

Conceptual metaphors in gesture*

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11

12 *Abstract*

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14 *This study investigates metaphoric gestures in face-to-face conversation. It is*
15 *found that gestures of this kind are mainly performed in the central gesture*
16 *space with noticeable and discernable configurations, providing visible evi-*
17 *dence for cross-domain cognitive mappings and the grounding of conceptual*
18 *metaphors in people's recurrent bodily experiences and in what people habitu-*
19 *ally do in social and cultural practices. Moreover, whether metaphorical think-*
20 *ing is conveyed by gesture exclusively or along with metaphoric speech, the*
21 *manual enactment of even conventional metaphors manifests dynamism in*
22 *communicating metaphors. Metaphoric gestures can provide salient, addi-*
23 *tional information about the aspect of the conceptualization which is the*
24 *speaker's focus of attention in real-time multimodal communication.*

25

26 *Keywords:* *Conceptual metaphor, gesture, embodiment, conversational*
27 *discourse.*

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30 **1. Introduction**

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32 In Lakoff and Johnson's (1980, 1999) theory of metaphor, "[c]onceptual meta-
33 phor is a natural part of human thought . . . [and] which metaphors we have and
34 what they mean depend on the nature of our bodies, our interactions in the
35 physical environment, and our social and cultural practices" (Lakoff and John-
36 son 1980: 247). Such embodied view of conceptual metaphors has been sup-
37 ported by a large amount of evidence from linguistic expressions in different

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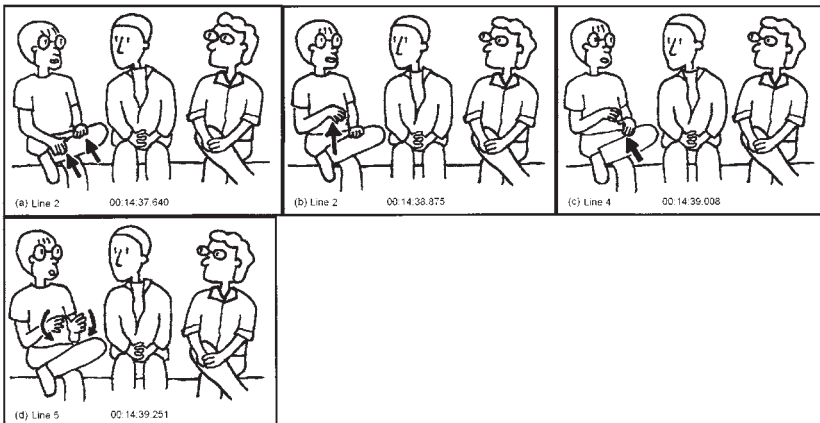
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1 languages. Despite the fact that metaphors in language are ubiquitous, Murphy
 2 (1996, 1997) and Glucksberg (2001) remain skeptical about the psychological
 3 reality of conceptual metaphors. They argue that using linguistic meta-
 4 phors does not necessarily mean people do think metaphorically. Conventional
 5 metaphors in particular may have already been lexicalized without requiring
 6 the use of cross-domain cognitive mappings when people use them. Different
 7 sources of evidence were then proposed to refute the criticisms of circularity
 8 and lexicalization, among which evidence from psychological and neurobio-
 9 logical research was found to show that people do use sensorimotor experi-
 10 ences to understand metaphorical language and abstract concepts (Gibbs 2006,
 11 2008). That linguistic metaphors shape thoughts can also be substantiated
 12 by Boroditsky's (2000, 2001) priming experiments which found that since
 13 Mandarin speakers talk about time in terms of a vertical spatial orientation
 14 and English speakers do so in terms of a horizontal spatial orientation, they
 15 also think differently about time. Not only did Mandarin speakers perform
 16 faster after vertical spatial primes than after horizontal spatial primes, but
 17 English speakers' performance was similar to that of Mandarin subjects after
 18 English subjects had been trained to use vertical metaphors. To the English
 19 subjects, the novel vertical metaphors influenced their conventional thought.
 20 Nonetheless, whether this new way of thinking about time will become the
 21 subjects' habitual conceptualization rests upon whether people repeatedly
 22 think about time vertically. In neuroscience, connections between the relevant
 23 sensorimotor areas of the brain and abstract conceptualization were also ob-
 24 served (Boroditsky 2000, 2001; Boroditsky and Ramscar 2002; Gallese and
 25 Lakoff 2005).

26 In gesture studies, “[e]xamination of real-time gestural production . . . is
 27 particularly useful in cases where the data are ethnographic rather than experi-
 28 mental; gesture is always there, and visibly present in the videotaped data”
 29 (Núñez and Sweetser 2006: 3). The specific manifestation of a metaphor in the
 30 use of the hands thus provides independent visible evidence of metaphorical
 31 thinking, and supports the embodied nature of this pervasive cognitive phe-
 32 nomenon in communication (Cienki 1998; Cienki and Müller 2008; Gibbs
 33 2008). In Example (1) below, the conversational topic is tea processing, and
 34 M1 is saying that the procedure is important. The word *guocheng* ‘procedure’
 35 (Line 3) is conceptualized as an object by use of the hands: M1 first has the left
 36 leg placed across the right leg. After uttering the quantifier *henduo* ‘a lot’ (Line
 37 1), just prior to the clause in which he will utter *guocheng*, he moves his right
 38 hand away from his left ankle to chest level. The left hand follows after the
 39 production of the copula *shi* (Line 3), rising to chest level from the thigh. Dur-
 40 ing the 0.5-second pause between the copular *shi* and *guocheng*, both hands are
 41 held apart with the palms facing one another and the fingers are slightly curled,
 42 as if holding onto an object. This gesture with noticeable and discernable con-

1 figuration iconically plays out the object concept in the source domain; what it
 2 represents is the tea-processing procedure in the target domain. Moreover, the
 3 whole manual configuration reveals people’s understanding of a non-physical
 4 event in terms of an object with boundaries. It is a gestural instantiation of the
 5 Object Schema, in that “[w]e experience ourselves as entities, separate from
 6 the rest of the world. . . . And when things have no distinct boundaries, we
 7 often project boundaries upon them—conceptualizing them as entities” (La-
 8 koff and Johnson 1981: 313).

