- / *Punctuality* – A physical action verb that describes an act with an instantaneous feature as time duration first matches the event structure marked as “punctuality”. Speed feature marked as “abruptly” or “quickly” is an extra indication (e.g. *chù* ‘touch’, ‘contact’, *pèng* ‘touch’).

- ///// *Process* – Actions that are specified as having a speed manner, such as, slowly, steadily, continuously, or gradually, demonstrate a representative feature of those events that have a time course. Pulling verbs, Writing verbs like, *huà* ‘draw’, *huà* ‘draw’, *huì* ‘draw, paint’, *miáo* ‘draw, paint’, and Stepping Verbs like *cèng* ‘rub under foot’, *dǎo* ‘tread on, step on’, *róu* ‘trample under foot, tread on’ can all be built up within such an event structure.

- ___ *State* – Focusing on only one nucleus event that Lying verbs represent, we find the three near-synonyms *pā*, *tǎng*, and *wò* all fit into an event structure that specifies a static state. The specification properties attached to these verbs, such as, the unobservable force flow, being inactive and motionless in terms of speed and motion directions, as well as the nature of being unable to have a causative counterpart to produce a result are all the event information that is characteristic of this event module.

Some simplex event structures:

The seven simplex event structures (•///// Inchoative Process, •/////• Bounded Process, /• Resultative, •/• Completive Punctuality, •___ Inchoative State (Effect State), •^^^^ Inchoative Stage, •^^^^• Bounded Stage) can be represented by the semantic properties of different type. For instance, for a Resultative event, the properties listed as “possible results caused to the Patient objects” of those action verbs are often the denotations of such an event structure that a verb can build up (see especially Cutting Verbs).

Let us take another class of verbs: Verbs of Throwing, for example. These verbs, such as *diū* ‘throw, cast, toss’, *rēng* ‘throw, toss, cast’, *tóu* ‘throw, fling, hurl, put in, drop’, and *zhì* ‘throw, cast’ can be defined as having process events with a

boundary (//////•) (Liu et al. 1999). Such an event structure is reflected by the verb's semantic properties that indicate the possible result of such an act to the Patient object, such as, "throwing to another location", which is true to all members of the class, "caused to be moving up through the air and then land", "gaining whirling momentum on the path of moving", etc. As a matter of fact, the human Agent's intention of doing the act and his/her mental effect on the act can also be seen as pieces of information released from the verb root that support such a bounded process event (see D. and E. in Table 4.3).

Composite event structures:

As Huang & Ahrens (1999) state, composite event structures involve more than one atomic event, hence it should be possible for these verbs to have more than one event focus distinguished within a complex event module. The three near-synonyms of Lying verbs given in 4.5.9 are good examples for the manifestation of different senses of a verbal lexicon that may be realized as having different event focuses. Let us have a look at the following examples (The examples taken from the Taiwan corpus are marked as (Taiwan), and those from the Beijing corpus are marked as (Beijing) at the end of the sentences below):

- 1a. 见一颗炮弹飞过来，她只好又趴回战壕去了。(Taiwan)
 jiàn yī kē pàodàn fēi guòlái, tā zhīhǎo yòu pā huí zhànáo qù le
 see one CL cannonball fly pass come, she only good again bend over trench go Le
 Seeing a cannonball flying over, she had to bend over and went back to the trench.

- b. 小孩在妈妈腿上趴着。(Beijing)
 xiǎohái zài māmā tuǐ shàng pā zhe
 child at mother leg on lie Zhe
 The child is lying on its mother's leg.

- c. 我累了就趴在桌子上睡了一会儿。(Taiwan)
 Wǒ lèi le jiù pā zài zhuōzi shàng shuì le yī huǐ er.
 I tired Le then at table on sleep Le a while
 I was tired and leaned on the table and slept for a while.

- 2a. 进来，快点儿躺进被窝来，别冻着。(Beijing)
 Jìnlái, kuài diǎnr tǎng jìn bèiwō lǐ, bié dòng zhe.
 Enter come, quickly lie in quilt nest come, not frozen Zhe
 Come in. Lie down and come under the quilt. Don't catch cold.

