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Complementary Gestures and Information Types[*]

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This paper investigates what kinds of information can be conveyed by complementary gestures that do not have a direct syntactic and semantic relation with particular linguistic constituents, what discourse functions the gestures have in communication, and how the relationship between gesturing and speaking can help in understanding the organization of information in Chinese daily conversation. The findings show that complementary gestures can convey attitudinal, script-evoked, and topical information. With regard to what all the participants are talking about, these various types of information are not the immediate concern of the participants at the moment of utterance; nonetheless, the complementary gestures provide additional meanings to enrich speech events or maintain the continuity of a topic under discussion.

Key words: complementary gestures, information types, focus of interest, Chinese
discourse

1. Introduction

Hand gestures spontaneously produced in face-to-face interaction can be associated with linguistic constituents. These manual movements play an important role in communication as they work in co-ordination with speech to express meaning. This study examines hand gestures in Chinese daily conversation, which can be illustrated in Example (1). The subject for talk in Example (1) is the way in which Speaker A's part-time job at the library was so hard: the speaker had to send a document to a number of different places, from the library to the Administration Building, then back to the library, and then to the Social Sciences Information Center. The manual forms include iconic gestures for the verbs. First, at the moment of uttering the verb *na* 'take' (IU2, see Appendix B for the definition of Intonation Unit), both A's hands rise from the thighs, and the arms cross at belly level as if to hold a document. Another iconic gesture

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is produced for the verb *song* 'send' at IU3: both hands move to the upper right periphery, conveying the idea of sending a document to the Administration Building. They move back a little for the second mention of the same verb at IU5, depicting the action of sending the document back to the library.

(1) 1 A: … Ranhou wo   jiu%,_
                then   1SG   thus

      2   …(.7) **na** yi ge gongwen,_
                take one CL document

          na 'to take': both hands rise from thighs, and arms cross at belly level

      3   …(.6) **song** dao%,\
                send   to

          song 'to send': both hands move to upper right periphery

      4   …(.7) xingzhengdalou,_
                Administration Building

      5   …(.6) **Song** huilai,\
                send   back

          song 'to send': both hands move back a little

      6   … Song qu shezizhongxin,_
              send   to   Social Sciences Information Center

      A: 'Then I took a document, and sent (it) to the Administration Building. (After that I) sent (it) back (to the library). (Then I) sent (it) to the Social Sciences Information Center.'

The gestures being discussed in Example (1) all rest upon their respective lexical items for interpretation. However, some manual forms are not affiliated with speech. In the following Example (2), Speaker A is complaining about her former roommate, who often stayed out overnight and sometimes might come back at six in the morning and knock at the door. The idea of opening the door for the roommate is not realized in speech, but rather expressed by hand movements after uttering the causal clause about starting her part-time work at eight in the morning (IU13): both of A's hands rise from the thighs to waist level and her right hand sweeps weakly to the right periphery, as if to open the door while she was not fully awake. This example illustrates that gesture and speech can be complementary in conveying information. The linguistic information alone does not always provide a complete view of the message that the speaker intends to communicate; "gestures are an integral part of language as much as are words, phrases, and sentences" (McNeill 1992:2).

(2) 1 A: … (.7) Ta   jiu%,\
                    3SG   then
     2   … (.8) <A chuqu A>,_
                               go out
     3   ..Ranhou <A jingchang wanshang hen   wan huilai A>,\
                    then   often   at night   very   late   come back
     4   ..Buran   jiushi%,_
                    or else   that is
     5   … zaoshang   cai   huilai,_
                    morning   then   come back
     6   …(.5) Na   wo   ye   bu   zhidao weishenme?\
                          PRT   1SG also NEG know   why
     7   …(.5) <P Ranhou wo   jiushi%,\
                              then   1SG   that is
     8   … a   jiu   shui   shui P>,\
                    PRT   then sleep sleep
     9   ..Youshihou zaoshang liu dian zhong,\
                    sometimes   morning   six CL   o'clock
    10 B: …(.5)<PP M PP>,_
                          Mm
    11 A: (0)Ko%   ko%   ^ko%,\
                    knock   knock   knock
    12   …(.6)<HI aiyo= HI>,/
                              PRT
        ((2 IUs omitted))
    13   … Yinwei   wo   ba   dian yao   dagong=,_
                    because   1SG   eight CL   have to do part-time work

    at the end of the clause/IU: both hands rise from thighs to waist level, and right
    hand sweeps weakly to right periphery

    A: 'She then went out. Then, (she) often came back very late at night. Or else,
        (she would) come back in the morning. Well, I didn't know why. Then, I just
        slept and slept. Sometimes, (she) came back at six in the morning,'
    B: 'Mm.'
    A: '(she) knocked and knocked and knocked (at the door). ((2 IUs omitted)) I had
        to start (my) part-time work at eight.'