- 9
 10 (1) 1 M1: . . . danshi wo shuo zhende . . wo cha . bushi
 11 but 1SG tell real 1SG tea NEG
 12 dongde henduo
 13 understand a lot
 14 2 after *henduo*, right hand rises from left ankle to chest level ([a]–[b]
 15 in Figure 1)
 16 3 . . . wo zui zhuyao shi . . .(0.5) **guocheng** la
 17 1SG most important COP procedure PRT
 18 4 *guocheng* ‘procedure’: after *shi*, left hand starts rising from thigh to
 19 chest level ([c] in Figure 1)
 20 5 during the 0.5-second pause, both hands are held apart with palms
 21 facing one another ([d] in Figure 1)
 22 M1: ‘But to tell the truth, I don’t really know a lot about tea. I . . . the
 23 most important thing is the procedure.’
 24
 25
 26
 27



42 Figure 1. Gestural depiction of the tea-processing procedure (http://dx.doi.org/017_suppl_1)

1 Forceville (2009) investigates non-verbal metaphors in various modes of
2 communication, such as pictures, music, sounds, and gestures. The present
3 study rather focuses on metaphors as conveyed by hands and arms. Metaphoric
4 gestures have been classified as ‘ideographs’ (Efron 1972 [1941]), ‘ideo-
5 graphs’ (Ekman and Friesen 1969; Rimé and Schiaratura 1991), a type of
6 ‘characterizing gestures’ (Kendon 1989) or ‘substantive gesturing’ (Kendon
7 1995), a type of ‘ideational gestures’ (Hadar et al. 1998), or ‘metaphorics’ (Mc-
8 Neill 1992). The hold-an-object gesture in Example (1) also appeared at the
9 metanarrative level in McNeill’s (1992: 14) narrative data, in that the speaker
10 metaphorically presented the abstract cartoon genre in form of a bounded object
11 while uttering ‘It was a Sylvester and Tweety cartoon’. Cienki (1998) in-
12 vestigated American college students’ metaphoric gestures for honesty and
13 dishonesty. Núñez and Sweetser (2006) examined how Aymara speakers gesture
14 the TIME-IS-SPACE metaphor. More studies can be seen in *Metaphor and*
15 *Gesture* (2008), examining the gestural representations of metaphorical concepts
16 in English narratives (McNeill 2008), conversation-interviews (Cienki
17 2008; Müller 2008), French television interviews (Calbris 2008; Montredon
18 et al. 2008), English class instructions in elementary schools (Williams 2008),
19 English lectures in college (Mittelberg 2008; Núñez 2008), and in an experi-
20 ment (Parrill 2008). The aim of the present research is to investigate meta-
21 phoric gestures in the natural spontaneous face-to-face interactions in Chinese
22 conversation to gain more insights into how people conceptualize concepts in
23 a metaphorical way in their daily communication. Metaphors in gesture also
24 provide empirical and visible evidence for the underlying embodiment of
25 metaphorical thoughts. They further bear out the dynamic nature of metaphorical
26 cognition, in that their real-time manifestations indicate which aspect of
27 the conceptualization is the speaker’s focus of attention at the moment of
28 speaking.

29 The next section introduces the data used in this study. Section 3 presents the
30 empirical analysis of the imagistic representations of conceptual metaphors
31 in gesture. Based on the findings, Section 4 provides a general discussion on
32 the relationship between language and gesture in communicating conceptual
33 metaphors.

34 35 **2. Data**

36
37 The NCCU Corpus of Spoken Chinese is a project of language documentation
38 which collects and archives spoken forms of Mandarin, Taiwanese, and Hakka
39 in Taiwan (Chui and Lai 2008). The sub-corpus of spoken Mandarin contains
40 short oral narratives and daily face-to-face conversations. The cartoon narra-
41 tions were recorded in 2002 and ranged from about two to ten minutes in
42 length. With regard to conversations, some data were collected during 1994

1 and 1995; the participants were college students who knew each other. Further
 2 casual conversations among family members, friends, and colleagues have been
 3 videotaped since 2006, and this portion of data can be accessed online.¹ All the
 4 participants were paid, and they were not told the particular focus of the re-
 5 search. The participants were free to find and develop topics of common inter-
 6 est; they were filmed for approximately an hour with a visible camera. One
 7 stretch from each talk, of about twenty to forty minutes, in which the partici-
 8 pants were comfortable in front of the camera, was then selected for transcrip-
 9 tion. A further project related to the NCCU Corpus of Spoken Mandarin is a
 10 gestural analysis of the transcribed narratives and conversations. The data used
 11 in this study come from two of the conversations: one is about tea processing
 12 and military service; the other is about love affairs in high school.

13 Besides hands and arms, other body parts can also be involved in conveying
 14 metaphorical thoughts. For instance, in a discussion of the publication of de-
 15 partmental address books, when one participant realizes that their address books
 16 merely have fifty pages whereas those of another department contain one hun-
 17 dred pages, she expresses the abstract idea of her shock and surprise by the
 18 linguistic metaphor *tu-xie* ‘vomit-blood’ and performs simultaneously a whole-
 19 body physical action by falling down to the ground from her chair, as if becom-
 20 ing unconscious. “Metaphoric gestures like these are parodies of well known
 21 body routines and convey a rich set of meanings that would be impossible to
 22 communicate via words” (Gibbs 2008: 299). The present study, nevertheless,
 23 focuses on the hand and arm movements only. Future research is needed to
 24 study the *tu-xie* type of metaphoric gesture.

25 The speech and the gesture data relevant for the present study were sepa-
 26 rately coded by two trained coders. Data were re-analyzed and discussed in the
 27 case of disagreement. Data without consensus were not used.

28 29 **3. Gestural representations of conceptual metaphors**

30 In multimodal communication, metaphorical thoughts can be expressed by
 31 speech and by hands. Of particular interest here are metaphors in gesture, and
 32 there are two ways to manifest metaphors, namely (a) metaphoric gestures
 33 with metaphoric speech and, (b) metaphoric gestures with literal speech. They
 34 will be discussed accordingly in this section.