- b. 他腰疼得躺不下来。(Taiwan)
 Tā yāo téng de tǎng bú xià lái
 He waist pain de lie not down come
 He had too much pain at the waist to lie down.
- c. 她一直躺在沙发上看书。(Beijing)
 Tā yīzhí tǎng zài shāfā shàng kàn shū
 She continuously lie at sofa on read book
 She has been lying on the sofa reading.
- 3a. 卧倒! (Beijing)
 Wò dǎo!
 lie fall
 Lie down!
- b. 弘公平静的躺在床上, 好像假寐。(Taiwan)
 Honggong píngjìng de wò zài chuáng shàng, hǎoxiàng jiǎ mèi
 Honggong peace de lie at bed on, seem false sleep
 Honggong lay in bed quietly, seemingly sleeping.
- c. 病卧在床三年的人也站起来了。(Beijing)
 bìng wò zài chuáng sān nián de rén yě zhàn qǐ lái le
 sick lie at bed three year De person too stand rise Le
 The person who lay in bed sick three years also stood up.

As we can see these three verbs: *pā* ‘lie on one’s stomach, bend over, lean on’, *tǎng* ‘lie’, *wò* ‘lie’ all show three different event focuses. But these different focuses can be illustrated within one complex event module that is termed by Huang & Ahrens (1999:10) as “Completive Resultative” (/•___). That is, these three focuses denote three different types of event structures: Punctuality (as seen in 1a, 2a, and 3a), State (as seen in 1b, 2b, and 3b), and length/duration of state (as seen in 1c, 2c, and 3c) (cf. Huang & Ahrens 1999: 11).

Now let us apply the verbal semantic specification lists to test and see if they can give the same information. Under the specification named “Motion Directions” we find the following two features (cf. Table 4.5):

C. Motion directions

- | | |
|---------------|-----------------------------|
| a. motionless | - true to all class members |
| b. downward | - true to all class members |

All the three verbs are specified as having the same three motion features in terms of direction. This tells three possible event aspects of each verb. (C.a.) can be seen as indicating a focus on a homogeneous state, while (C.b.) on punctuality. Two event representations are matched here. Then, let us continue to have a look at the specification of the time duration of each of the actions:

D. Duration

- | | |
|----------------------|----------------------------|
| a. non-instantaneous | -true to all class member |
| b. instantaneous | -true to all class members |

As for the features of motion directions, all the three verbs have both instantaneous and non-instantaneous features of action duration in terms of time as well as manner state. This is again in accordance with the event structure representations: (D.a.) focusing on duration of state, while (D.b.) on punctuation, which has already been verified by (C.a.) above.

If we continue to have a look at the other specifications of the class members, such as, body posture, as relisted here in (E) (cf. Table 4.5):

E. static body postures

- | | |
|--------------------------------|------|
| a. with one's stomach downward | pā |
| b. with one's stomach upward | tǎng |
| c. any manner of lying in bed | wò |

we can see that this sub-specification represents not only the possibility of an event focus on state of manner, but also differentiates the three verbs from the aspect of physical postures in reality, which is the crucial dividing line between one synonym and another of this group.

6.2 Inherent Attributes

According to Huang & Ahrens (1999: 11) inherent attributes refer to the semantics of the event itself. In the specification property lists those properties given under “Body part information” (see all the classes of verbs given), “Possible results caused to the Patient object” (e.g. Verbs of Cutting, Picking, Pulling, Putting, Throwing, Touching), Patient objects’ possible properties” (e.g. Verbs of Cutting, Picking, Pulling, Throwing, Touching), “Agent subject’s possible intention” (e.g. Verbs of Putting, Throwing, Stepping), “Implied intention in the act” (e.g. Verbs of Touching, Stepping), and “Agent’s mental effect that makes the act done” (e.g. Verbs of

Throwing) can all be regarded as the representations of inherent attributes reflected in an event. For instance, the attribute of [Control] is best reflected by the human agent subject for all verbs of Physical Action. [Effect] is an attribute that is mostly seen in the properties that are listed as “Possible results caused to the Patient object”, etc.

6.3 Role Modules

Role attributes refer to the focused roles of the event. For Verbs of Physical Action in general, the typical roles are the two arguments that function as Agent and Patient. For Verbs of Hand Contact with Instrument. Instrument role is often an optional role in the module. Each individual piece of information listed under the title “Agent’s manner distinctions” in the specification property lists can be considered as an indication of optionally or possibly focused roles of an event, such as Goal, Location, Manner, Target, etc.

6.4 Role-Internal Attributes

In terms of Role-internal Attributes, for those verbs discussed in this paper that are designated as having specifications such as “Motion directions”, “Patient object’s possible properties”, and “Possible results caused to the Patient objects”, etc. Verbs of Drawing (see 4.5.7), Pulling (see 4.5.3), and Putting (see 4.5.4) are most likely to project such semantic components to shape a focused role of a particular event.