'Complementarity' is a term used by McNeill (1992:13) to characterize the fact
that "[s]peech and gesture refer to the same event and are partially overlapping, but the
pictures they present are different." McNeill's example is: at the moment the speaker
utters 'she chases him out again', "speech conveys the ideas of pursuit and recurrence
while gesture conveys the weapon used (an umbrella)" (ibid.). In other words, the form
of the speaker's hand in a shape as though to grip something is not coordinated with any

lexical item, and the utterance is grammatically complete without the gesture. This kind of gesture has also been mentioned in other studies. Bavelas et al. (1992, 1995) identified a type of conversational manual forms named 'interactive gestures'. They are used to address to other participants and function "to aid the maintenance of conversation as a social system" (Bavelas et al. 1992:470). Within this category, some gestures have parallel verbal references but some do not. Moreover, 'pragmatic gesturing' in Kendon's (1995:247) study "expresses aspects of utterance structure, including the status of discourse segments with respect to one another, and the character of the 'speech act' or interactional move of the utterance." The gestures at issue refer to the conventional emblems. Finally, Church & Goldin-Meadow (1986) investigated the mismatches between gesture and speech in children's explanations of a concept. The 'discordant' children in their study "produced many explanations in which the information conveyed in speech did not match the information conveyed in gestures" (ibid: 43). Again, some gestures of this kind had linguistic references, whereas the others "conveyed more information than was conveyed in speech" (ibid: 51). Because of different perspectives and research purposes, gestures that lack references in speech have been categorized in various ways together with those having references. They were not singled out for analysis and discussion.

In the present study, spontaneous hand gestures that are not associated semantically with any particular linguistic constituents in their accompanying clauses are called 'complementary gestures'. They are idiosyncratic and spontaneous with a context-dependent meaning and use. The study examines what kinds of information can be conveyed in the gesture modality alone, what discourse functions the complementary gestures have in communication, and how the relationship between complementary gestures and speech can help in understanding the organization of information in Chinese daily conversation.

The next section introduces the database used in this study. Section 3 investigates the types of information and functions carried by complementary gestures. Based on the findings, §4 will discuss the organization of information in communication, followed by a conclusion in §5.

2. The database

The data used here include four casual, unpremeditated, multi-party conversations which took place in 1994 and 1995 among college students who knew each other. The subjects were free to find topics of common interest; they were not told the particular focus of the research. The subjects were filmed for approximately an hour, with a visible camera and in full-body shot. One section from each conversation, about twenty

minutes of talk, in which students were more comfortable in front of the camera, was then extracted. Gestures were analyzed on computer, using MediaStudio Pro, a program package which features frame-by-frame advance and varying slow-motion capabilities with no muting, so that the sound could be heard as the images were advanced. Thus, movement at a given moment in time could be matched with a simultaneously uttered syllable or with silence.

According to McNeill (1992:83), there are mainly three phases of gesticulation: 'preparation', 'stroke', and 'retraction'. The preparation phase (also known as 'onset') refers to "the limbs mov[ing] away from their rest position to a position in gesture space where stroke begins." In the stroke phase, "the meaning of the gesture is expressed" (ibid.). Finally, the retraction phase is the "return of the hand to a rest position" (ibid.). In the examples of the present study, only the obligatory stroke phase is described in words; the linguistic expression that synchronizes with the gestural stroke is underlined and in bold.

In the database, there are other kinds of gesture that also carry information not conveyed in speech. First, some gestures were used to make the meaning of the associated constituents clear. The iconic gesture in Example (3) clarifies what the accompanying pro-adverb *zheme* 'like this' (IU4) means in discussing the size and height of a gas can. Speaker B, at the time she utters the first syllable *zhe* of the pro-adverbial *zheme*, raises her right hand to shoulder level with the palm open and facing downward while her left hand is at waist level with the palm open yet facing upward. The distance between the palms thus represents the height of a gas can.