35 36 *3.1. Metaphoric gestures with metaphoric speech*

37 Cienki (1998) discussed metaphors in a study of gestural representations
 38 of honesty and dishonesty, including TRUTH-IS-STRAIGHT, CONSIDERING-THE-
 39

40
 41 1. The data from the NCCU Corpus of Spoken Mandarin can be accessed online at <http://140.119.172.200> [accessed January 2010].
 42

1 IMPORTANCE-OF-DIFFERENT-FACTORS-IS-WEIGHING-DIFFERENT-OBJECTS, SITUATIONAL-
 2 FACTORS-ARE-OBJECTS, and AN-EVENT-IN-TIME-IS-MOVEMENT-THROUGH-SPACE. The
 3 subjects also used two gesture spaces to stand for good and bad moral behavior
 4 symbolically. Gestures of this kind are ‘metaphors utilizing space’ (McNeill
 5 1992) or abstract pointing (Kendon 2004). These types of gestures are not con-
 6 sidered here, since they do not bear a direct semantic relationship with the
 7 lexical constituents or the speech events at issue.

8 This section presents empirical data in our corpus showing that people not
 9 only perform metaphoric gestures while they talk metaphorically, but that
 10 manual configurations can also reveal the speaker’s real-time focus of atten-
 11 tion, “indicat[ing] which facets of an overall conception are active at a given
 12 moment, thus providing clues to the shifting of attention in online processing”
 13 (Langacker 2008: 249).

14
 15 *object gesture*

16 Example (1) has provided gestural evidence to represent the concept of ‘proce-
 17 dure’ as a referring entity. The object gesture in the following Example (2)
 18 further depicts the quantifying aspect of the abstract referent under discussion:
 19 As F3 produces the conjunction *fanzheng* ‘anyway’ in Line 1, she raises the left
 20 hand and forms a cupped shape with slightly curled fingers at waist level, as if
 21 holding a small object in her hand. Then, at the moment of uttering the two
 22 syllables in *gao-zhong* ‘high school’, all the digits are drawn together and their
 23 tips come in contact with one another two times. These movements as a whole
 24 manifest the conceptualization of high-school love affairs, being linguistically
 25 expressed by the demonstrative *naxie* ‘those’ in the first clause (Line 1), as a
 26 discrete object, and, at the same time, the gesture also serves to indicate that F3
 27 did not have a lot of romances at that time. What is significant in this example
 28 is that the manifestations of the same metaphor across the two modalities high-
 29 light different aspects of conceptualization. The HIGH-SCHOOL-LOVE-AFFAIRS-AS-
 30 OBJECTS metaphor in speech is used to characterize the romances as *bushi hen*
 31 *mingxian* ‘not very obvious’ and *aiaimeimei* ‘vague’ in Line 4, whereas the
 32 same metaphor in gesture focuses on the frequency of the occurrences.

34 (2) 1 F3: .. fanzheng jiushi ni. . gaozhong jiushi **naxie**
 35 anyway that is 2SG high school that is those
 36 ma. . ye
 37 PRT also

38 2 *naxie* ‘those’: at *fanzheng*, left hand rises and forms cupped shape at
 39 waist level ([a]–[b] in Figure 2)

41 3 small quantity: at *gaozhong*, tips of all digits come together two
 42 times ([c]–[e] in Figure 2)

1 4 bushi hen mingxian a . . . fanzheng jiushi zheyang .
 2 NEG very obvious PRT anyway that is like this
 3 aiaimeimeide . aiaimeimeide
 4 vague vague

5 F3: ‘Anyway, that is, you just had those love affairs in high school,
 6 those that were not very obvious. Anyway, those that were vague
 7 . . . vague.’
 8
 9

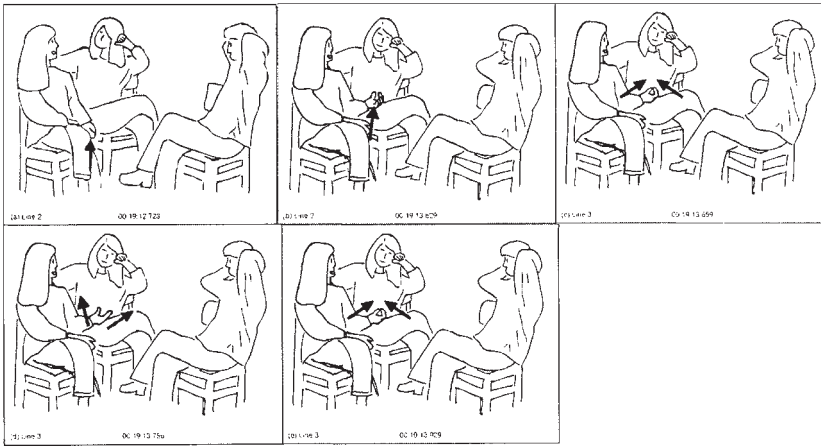


Figure 2. Gestural depiction of high-school love affairs

26 hitting and punching gestures

27
 28 Personification is another kind of metaphor used “to comprehend a wide variety of experiences with nonhuman entities in terms of human motivations, characteristics, and activities” (Lakoff and Johnson 1980: 33). M1 in Example (3) first mentions that the tea leaves have to be placed on a piece of silk which is then tied up to make a bundle before fermentation in a machine (Line 1). The piece of silk used in this way is known as *tekin* ‘tea towel’ (Line 2). The design of the machine is such that the bundle will be subject to hard handling as it is raised up inside the machine and then falls down again. To conceptualize the idea that the tea towel can endure the incessant rotation in the tea-processing machine without being damaged, the speaker personifies the action to which the tea towel is subjected. And, in addition to using the two verbs *zhemo* ‘to torture’ (Line 8) and *lingnüe* ‘abuse’ in speech (Line 10), what the speaker imagines real-time about such ‘bad behavior’ is only enacted physically by manual actions: M1 explains in Line 5 that the tea towel is rotated in the machine by performing a rotating gesture in front of the chest two times ([a] in

1 Figure 3). Then while *zhemo* is uttered, his right hand in a fist rises to shoulder
 2 level and then his arm thrusts down, as if hitting somebody. The same punch-
 3 ing action is performed even more forcefully during the production of *lingnüe*
 4 to depict the infliction of great physical pain on a person.