7 General Discussion

By clarifying the semantic properties of each near-synonym verb into distinctive categories, the similarities and differences between one verb and another in the class are projected from the verb root up to its event structures. Comments on general results of the semantic distinctions of verbs of various classes are given as follows:

1. Based on the identification of the semantic features that differentiate verbal semantic behavior a conclusion can be reached: near-synonyms can be distinguished from one and another by a close look at both the obvious and implicit semantic properties encoded in the verb root. Salient semantic features deduced from a shared verb class may be predictive enough of the basic verbal features of the class members, and a further look at the implied properties, such as the implications of the possible properties of the Patient objects, the possible state of the mind of the human Agents, may make the differentiation clearer between the hardly distinguishable synonyms.

2. It seems that within the near-synonyms of physical action verbs in Chinese such a broad assumption that the syntactic behavior of verbs is semantically determined (cf. Levin 1993:14) could not be taken as a powerful technique for investigating verbal synonym distinctions. This finding corresponds to what Tsai et al (1997, 1999) have claimed in their investigation of several near-synonym pairs of

perception verbs. An attempt has been made here to show that distinctions of verbal synonyms of Physical Action arise from the physical manner distinctions of the actions portrayed, which, to a large extent, lay the foundation of the prediction of their Patient objects, aspectual adverbs and resultative complements in the sentence construction.

3. The identification of the relevant semantic components of each member of the class given in this paper is an exemplification of a semantic decomposition approach for the investigation of verbal semantics of Physical action verbs in general, and near-synonyms in particular. As part of the semantic specification system for measuring the relations among near-synonyms, hierarchical orders are established to illustrate the distance relations of the class members. These hierarchies do not only render each verb into its position but also confirm the basic verb's status as discussed by Viberg (1993, 1999) and Huang (2001).

4. It is noticed that the position of a particular verb in the hierarchies of the class members is not fixed; it may be moved higher up or lower down in one hierarchy of a verb rather than in another. This is because once the head verb, or the focused, centered verb is changed, the relation between other verbs is also changed.

5. As a matter of fact, the more properties that are listed, the longer the distance between the class members may appear to be. For instance, there are more than 40 features listed in the class of Throwing Verb synonyms but the highest shared number is not more than 9 between two synonyms. However, a reminder should be added here: this semantic specification list is done to the semantic extreme of a verb's potential and only shared properties among the class members should be considered as the most prominent features of all.

6. Members of a class have a high tendency of combining with one and another into VV compounds. When such compounds are formed their event structures can never represent a nucleus module of any type of MARVS. Instead, simplex and composite modules make the framework for all of them.

7. The specification system for the componential decomposition characterizes the relationship between the different layers of meaning in an action verb - the grammatical meaning embodied in its transitive or non transitive quality, the semantic meanings realized by the embodied attributes of its possible subjects and objects, and the real meaning reflected by the manners of the physical action. It shows that grammatical description can be achieved in terms of its realizations in reality. It is possible that more features are embedded in these verb roots that are not specified here. But, the purpose of such an illustration is to show the potential of a different approach that is powerful enough to make a differentiation between synonyms right at the lexical level.

8. As a physical action verb typically represents an active event, its lexical meaning specifies many more aspects and covers a larger scope of events than any other type of verbs. The lexicon-based but event-focused elaboration of the verb is, as a matter of fact, a way of presenting a conceptual and cognitive profile (Smith 1991) embedded in human linguistic actions. Finally, what is left to state is that this

classification of verbs, though methodologically different from that of Huang and Ahrens, strongly supports their argument that “lexical semantic representation is the grammaticalization of conceptual information” (Huang and Ahrens 1999: 4), and, furthermore, the three most important properties, which they claim to be the backbone of verbal semantics, are also verified to a large extent.

8 Conclusion

In this paper, various classes of near-synonyms of physical action verbs are identified. The members are examined and distinguished by further decomposition of the meaning components encoded in the members of the class. The commonly shared specific meaning components are separated in a projected manner. The semantic specification lists given for each class verbs are expected to function as “a probe into the elements entering into the lexical representation of word meaning” (Levin 1993:14). As it is more complicated to take a syntactic approach to investigate Chinese verbs to extract the common semantic features for the prediction of the differences between the verb classes, it is hoped that the present approach will be tested with further study and will aid in identifying the semantic features or distinctions not only within the Verbs of Physical Action but any verbal or nominal class of lexicon.