(3) 1 A: …Shenme shi   wasi^guan?\
               what   COP   can of gas

     2 C: …Jiu   shi   xiao   guan   <A zheyangzi% A>,_
               EMP   COP   small   can   like this

     3 A: (0)<P Duo xiao% P>?\
                 how small

     4 B: …(.9)**<u>Zheme</u>** gao   ba,\
                like this   high   PRT

         zheme 'like this': right hand raises to shoulder level with palm open and downward; left hand is at waist level with palm open and upward

         A: 'What is a can of gas?'
         C: '(It) is (a) small can.'
         A: 'How small?'
         B: 'About this high.'

Second, gestures can also replace covert arguments. In Example (4), as the participants are talking about how using the same kind of shampoo continuously will make people lose hair, Speaker B asks A if she has the same problem (IU6-7). The question involves an unrealized argument—the 'direct object' of the verb *diao* 'lose' (IU7). Although the referent of the direct object, 'hair', is not verbalized, it can be understood by means of two deictic gestures: A's right index finger points at her own hair on the right side while uttering *you* 'have', and then points at her hair on the left side while producing the first syllable *kai* of the verb *kaishi* 'start'.

(4) 1 B: … Ruguo   ni   yizhi   yong   a,_
                if   2SG   continuously   use   PRT
    2   ..ranhou,\
                then
    3   … kai[shi%],\
                start
    4 A: ..[m=],/
                Mm
    5 B: ..toufa jiu   hui   ^diao,\
                hair   then   will   lose
    ((6 IUs omitted))
    6   …<F Ni   <A xianzai% A>F>,\
                2SG   now
    7   ..**you** mei   you   **kaishi** zai   diao?\
                have NEG have   start   PROG   lose

you 'have': right index finger points at own hair on right periphery

kaishi 'to start': right index finger points at own hair on left periphery

    8 A: ..Meiyou   a,\
                NEG   PRT

B: 'If you keep using (the same kind of shampoo), then (you would) start…'
A: 'Mm.'
B: 'losing (your) hair. ((6 IUs omitted)) Now, are (you) starting to lose (hair)?'
A: 'No.'

Finally, some gestures not bound to any constituents can function to address somebody, as exemplified by the interaction in (5). The conversational topic is shampoo, and Speaker C is telling what she knows about the green Vidal Sassoon shampoo, so the subject of the first clause (IU1-2) is the first person singular *wo*. To present the information particularly to Speaker A, C points at the addressee with her left index finger at the time she utters the pronominal form *wo* 'I'. Hand movements of this kind were categorized as 'interactive gestures' by Bavelas et al. (1992, 1995).

(5) 1   C: …**Wo** <A   zhidao% A>,\
              1SG   know

          wo 'I': left index finger points at A

     2   ..lüse   shaxuan   shi   ganma   de   la,\
                green   Vidal Sassoon COP   do:what PRT   PRT
     3   ..Wo   tongxue   shuo%,_
                1SG   classmate say
     4   .. lüse   shaxuan   shi   gei,_
                green   Vidal Sassoon   EMP   for
     5   ..<A na   zhong   meitian   xitou   de   ren   yong A>.\
                    that kind   every day   wash:hair   DE   people   use
     6   A: ..Zhende a=?/
                really   QST
     7   C: …^Dui,\
                right

          C: 'I know what (the) green Vidal Sassoon (shampoo) is. My classmates said (the)
               green Vidal Sassoon is for the kind of people who wash (their) hair every day.'
          A: 'Really?'
          C: 'Right.'

All the various uses of gesture mentioned above were excluded in the present study, since the manual forms are either bound to particular lexical items, be it overt or covert, or the gestured addressing function is not directly related to the content of talk. The complementary gestures to be studied here are not associated with any lexical constituents in their immediate clausal contexts; nor do they substitute for any missing arguments. Utterances are grammatically complete without the complementary gestures. Although the gestural information is not encoded in speech, it is still part of the message.

Since complementary gestures do not parallel meaning that is expressed in words, their context-dependent meanings and uses were checked and confirmed by three analysts.

3. Types of information conveyed by complementary gestures

Despite the fact that the idea expressed by a complementary gesture is not realized linguistically, as in Example (2) in the hand movement of opening the door produced by Speaker A, the interpretation of the gesture is still based on the literal verbalization of the speech event at issue. The conveyed information is explicit in context. Then, what kinds of information would speakers convey only by gesturing? And, what discourse functions do the gestures have in communication? These questions will be discussed in this section.