- 5 (3) 1 M1: ...(.6) ranhou jiu fang zai chaqiu limian
 6 then then put at tea ball inside
 7 a...(.7) jiu fang zai.
 8 PRT then put at
 9
 10 2 <L3 tekin L3> la. nage dou shi si
 11 tea towel PRT that all COP silk
 12 zuo de a. hen
 13 make PRT PRT very
 14 3 nai...(.7) hen nai...(.1.6) <L3 tsiok nai
 15 endure very endure very endure
 16 phun L3> a @@
 17 rotate PRT
 18
 19 4 M3: ...(.1) <L3 phun L3>
 20 rotate
 21
 22 5 M1: ..jiushi rang ta **zhuan**
 23 that is let 3SG rotate
 24
 25 6 *zhuan* ‘rotate’: left open palm faces up at waist level; right hand in
 26 a fist, facing down at chest level, moves clockwise two times ([a]
 27 in Figure 3)
 28
 29 7 M3: ... huh
 30 BC
 31
 32 8 M1: ..ni. zenmede. **zhemo** ta
 33 2SG whatever torture 3SG
 34
 35 9 *zhemo* ‘torture’: right hand in a fist rises to shoulder level and
 36 thrusts down ([b]–[c] in Figure 3)
 37
 38 10 .. **lingnüe** ta. ta dou hen. . . hen. . bu hui. .
 39 abuse 3SG 3SG all very very NEG will
 40 dou bu hui po
 41 all NEG will break
 42
 43 11 *lingnüe* ‘abuse’: right hand in a fist rises to shoulder level and then
 44 thrusts down ([d]–[e] in Figure 3)
 45
 46 12 jiu dui le
 47 then right PRT

1 M1: 'Then put the dried leaves into a tea ball . . . wrap them up with a
 2 tea towel. That is made of silk. That can endure . . . endure . . .
 3 endure the rotation to a great extent.'
 4 M3: 'Rotate.'
 5 M1: 'That is, let the tea towel rotate.'
 6 M3: 'Huh.'
 7 M1: 'No matter how you torture it and how you abuse it, it . . . it . . .
 8 very . . . very . . . will not . . . will not break at all.'

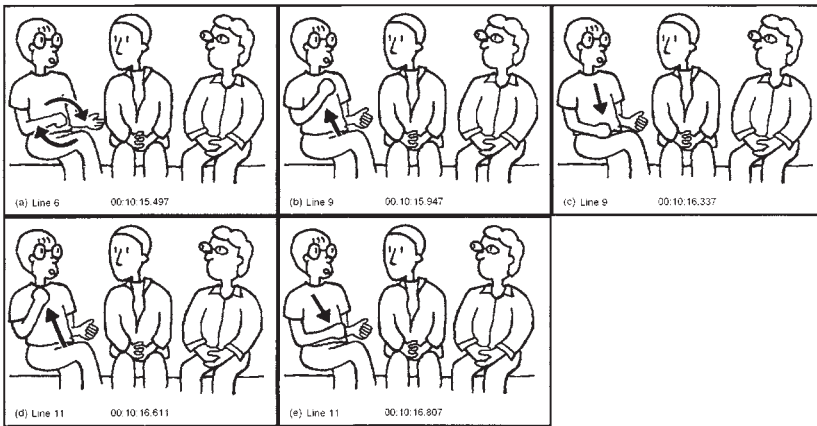


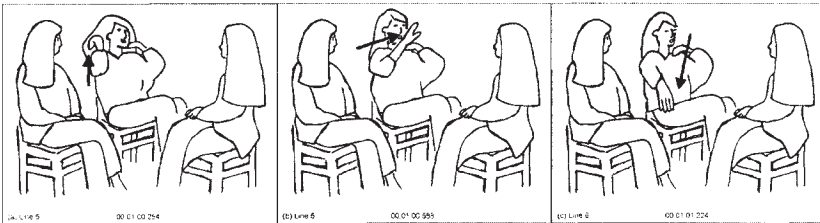
Figure 3. *Gestural depiction of 'tea-towel-as-a-person'*

orientation gesture

Oriental metaphors are commonly used to convey metaphorical thoughts. Gestures readily provide spatial orientations for abstract concepts like 'being bogged down in a love relationship' in Example (4). The container metaphor with boundaries and an in-out orientation (Lakoff and Johnson 1980: 29), as well as the BAD-IS-DOWN metaphor are linguistically represented by the verb *xianru* 'fall into/be bogged down in a mess' (Line 4) to stand for getting into a hypothetical, difficult situation if F2 had formed a connection with a male friend. At the same time, the speaker's right hand, which is already in a full stretch to the front in the upper right periphery (see the division of the gesture space in McNeill 1992), comes straight down to waist level. The orientation of the hand offers visible evidence for the action of going down into a receptacle; what it metaphorizes is the idea of lapsing into a complicated love affair.