References

- Cheng, Chin-Chuan. 2001. The Lexical Semantic Prominence among Near Synonyms. Paper presented at the Second Workshop on Chinese Lexical Semantics, Peking University, May 14-18, 2001.
- Demers, A. Richard. 1988. Linguistics and Animal Communication. In F.J. Newmeyer (ed.), *Linguistics: The Cambridge Survey*. Vol. iii. Cambridge: Cambridge University Press, 314-335.
- Gao, Hong. 1999. The Resultative and Causative Properties of *Da* Compounds in Chinese. *Deutsche Gesellschaft für Sprachwissenschaft. Mitteilungen der DGfS*. Nr. 50, Dezember.
- Gao, Hong. 2000. Causative Constructions of Physical Contact Verbs in Chinese. Paper presented at 2000 Nordiska Grammtik i Fokus. Lund.
- Gao, Hong. 2001. Notions of Motion and Contact for Physical Contact Verbs. In Arthur Holmer, Åke Viberg & Jan-Olof Svantesson (eds.), *Proceedings of the 18th Scandinavian Conference of Linguistics*. Vol.2. 193-209.
- Grandy, Richard E. 1992. Semantic Fields, Prototypes, and the Lexicon. In Lehrer & Kittay (eds.), *Frame, Fields, and Contrasts: New Essays in Semantic and Lexical Organization*. Hillsdale, NJ: Erlbaum, 103-122.
- Hale, K.L. & Keyser, S.J. 1987. A View from the Middle. *Lexicon Project Working Papers*, 10. Cambridge, MA: Center for Cognitive Science, MIT.

- Huang, Chu-Ren & Ahrens, Kathleen. 1999. The Module-Attribute Representation of Verbal Semantic. In Kathleen Ahrens, Huang Chu-Ren & Tsai Mei-Chih (eds.), *Working Papers on Chinese Verbal Semantics*. Taipei: Institute of Linguistics, Academia Sinica.
- Huang, Chu-Ren, Liu, Mei-Chun, & Tsai Mei-Chih. 1999. From Lexical Meaning to Event Structure Attributes: Across Semantic Classes of Mandarin Verbs. In Ahrens Kathleen, Huang Chu-Ren & Tsai Mei-Chih (eds.), *Working Papers on Chinese Verbal Semantics*. Taipei: Institute of Linguistics, Academia Sinica.
- Huang, Chu-Ren. 2001. Linguistic Tests for Chinese Lexical Semantic Relations – Methodology and Implications. Paper presented at the Second Workshop on Chinese lexical Semantics, Peking University, May 14-18, 2001. Beijing.
- Lakoff, George & Johnson, Mark. 1980. *Metaphors we live by*. Chicago: University of Chicago Press.
- Levin, Beth. 1993. *English Verb Classes and Alternations: A preliminary investigation*. Chicago: University of Chicago Press.
- Liu, Mei-Chun, Huang, Chu-Ren & Lee, Charles C. L. 1999. When Endpoint Meets Endpoint: A Corpus-based Lexical Semantic Study of Mandarin Verbs of Throwing. In Kathleen Ahrens, Huang Chu-Ren & Tsai Mei-Chih (eds.), *Working Papers on Chinese Verbal Semantics*. Taipei: Institute of Linguistics, Academia Sinica.
- Lyons, J. 1995. *Linguistic Semantics: An Introduction*. Cambridge: Cambridge University Press.
- Smith, C. S. 1991. *The Parameter of Aspect*. Dordrecht: Kluwer Academic Publishers.
- Tsai, Mei-Chih, C.-R. Huang, K.-J. Chen, & K. Ahrens. 1997. Towards a Representation of Verbal Semantics. An Approach Based on Near Synonyms. In *Proceedings of Rocling X*: 34-48. Taipei: Association for Computational Linguistics and Chinese Language Processing.
- Tsai, Mie-Chih, Huang, Chu-Ren, Chen, Keh-Jiann & Ahrens Kathleen. 1999. Towards a Representation of Verbal Semantics: An Approach Based on Near-Synonyms. In Ahrens Kathleen, Huang Chu-Ren & Tsai Mei-Chih (eds.), *Working Papers on Chinese Verbal Semantics*. Institute of Linguistics, Academia Sinica.
- Viberg, Åke. 1993. Crosslinguistic Perspectives on Lexical Organization and Lexical Progression. In K. Hyltenstam & Å. Viberg (eds.), *Progression and Regression in Language*. Cambridge: Cambridge University Press, 340-385.
- Viberg, Åke. 1999. Polysemy and Differentiation in the Lexicon. In Jens Allwood & Peter Gärdenfors (eds.), *Cognitive Semantics*. Amsterdam/Philadelphia: John Benjamins, 86-126.