3.1 Attitudinal information

The following example (6) has to do with shampoo. What Speaker B explains in IU1, 3 and 4 is that she used a particular brand of shampoo because there was a bottle at home. The clause in IU4 does not indicate her attitude toward the event of using the shampoo. It is rather depicted by a complementary gesture: both the speaker's elbows move outward while uttering the verbs *na* 'take' and *yong* 'use', signifying that using that kind of shampoo was 'nothing'.

(6) 1 B: …Fanzheng%,\
            anyway
     2   …w% --
            REPAIR
     3   …wo   jia   jiu   you   yi   ping   a,/
            1SG home EMP have one bottle PRT
     4   …<A Wo [jiu A> **na**lai **yong** a],\
            1SG then   take   use   PRT

        na 'to take' & *yong* 'to use': both elbows move outward

     5 A: [Oh   oh=]./
            PRT   PRT
     6 B: …(.7) Ranhou   wo   juede%,_
            then   1SG   feel
     7   ..hai   bucuo,\
            still NEG:bad

        B: 'Anyway, there was a bottle (of shampoo) at home. So, I used (it).'
        A: 'Uhuh.'
        B: 'And then, I thought (it) was not bad.'

Example (7) includes another attitudinal gesture that is not tied to any verbal component of the utterance. During a discussion about foreigners dining at a Chinese restaurant, what Speaker A tells is that two Chinese of Mainland origin considered the habits of foreign people strange. The contemptuous attitude of the Chinese, again, is only conveyed manually, as the speaker's left hand sweeps outward once while producing the nominal *waiguoren* 'foreigner' (IU9).

(7) 1   A: …Jiushi ta   zai   nage,_
               that is 3SG   be.at   that
    2   ..zhongguocheng   ma,_
             Chinatown   PRT
    3   …Ranhou jiu   you   liang   ge%,_
             then   then   there.be   two   CL
    4   ..waishengren   na   zhong,_
             Chinese of Mainland origin   that   CL
    5   ..yijing   yimin   hen   jiu   [le],\
             already   emigrate very   long   PRF
    6   B: [m   m=],_
             BC   BC
    7   A: ..<A ta   shuo% A>,\
               3SG say
    8   ..zai na   ge   zhongguo   caiguan   zai   nabian,\
             at   that CL   Chinese   restaurant at   there
    9   ..tamen   ^**waiguoren**   a,\
             3PL   foreigner   PRT

         waiguoren 'foreigner': left hand sweeps outward

    10   ..xiguan   jiushi   guai.\
             habit   EMP   be.strange

         A: 'That is, she was at the Chinatown. Then, there were two Chinese of Mainland
              origin, the kind that had been emigrated (to the US for) a long time.'
         B: 'Mm.'
         A: 'She said (that) at the Chinese restaurant (the Chinese said) the habits of the
              foreigners were strange.'

The two gestures in these two examples are not emblems because they are not standard forms like 'okay', and their interpretations rest upon the linguistic contexts (see the definition of emblems in Ekman & Friesen 1969 and Goldin-Meadow 1999). The attitudinal information being gestured is comparable to linguistic attitudinal adverbials. Nevertheless, the gestures do not substitute for any covert constituents of the accompanying clauses. Without relating to any overt lexical constituents, complementary gestures of this type function to add to the total meaning of the speech event as a whole.

3.2 Script-evoked information

The second type of information that also embroiders the entire speech event is evoked by a script being mentioned linguistically in the context. Scripts are stored knowledge that consists of sequences to guide people to move from one activity to

another (Schank & Abelson 1977). People having knowledge of a script are familiar with the sequence of events involved in a particular situation. In communication, such knowledge can be expressed just by gesturing.