(4) 1 F1: . . . jiaru shuo . . . ni gen na nande . . . you qu
 2 if say 2SG with that man PRF go

- 1 lianluo zheyang
2 contact like this
- 3 2 F2: (0) dui a
4 right PRT
- 5
- 6 3 F1: (0) ranhou ni zai qu . zhao ta haishi
7 then 2SG again go find 3SG or
8 ganme . . . jiushi shou . . .
9 do what that is say
- 10
- 11 4 ni hen rongyi hui **xianru**
12 2SG very easy will fall into
- 13 5 at *rongyi*, right arm is extended to front at head level ([a]–[b] in
14 Figure 4)
- 15 6 *xianru* ‘fall into’: right hand comes straight down to waist level ([c]
16 in Figure 4)
- 17
- 18 F1: ‘If you still had had contact with the guy,’
19 F2: ‘Right.’
20 F1: ‘then, you had seen him again or whatever, that is, it would have
21 been easy for you to be bogged down in a mess.’
- 22
- 23



31 Figure 4. *Gestural depiction of ‘be-bogged-down in a mess’*

32

33 *spatialization gesture*

34

35 TIME-IS-SPACE is a universal spatialization metaphor which has social and cul-
36 tural bases. “Our physical and cultural experience provides many possible
37 bases for spatialization metaphors. Which ones are chosen, and which ones
38 are major, may vary from culture to culture” (Lakoff and Johnson 1980: 19).
39 Aymara speakers, for instance, gesture a culture-specific cognitive pattern that
40 future-is-behind-ego and past-is-in-front-of-ego (Núñez and Sweetser 2006).
41 In the Chinese culture, both the horizontal front-back and the vertical up-down
42 orientation are found in the metaphorical conceptualization of time. The front-

1 back orientation further suggests two different types of temporal thinking, de-
 2 pending on the speaker's choice between the time-moving and the ego-moving
 3 perspective. The front-back orientation with the time-moving perspective can
 4 be seen in Example (5). The others will be discussed in the next section. The
 5 subject of the talk in the excerpt in (5) has to do with growing different kinds
 6 of agricultural products between two rows of tea plants. M1 employs the time-
 7 moving perspective and tells his interlocutors that the time when crops were
 8 grown between the two rows of tea plants is earlier than the time when sweet
 9 potatoes were grown. The temporal expression *zhiqian* 'before' in M1's second
 10 turn (Line 3) is accompanied by a gesture: To locate the time at which sweet
 11 potatoes were grown, M1 first extends his left index finger at chest level and
 12 points down while producing the first-person pronominal *women* in Line 3.
 13 When *zhiqian* is produced, the time of the growing of crops, which is prior to
 14 that of the growing of sweet potatoes, is then depicted by moving the left index
 15 finger to the front of the sweet-potato locatio.

- 16
 17 (5) 1 M1: .. women liang hang cha zhongjian .hai yao
 18 1PL two row tea middle still have to
 19 zhong fanshu
 20 grow sweet potato
- 21 2 M3: (0) wo zhidao... ni gen women jiang [guo]
 22 1SG know 2SG with 1PL tell EXP
- 23
 24 3 M1: [dui a] .. wo gen ni jiang guo ma...
 25 right PRT 1SG with 2SG tell EXP PRT
 26 hai . . women **zhiqian**
 27 still 1PL before
- 28
 29 4 at *hai*, left hand rises to chest level and index finger extends ([a]–[b]
 30 in Figure 5)
- 31
 32 5 at *women*, left index finger points down ((c) in Figure 5)
- 33
 34 6 *zhiqian* 'before': left index finger turns to front and points down
 ([d]–[e] in Figure 5)
- 35
 36 7 hai you zhong dao
 37 still PRF grow crops
- 38 M1: 'Between two rows of tea plants, we still had to grow sweet
 39 potatoes.'
- 40 M3: 'I know. You told us already.'
- 41 M1: 'Right, I told you already. Still . . . before that, we also grew
 42 crops.'

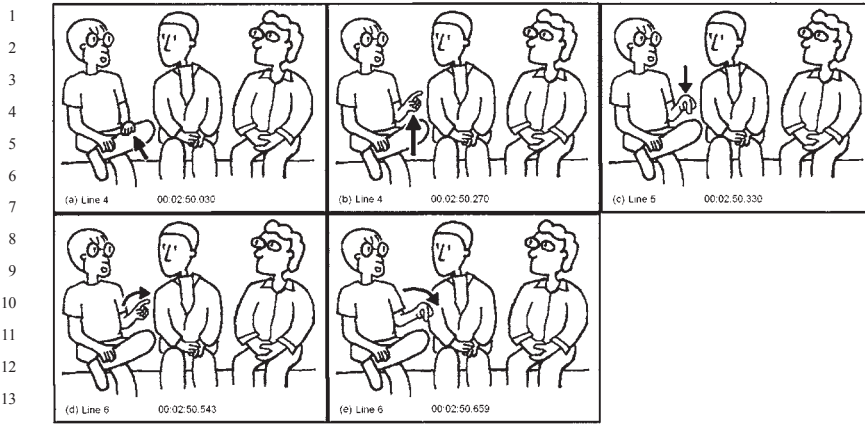


Figure 5. *Gestural depiction of 'time-is-space' with the time-moving perspective*

The linguistic metaphors discussed in this section are largely conventional, yet their respective imagistic representations bear out the underlying embodied conceptualization grounded in what people habitually do in their bodily interactions and social-cultural practices. Moreover, “metaphor gestures with speech are likely not just communicating redundant information, but . . . express something different” (Gibbs 2008: 296). The different information can be about the force-dynamic properties of the source domain (Cienki 1998: 191), such as the strength of hitting in Example (3), the quantifying aspect of the target concept in Example (2), or the speaker’s perspective in Example (5).

3.2. *Metaphoric gestures with literal speech*

Metaphoric gestures do not always co-occur with metaphoric speech. For those which are produced without concomitant linguistic representations, metaphorical thoughts can not be interpreted without perceiving the manual configurations.

spatialization gestures

In Example (6) the temporal adverbial *zuotian* ‘yesterday’ in Line 4 carries the literal meaning. Its underlying metaphorical conceptualization is rather expressed by the manual modality. But different from understanding time moving past the speaker horizontally in Example (5), the *TIME-IS-SPACE* metaphor gestured by the same speaker takes the ego-moving perspective instead. As a result, the spatial orientation of the past time *zuotian* differs from that of *zhiqian*: During the pause before *zuotian*, M1’s both hands are already kept

1 apart in front of the chest, with both palms slightly facing up, as if holding the
 2 dried tea. At the moment the temporal adverbial is uttered, M1's left hand
 3 moves up to shoulder level and then points back with an open-palm. The ges-
 4 ture depicts the conceptualization that the speaker is moving through time
 5 horizontally.