The subject for conversation in the following example (8) has to do with food utensils. What the speakers are discussing are the different kinds of utensils that can be used to serve food at a departmental gathering, including *jiazi* 'food tongs' (IU2), *kuaizi* 'chopsticks' (IU6), and *tangpiao* 'soup spoons' (IU10). The things that people do with these various kinds of tools is the familiar knowledge stored in the script of 'using food utensils', and this knowledge is activated by the concepts being verbally represented by the nominals *jiazi*, *kuaizi*, and *tangpiao*. The script-evoked information is depicted by three complementary gestures produced by Speaker A. The first is produced while uttering the first syllable *tang* of *tangpiao* 'soup spoon': the speaker's right hand moves downward from chest level to form a bowl shape as if to dish the corn up with a soup spoon. The second gesture occurs when *shengcai* 'lettuce' is verbalized (IU12): the speaker, whose right index finger and middle finger have already formed a chopstick gesture at IU11, starts moving the fingers forward and downward to depict picking up vegetables with chopsticks. The last gesture takes place at the moment of uttering the modal *keyi* 'can' within the same IU12: the speaker moves the chopstick gesture back to depict putting the lettuce onto her own plate. In this example, the participants are talking about soup spoons and chopsticks. What people do with these two kinds of food utensils is script-evoked information being expressed in the gesture modality alone.

```
(8)  1   B:  …Ni    keyi,\
                 2SG   can
     2       ..duo    nong   ji    zhi   jia[zi       a]._
                more   get    few   CL    food tongs   PRT
     3   C:  [Qi- --
                 REPAIR
     4       ..qu   nali]   ^nong?\
                go    where   get
     5   A:  …Wo    juede% --
                 1SG   think
     6       ..yong   kuaizi,\
                use     chopstick
         ((2 IUs omitted))
     7       …(1.1)Yinwei   ni    kan%,\
                     because   2SG   see
     8       …xiang%,\
                 like
     9       ..^yumi   na    zhong   dongxi,_
                corn     that   kind     thing
```

10   …jiu   yong   **tangpiao**,_
           then   use   soup spoon

tangpiao 'soup spoon': right hand moves downward from chest level

11   …(.7)Ranhou%,\
          then

ranhou 'then': right index finger and middle finger form chopstick gesture

12   …**shengcai** **keyi** yong   kuaizi.\
           lettuce   can   use   chopstick

shengcai 'lettuce': chopstick gesture starts moving forward and downward

keyi 'can': chopstick gesture moves back

B: 'You could get more food tongs.'
C: 'Where (can I) get (them)?'
A: 'I think (you can) use chopsticks, ((2 IUs omitted)) because, you see, for the kind of thing like corn, (you can) use soup spoons. Then, (for) lettuce, (you) can use chopsticks.'

In Example (9), Speaker B tells how she could not find her friend's article in the journal of Cheng Kung University. There is a lot of knowledge stored in this 'find-an-article-from-a-school journal' script that is partly verbalized and partly gestured. The utterances have to do with her requesting a cousin to borrow for her a particular issue of the university journal (IU1, 2, and 3), having borrowed the issue (IU4), then realizing that the article that she had thought would be in it was not there (IU5). Before learning that the article was not included in the journal, the first thing the speaker needed to do was to open it to check. The knowledge that guides the speaker to perform the action is included in the script, and evoked by the first two actions being verbalized by the two clauses in IU1, 2 and 3. The evoked information, again, is conveyed by a complementary gesture: at the time the negation word *meiyou* is produced (IU5), both of Speaker B's hands rise up to the front of the chest with closed fingers, appearing to hold the university journal. Then, the hands move side-to-side, as if opening the journal to check.

(9) 1 B: …Wo   baituo   wo   biaoge,_
              1SG   request someone to do a favor 1SG   cousin
      2   ..qu bang wo   gen%,/
              go   help   1SG   with
      3   …chenggong   de   ren   ^jie   ma.\
              Cheng Kung University DE people borrow   PRT
      4   …Jieguo   jiedao   na yi qi   a,_
              as a result borrow.ACMPL that CL issue PRT

5 …(1.)**Meiyou** ta de zuopin,\
     NEG.have 3SG ASSC work

meiyou 'do not have': both hands rise up to chest front with closed fingers, then move side-to-side

B: 'I requested my cousin to do me a favor: to borrow (the journal of Cheng Kung University) from a student of Cheng Kung University. As a result, (he) borrowed that (particular) issue, (but) his work was not (included).'

The script-evoked information, just like the attitudinal information, is not incorporated into the associated utterances. Moreover, the complementary gestures mentioned in Examples (8) and (9) do not embroider single utterances, but enrich both of the entire speech events of choosing food utensils and of looking for an article.

3.3 Information that maintains the continuity of topic

The last of the three types of complementary gesture found in the database carries information indicating the continuity of a topic at issue. The gestural information is the topic *per se*, rather than the information related to the topic of discourse as conveyed by 'topic gestures' in Bavelas et al. (1992).

In daily interaction, conversation proceeds as people bring up different topics. Once a topic is established, the participants talk about it with orientations, descriptions, and elaborations. In Example (10), the subject for talk is wearing long hair in high school. After the topic has been brought up by the question in IU1 and 2, what Speaker A informs the other participants is that not until senior high could students at her school wear long hair (IU4). The topical referent *toufa* 'hair' is not verbalized but rather gestured: the speaker's left hand touches her own long hair on her right shoulder at the time she utters *gaozhong* 'senior high'.

(10) 1 B: ….Nimen guozhong toufa,_
       2PL junior high hair
    2   ..keyi liu name chang ma?/
        can wear such long QST
    3 C: …Keyi.\
        can
    ((2 IUs omitted))
    4 A: ..Women dao **gaozhong**./
        1PL till senior high

gaozhong 'senior high': left hand touches own hair on right shoulder

B: 'Could you wear such long hair in junior high?'
C: '(We) could.'
((2 IUs omitted))
A: 'We (could do that only when we went to) senior high.'

In Example (11), Speaker C brings up the topic of hitting cockroaches in the first clause (IU1-4). This topical idea is manually performed as Speaker C's right hand with closed fingers at chest level sweeps downward to signify the hitting action while uttering the nominal *zhanglang* 'cockroach' in IU3. Then, she elaborates a lot on this topic, sharing her experiences of using different things to hit cockroaches, consisting of *tuoxie* 'slippers' (IU5), *yi ge hen zhong de shu* 'a heavy book' (IU7), *baozhi* 'a newspaper' (IU9), and *bijiao chang de dongxi* 'things that are comparatively long' (IU11). While mentioning the final object in IU11, it is the idea of holding a long thing that the speaker is uttering. The topic of hitting the cockroach is rather conveyed manually: at the moment the adjective *chang* 'long' is produced, C's right hand descends from the face to the shoulder with the fingers curled, sweeping downward to depict the hitting action.

(11) 1 C: (0)^Wo   yiqian   ^gan,\
              1SG   before   dare
       2   …jiushi   nage%,_
              that is   that
       3   ..zhanglang   s- --
              cockroach   REPAIR
       4   …ba   ta   ^dasi,\
              BA   3SG   hit to death
       5   ..Na   tuoxie   dasi,\
              take   slipper   hit to death
           ((25 IUs omitted))
       6   …Buran   jiu   diu   yi   ge%,_
              or else   then   throw   one   CL
       7   …hen   zhong   de   shu,\
              very   heavy   ASSC   book
           ((5 IUs omitted))
       8   …Yaoburan   jiu%,\
              or else   then
       9   …zhao   baozhi   a,_
              find   newspaper   PRT
           ((28 IUs omitted))
       10   …Wo   dou   hui   na%,_
              1SG   all   will   take

11	…bijiao	^**<u>chang</u>**	de	dongxi,_
	comparatively	long	DE	thing

chang 'long': right hand descends from face to shoulder with fingers curled, and sweep downward

12	…Wo	juede	zheyang,/
	1SG	think	like this

13	…bijiao%..	^yuan,\
	comparatively	far

14	…Jiu	bu	hui,\
	thus	NEG	will

15	…^kan-dao,\
	see:ACMPL

C: 'I used to dare to hit cockroaches before. (I) used slippers to hit (them) to death. (25 IUs omitted) Or else (I would) throw a heavy book. (5 IUs omitted) Or else (I would) find a newspaper. (28 IUs omitted) I would take something longer. By doing this, I think, (I would be) farther away (from the cockroach). (I) thus would not see (them).'

McNeill & Levy (1993:364) claim that "linguistic elements that are continuous with their context are at times accompanied by gesture… [to] maintain continuity with respect to their location in space, handedness, and/or form." The topical ideas mentioned in this section, namely 'wearing long hair' in Example (10) and 'hitting cockroaches' in Example (11), though not being expressed in words, are gestured to maintain their continuity, reminding the participants of the subject matter under discussion while talking about another, though related, theme.

This section has discussed three types of information carried by complementary gestures that neither correspond to any overt lexical constituents, nor substitute for covert constituents. Yet, their meanings and functions are fully understood in context. Their occurrences provide evidence that not everything that a person intends to communicate has to be expressed in speech. As far as the present corpus is concerned, the gestural channel alone can express attitudinal, script-evoked, and topical information that functions to provide additional meaning for an entire speech event or to maintain the continuity of a topic at issue. Based on these findings, the next section will discuss what complementary gestures can tell us about the organization of information in communication.