6 (6) 1 M1: .. women nage jiaozuo <L3 tesoo L3> a
 7 1PL that call as dried tea PRT

8
 9 2 M4: ..(0.6) <L3 tesoo L3>
 10 dried tea

11 3 M3: ...[ha]
 12 what

13
 14 4 M1: [<L3 te]soo L3>.. **zuotian**.. ai.. wanshang
 15 dried tea yesterday PRT night
 16 zuoqilai jiao <L3 tesoo L3>
 17 do:RESULT call dried tea

18 5 during the pause before *zuotian*, both hands are already apart with
 19 palms facing slightly up in front of chest ([a] in Figure 6)

20 6 *zuotian* 'yesterday': left hand moves up to shoulder level and points
 21 back with open-palm ([b] in Figure 6)

22
 23 M1: 'We called it 'dried tea'.'

24 M4: 'Dried tea.'

25 M3: 'What?'

26 M1: 'Dried tea. Yesterday . . . it was called 'dried tea' . . . when the
 27 processing was finished at night.'

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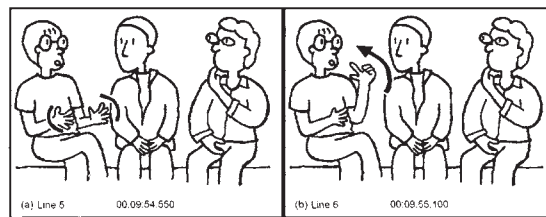
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Figure 6. Gestural depiction of 'time-is-space' with the ego-moving perspective

Besides representing time as in front and in back of ego, Chinese has a third type of orientation in understanding of time in terms of space—verticality. The conceptualization of time as moving up and down is illustrated in Example (7) which is about military-service terms. The period of time which is being

1 described by M1 in Line 5 is the gap of thirty-two terms of service, periods of
 2 sixteen months, between his unit leader and himself when he was doing his
 3 military service. This time he makes a gesture for the TIME-IS-SPACE metaphor
 4 with vertical orientation: After gesturing the action *jinqu* ‘enter (the army)’ by
 5 moving the right open palm from the shoulder level down to the chest level ([a]
 6 and [b] in Figure 7), M1’s right hand stays in front of the chest with the palm
 7 hanging loosely. When the first occurrence of *wo* ‘I’ (Line 5) is produced, the
 8 right palm moves toward the speaker’s own body to designate a space for
 9 himself and also for his own term of service. Then, the right hand rises up to
 10 shoulder level and the index finger is extended. At the time of verbalizing *shifu*
 11 ‘unit leader’, M1 points to the front with the index finger to locate the leader
 12 and his term. Since each term refers to half a month (Line 10), the lower space
 13 in the vertical orientation metaphorically represents the time M1 joined the
 14 military unit; the upper space indicates sixteen months back in the past. In
 15 Boroditsky’s (2000, 2001) studies of the use of linguistic metaphors of time in
 16 Mandarin and English, she finds that Mandarin speakers talk about and think
 17 about time in terms of up and down more frequently. Since the database used
 18 in the present study does not contain many occurrences of spatial metaphors in
 19 gesture, whether Chinese speakers prefer gesturing the time metaphor verti-
 20 cally needs future research. Moreover, as mentioned in Section 1, Boroditsky’s
 21 experiments found that after the English speakers had learned to use the new
 22 vertical metaphors, they performed faster after vertical spatial primes, suggest-
 23 ing the influence of language on thought. On the other hand, it is also common
 24 for people to have new metaphorical ideas before they communicate them via
 25 language and gesture. More relevant to the present study is the manual mani-
 26 festation of new metaphors, which deserves further study.

27 The same speaker in Examples (5), (6), and (7) talks about time in terms of
 28 space, but each gestural occurrence reveals a different way to think about time.
 29 The forward, backward, and upward gestures bear out the fact that the com-
 30 munication of metaphorical thoughts is a dynamic manifestation in real time.

- 31 (7) 1 M1: . . na shihou yinwei women. . .(1.0) xianjie a. . .
 32 that time because IPL connect PRT
 33 nage. . .(0.7) luocha hen
 34 PF gap very
 35
 36 2 yan[zhong] . . . wo **jinqu**
 37 serious 1SG enter
 38
 39 3 *jingqu* ‘enter (the army)’: at *wo*, right hand in front of chest
 40 descends from shoulder level to chest level ([a]–[b] in Figure 7)
 41
 42 4 M3: [huh]
 BC

1 5 M1: .. wo gen wo shifu cha le ..
 2 1SG with 1SG unit leader differ PRF
 3 sanshi. . .(0.6) er qi
 4 thirty two term
 5
 6 6 at the first *wo*, right palm moves toward body in front of chest ([c]
 7 in Figure 7)
 8
 9 7 at *shifu*, right hand rises to shoulder level and extended index finger
 10 points to front ([d] in Figure 7)
 11 8 M3: . . .(.5) hm
 12 BC
 13 9 M2: . . .oh
 14 BC
 15
 16 10 M1: .. yi qi shi jiushi ban ge yue
 17 one term COP that is half CL month
 18
 19 M1: ‘At that time, because we . . . connection . . . there was a big gap.
 20 When I entered the army,’
 21 M3: ‘Huh.’
 22 M1: ‘my unit leader and I were thirty-two terms apart.’
 23 M3: ‘Hm.’
 24 M2: ‘Oh.’
 25 M1: ‘Each term of service was, that is, half of a month.’

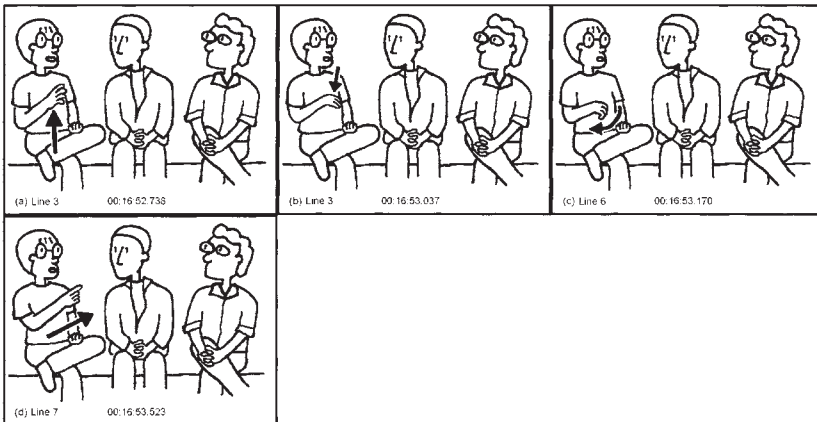


Figure 7. Gestural depiction of ‘time-is-space’ with vertical orientation

1 weighing gesture

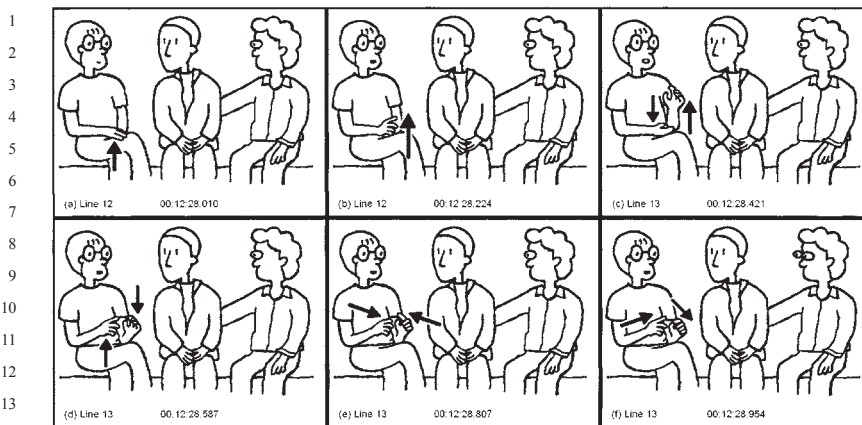
2 The last metaphor in gesture is concerned with the concept of weighing. Lakoff
 3 (2008b: 283) mentions McNeill's example in which the speaker moves one
 4 hand up and the other down several times while deciding between a choice of
 5 alternatives in the utterance 'I couldn't decide whether to stay at home or go to
 6 the movies'. The gesture enacts the metaphor CHOOSING-IS-WEIGHING. In Cienki
 7 (1998: 193), the weighing gesture represents the consideration of the impor-
 8 tance of different factors along with the utterance 'It's like balancing all these
 9 things'. In our data, weighing is rather used in comparing the shapes of tea
 10 leaves. In the following Example (8), M1 states that the lightly fermented tea
 11 is formed after withering (Lines 1 and 2), but before that the leaves can be used
 12 to brew tea which is then put in the refrigerator to make a cold drink (Lines 5
 13 and 6). What he says in his last turn (Line 11) is that the leaves of the lightly
 14 fermented tea and those of the cold tea have different shapes. The idea of com-
 15 parison is not expressed in words, but conveyed by a metaphoric gesture
 16 grounded in the social practice of weighing objects in daily life. The metaphor
 17 is depicted at the time the particle *ho* 'okay' is uttered (Line 11): The right hand
 18 first rises from the thigh to the chest level, followed by the left hand. Totally,
 19 the speaker moves one hand up and the other down four times while saying that
 20 the leaves of the two types of tea are different in shape.
 21

- 22 (8) 1 M1: . . . (0.7) zai rang ta ganzao. . jiushi women. .
 23 again let 3PL wither COP 1PL
 24 he de cha le
 25 drink REL tea PRT
 26
 27 2 . . . zhege. . . shi. . . suoweide. . jiushi
 28 this COP so-called that is
 29 <L3 tshennte L3> a
 30 lightly fermented tea PRT
 31
 32 3 M3: . . . m
 33 BC
 34
 35 4 M2: (0) m
 36 BC
 37
 38 5 M1: . . . wanshang zuoqilai desh hou. . nage
 39 night do:RESULT when that
 40 <L3 tesoo L3> a. . . qishi
 41 dried tea PRT in fact
 42
 43
 44 6 jiu keyi bingqilai. . dang lengdongcha
 45 then can refrigerate:INCHO as cold tea

- 1 7 M3: (0) uh
2 BC
- 3 8 M1: . . . a zhege . . . dier tian . . . jingguo zhege
4 PRT PF second day go through this
5 qingxing ne . . . zai
6 condition PRT again
7
- 8 9 . . . bingqilai . . . ye keyi dang lengdongcha
9 refrigerate:INCHO also can as cold tea
- 10 10 M3: . . . m
11 BC
- 12 11 M1: . . . ho . . . zhishi bu yiyang . . . chaxing
13 PRT only NEG same tea shape
14 bu yiyang
15 NEG same
16
- 17 12 at *ho*, right hand rises from thigh to chest level, followed by left
18 hand ([a]–[b] in Figure 8)
19
- 20 13 after *ho*, both hands move up and down ([c]–[d] in Figure 8); then
21 fingers of both hands move up and down ([e]–[f] in Figure 8)
- 22 M1: ‘Let the leaves wither again, and then, they are used to brew the
23 kind of tea we drink. It is so-called lightly fermented tea.’
24 M3: ‘Mm.’
25 M2: ‘Mm.’
26 M1: ‘When the withering is finished at night, in fact, the dried leaves
27 can be used to brew tea which is then put in the refrigerator to
28 make a cold drink.’
29 M3: ‘Uh.’
30 M1: ‘The next day, after going through such condition . . . again . . .
31 refrigerate the tea . . . it can also become cold tea.’
32 M3: ‘Mm.’
33 M1: ‘OK, just the shapes of the tea leaves are not the same.’
34

35 **4. General discussion and conclusion**
36

37 The empirical research in the present paper provided evidence that metaphori-
38 cal thought is readily conveyed by gesture exclusively or along with meta-
39 phoric speech in daily face-to-face communication. Thus, “[m]etaphors are
40 mental structures that are independent of language” (Lakoff 2008a: 82).
41 Nevertheless, many of the linguistic metaphors were substantiated by the
42 metaphoric gestures in Chinese conversational discourse, including THE-TEA-



15 Figure 8. *Gestural depiction of 'comparing-is-weighing'*

16
17 PROCESSING-PROCEDURE-IS-AN-OBJECT, HIGH-SCHOOL-LOVE-AFFAIRS-ARE-OBJECTS,
18 THE-TEA-TOWEL-IS-A-PERSON, GETTING-BOGGED-DOWN-IN-A-MESS-IS-GOING-DOWN,
19 BAD-IS-DOWN, and TIME-IS-SPACE. Together with the COMPARING-IS-WEIGHING
20 metaphor, all the metaphoric gestures bear out the grounding of conceptual metaphors
21 in the habitual perceptual and bodily experiences of people in dealing
22 with discrete entities and containers, orientating the bodies, recognizing human
23 traits, and weighing objects.