4. Organization of information in discourse

Why does a speaker produce complementary gestures? This can be accounted for

with respect to how the speaker organizes information. In daily face-to-face conversation, the most common type of linguistic activity is to 'communicate information', talking about events concerning time, place, participants, and states-of-affairs. The speaker has to make a choice and provide the information relevant to the discussion among the participants. Information is also organized into various types and conveyed either in words or by gesturing. These two channels of communication form three ways through which different kinds of information can be expressed. The first way to convey information is via the linguistic channel exclusively, not using gesture as part of the utterance.

The second way is using gesture as a way of expressing something similar to what is expressed in the associated speech. Many previous studies have provided evidence that the use of gesture can tell the way speakers organize information, since manual movements can mark different units of talk in discourse. Based on storytelling data, McNeill (1992:93) finds that "iconics occur overwhelmingly in narrative clauses, while beats can occur in both narrative and extranarrative clauses … abstract pointing occurs chiefly with narrative clauses, whereas metaphorics appear chiefly with extranarrative clauses." Bavelas et al. (1992:473) distinguish 'topic gestures' and 'interactive gestures' in conversation to characterize, respectively, the information directly related to the topic of discourse, and the information referring "to some aspect of the process of conversing with another person." They further suggest that interactive gestures may function to cite the other's previous contribution, to seek agreement, understanding, or help, to deliver new versus shared information, and to present events around the speaker turn. With respect to 'communicative dynamism', Levy & McNeill (1992) and McNeill & Levy (1993) show that the quantity and complexity of gestures would increase along with complex linguistic expressions as the information conveyed by the utterances functions to push the communication forward. Concerning given and new information, McNeill & Levy (1993:365) suggest that "gestures tend to occur at points of topic shift, such as new narrative episodes or new conversational themes … highly presupposed linguistic elements would either lack gestures entirely, or would be accompanied by gestures that are specialized for their cohesive function or form." Finally, Kendon (1995:247), based on Southern Italian conversation, differentiated 'substantive gesturing' from 'pragmatic gesturing', in that "[the former] contributes to various aspects of the content of the utterance of which it is a part, whether literally or metaphorically… [whereas the latter] expresses aspects of utterance structure." He further identified two 'discourse unit marker gestures' that mark 'topic' and 'focality' of what is being said respectively. In Chinese discourse, Chui (2005) finds the distinction between foreground and background information in the use of iconic gestures. First, speakers incline to gesture for new information in topical clauses. The temporal patterning of iconic gestures and the

associated new referents serve to further distinguish topical and non-topical information, in that either onsets or strokes would come before topical referents to signal that the upcoming new information is noteworthy and deserves attention. In short, people use manual actions in different ways to distinguish various aspects of information conveyed by the utterances.

The third way to express what the speaker has chosen to talk about is including gesture in the utterance but expressing something in gesture that is not expressed in the speech. Section 3 has already discussed three types of information depicted by complementary gestures. The reason why they are gestured without concomitant speech lies in whether the information is being organized and presented as the 'focus of interest'. The linguistic contexts provide evidence that the attitudinal, script-evoked, and topic-maintaining information depicted by complementary gestures is not the focus of interest, because it is not the immediate concern of the participants at the time the gesture is produced. What the speakers are focusing on is what they are uttering. In Examples (6) and (7), the common interests of the participants are different brands of shampoo and the habits of foreigners respectively, so Speaker B's attitude toward a particular brand and the two Chinese's attitude toward foreigners are subsidiary and conveyed by gesturing. Similarly, the gestured script-evoked information is also not the center of interest: in Example (8) the speakers focus on the different kinds of food utensils to be used at a departmental gathering, rather than on how to use the utensils as gestured. In Example (9), the focus of interest is whether Speaker B can find her friend's article in the Cheng Kung University journal. The gestural information indicating opening the journal to check is irrelevant to the talk. Finally, once a topic has been set up, speakers would talk about it with a new focus. In Example (10), the center of attention in speaker B's utterance is 'the time', rather than the topic 'wearing long hair'; the center of attention in Speaker C's turn in Example (11) is 'the things', instead of the topic 'hitting cockroaches'. Not being organized and presented as the focus of interest, the topical information can be expressed by complementary gestures.

5. Implications

While information being conveyed in communication can be organized and presented in various ways, the findings of the present study bear out a distinct way of organizing the speaker's ideas into different units of talk with respect to 'focus of interest'. Whether the information is the focus of interest or not is negotiated and determined by the participants in the linguistic interaction; the utterances indicate what the immediate common interest of the participants is. Two channels of communication have been shown to work together and show a 'division of labor' in conveying these

two aspects of information. Complementary gestures further contribute to adding more information to enrich a speech event and maintaining the continuity of a topic. In the future, I hope that data of various kinds are available to attest to the findings reported here.

Finally, speech and gesture are now widely accepted as different manifestations of a single underlying process of utterance production. Nevertheless, there are different views toward the cognitive unity of speech and gesture. Kendon (1983:19) holds that speech and gesture are separately generated; both may represent "different *aspects* of the single conceptual unit by which they are being guided." Butterworth & Hadar (1989) claim that gestures are also very closely linked to speech production, but that both share more than one computational stage. De Ruiter (2000) proposes the Sketch Model for gesturing, assuming that gesture and speech are part of the same communicative intention, and are planned by the same process. He extends Levelt's (1989) model of speech production to incorporate the processing of gesture. McNeill & Duncan (2000) claim that the same idea unit from which both gesture and speech originate from is a *growth point* which combines both imagery and linguistic content. Contrary to McNeill and Duncan, Kita (2000) regards gesture and speech as conceptually parallel but basically separate streams of cognition. Speech is concerned with analytic thinking; gesture, spatio-motoric thinking. In short, these various cognitive models of gesture-speech integration are mainly concerned with whether gesture and speech constitute single idea units, or whether they are separate yet closely related units. However, formulating a computational model of gesture-utterance performance that simulates the way Chinese speakers use complementary gestures along with speech in face-to-face communication also requires the linguistic details. It is also my hope that the linguistic details provided in the present study can contribute to the modeling of complementary gestures and speaking in Chinese discourse.

Appendix A: Abbreviations of linguistic terms

1PL	first person plural
1SG	first person singular
2PL	second person plural
2SG	second person singular
3PL	third person plural
3SG	third person singular
ACMPL	accomplishment aspect
ASSC	associative morpheme
BA	the morpheme BA
BC	backchannel
CL	classifier
COMPARE	compare morpheme
COMPL	complementizer
COP	copula verb
DLM	delimitative aspect
EMP	emphatic adverbial
EXP	experiential aspect
NEG	negative morpheme
PF	pause filler
POSS	possessive
PRF	perfective aspect
PROG	progressive aspect
PRT	discourse particle
QST	question particle
REPAIR	repair phoneme(s)
SELF	reflexive morpheme

Appendix B: Transcription conventions

An 'Intonation Unit' (IU) is defined as a stretch of speech uttered under a single coherent intonation contour, which tends to be marked by a pause, a change of pitch, and a lengthening of the final syllable (Du Bois et al. 1993).

Units
    {carriage return}   intonation unit
    --   truncated intonation unit
    {space}   word
    -                          truncated word

Speakers
    :   speaker identity/turn start
    []   speech overlap

Transitional continuity
    .   final
    ,   continuing
    ?   appeal

Terminal pitch direction
    \\   fall
    /   rise
    _   level

Accent and lengthening
    ^   primary accent
    =   lengthening

Pause
    ...(N)   long
    ...   medium
    ..   short
    (0)   latching

Vocal noises
    (H)   inhalation
    %   glottal stop
    @   laughter

Quality
    <@   @>   laugh quality
    <A   A>   allegro: rapid speech
    <P   P>   piano: soft
    <DIM   DIM>   diminuendo: gradually softer

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補足手勢與訊息類型

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　　在中文會話中所使用的「補足手勢」跟說話內容沒有直接的語法和語意關係，但這類手勢也傳達訊息。本研究主要探討補足手勢傳達什麼類型的訊息、補足手勢的語用功能，以及訊息結構。研究發現補足手勢可以傳達沒有說出的訊息包括：對談論事件的態度、談論事件所引發的相關訊息，和表達主題。根據參與者正在交談的內容，雖然這些訊息都不是當下的談話焦點，補足手勢卻能提供更多的意義，豐富事件談論的內容，也能維持主題的連續性。

關鍵詞：補足手勢，訊息類型，談話焦點，中文言談篇章