24 The iconic manifestations of metaphorical thoughts in the use of the hands
25 provide evidence that the metaphorical expressions are not lexicalized. Psycholinguistic
26 studies of linguistic metaphors have already found that people's bodily experiences
27 in action affect their performance in the imagination and understanding of metaphorical
28 actions (Gibbs 2006), and that "even highly conventional kinds of metaphors are
29 analyzable to varying extents . . . [and] even the most clichéd metaphoric phrases
30 are not understood through simple retrieval of their meanings stored in a phrasal,
31 mental lexicon" (Gibbs 2008: 295). Gestures also substantiate cross-domain cognitive
32 mappings. The gestural forms are iconic for the source-domain concepts, and they
33 evidence the presence and the real-time activation of the source domain in the mind
34 of the speaker.
35

36 Furthermore, the enactment of even conventional metaphors in gesture supports
37 "the dynamic creation, and recreation, of metaphoric thought in the bodily act of
38 online communication" (Gibbs 2008: 292). While they were mainly performed in
39 the central gesture space with noticeable and discernable configurations, metaphoric
40 gestures provide salient, additional information about the aspect of the conceptualization
41 that is the speaker's focus of attention. In our analysis, time is conceived of
42 metaphorically as space, but choos-

1 ing different spatial orientations to express different viewpoints at different
 2 moments of speaking is a dynamic online depiction of metaphorical thoughts.
 3 The gesture in Example (3) manifests that it is the hitting and punching aspect
 4 of treating someone badly that is activated and salient. The hold-an-object ges-
 5 ture in Example (1) is frequently produced, but the OBJECT concept can be
 6 realized in another imagistic form—the cupped palm-up open hand gesture in
 7 Example (2)—to highlight the quantifying aspect of the concept, while the
 8 same linguistic metaphor is used for another purpose—characterizing the tar-
 9 get referent.

10 Finally, the parallel metaphorical mappings of gesture and language bring us
 11 to the discussion about the relationship between gesture and language. This
 12 issue has been studied in different lines of research. Armstrong and Wilcox
 13 (2007) and Wilcox (2008) propose an evolutionary link between them, in that
 14 the origins of human language can be traced to visible gestures. The neural
 15 integration of gesture and speech is supported by many neurolinguistic studies
 16 using neuroimaging techniques, among which Özyürek et al. (2007a) fMRI
 17 study shows that action and language processing share a high-level neural in-
 18 tegration system: Broca's area can be modulated by action processing, and the
 19 premotor cortex can be modulated by the language context including physical
 20 actions. Gallese and Lakoff (2005) find that observing a metaphoric gesture
 21 may activate certain motor regions of the brain that could be linked to the em-
 22 bodied source domains of many metaphoric concepts. Lakoff (2008a, 2008b)
 23 also interprets how metaphoric language and metaphoric gesture work in the
 24 brain with respect to the recent findings in neuroscience, such as mirror neu-
 25 rons, neural binding, and convergence zones. The evidence for cognitive link-
 26 age is based on various areas of research including gesture (see the editorial by
 27 Özyürek and Kelly 2007b, and the discussion in Núñez 2008: 94–95 and
 28 Núñez and Sweetser 2006: 19–20). The findings of the present study support
 29 such a cognitive connection between the linguistic and imagistic representa-
 30 tions of metaphors. The question then arises as to whether co-occurring ges-
 31 tures are best considered part of language structure. There is no consensus, but
 32 the findings here support the general view among the studies in *Metaphor and*
 33 *Gesture* (2008) that gesture and language are parts of the same system; “ges-
 34 ture is an inherent part of language—gestures work as signs communicating
 35 thought” (Lakoff 2008a: 284).

36 In the future, novel metaphoric gestures and metonymic gestures are worth
 37 investigating, since they can also reveal people's creativity and dynamism in
 38 conceptualization, and the speaker's focus of attention in real-time multimodal
 39 communication.

40
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1 **Appendix**

2

3 **Gesture and speech transcription conventions**

4

5 Transcription of speech

6

[] speech overlap

7

... (N) long pause

8

... medium pause

9

.. short pause

10

(0) latching

11

@ laughter

12

<L3 L3> code-switch to Taiwanese

13

14 Transcription of gesture

15

16 For the representation of gesture in examples, the lexical affiliate(s), if there
 17 is/are any, is/are in boldface. The description of the gesture(s) is given under
 18 the line of accompanying speech. In each gestural description, if there is a
 19 colon, the word(s) before it represent(s) the linguistic referent a gesture is
 20 associated with; the description of the manual movement comes after the
 21 colon.

22 The time code shown at the bottom of each panel in the figures is expressed
 23 in *hours:minutes:seconds.milliseconds*.

24

25 **Abbreviations of linguistic terms**

26

27 1PL first person plural

28

1SG first person singular

29

2SG second person singular

30

3SG third person singular

31

3PL third person plural

32

BC backchannel

33

CL classifier

34

COP copula verb

35

EXP experiential aspect

36

INCHO inchoative aspect

37

NEG negative morpheme

38

PF pause filler

39

PRF perfective aspect

40

PRT discourse particle

41

REL relativizer

42

RESULT resultative morpheme

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