Metaphor, gesture, and thought

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Introduction

How can a gesture be metaphoric? We will begin to answer the question by considering a gesture that was famously set in stone. The image in Figure 1 is that of a statue of Vladimir Lenin, the Russian revolutionary that founded the Soviet Union.

![Lenin Statue pointing toward the “bright future” of communism](Source: Wikipedia.org)

This particular statue stands in Vladivostok and similar statues were located in most major cities throughout the USSR and Eastern Europe in their communist era. On this statue, the right arm is extended forward, and the hand is also extended, pointing forward with the index finger. Other Lenin statues with the outstretched arm have the hand in a different orientation, some thumb up with a vertical palm, some palm down, and others palm facing-up with an extended hand. The general image of the Lenin statue as pointing ahead was so prevalent that it became common for foreign tourists to have their picture taken below such statues, mimicking the same forward pointing gesture. One need only conduct an image search on the internet for “lenin statue” to get a sense of the many occurrences of this representation of Lenin. But why is Lenin’s hand extended forward?
While there are multiple interpretations, including the evocation of religious iconography (Bonnell 1997: 144), a standard explanation is that Lenin was indicating the “bright future” of communism. As Bonnell (1997: 145) describes a painting of Lenin in the same position, “The position (arm and hand outstretched ...) suggests forward movement — pointing in the direction of the future...” Thus the statue can be seen as frozen in the midst of producing a gesture that metaphorically indicates the future as located ahead. This is a metaphor common to many cultures, as explained below, and has been researched extensively as a conceptual metaphor dating back to Lakoff and Johnson (1980). In the Soviet state, it held special status in connection with the utopian vision of the future. Holz (1993: 74) notes that the Soviet government’s Five Year Plans “conceived of contemporary existence — the ‘is’ — as a permanent progress towards future socialist happiness — the ‘will be’.” For the same reason, statues of Kim Il-Sung in a similar pose, pointing ahead, can be found in cities throughout North Korea.

The gesture of pointing ahead to indicate the future is not unique to the gestures of human figures in stone; it also occurs in the spontaneous gesturing of living humans while speaking, the kind which will be focussed on in this chapter. For example, Calbris (1990: 87) observes that in French and other European cultures, the future can be indicated by “a forward leap of the hand or forefinger (Two-and-a-half million unemployed * very soon),” with the timing of the gesture indicated by the asterisk (*). Similarly, postponing an activity to a future can time be indicated gesturally by a movement forward of the hand or forefinger: “We can’t put it off * until next week” (ibid.; and see Calbris 1985 for more detail). Such use of gesture spontaneously in these contexts suggests that gesture is another form of human behavior in which we may see (in the multiple senses of that word) the expression of metaphors.

These few examples offer a glimpse of the relevance of studying gesture in relation to thought, both individual thought and ideas shared by cultural groups. More specifically, they indicate the high relevance of gesture research for the study of metaphor in relation to thought. In this chapter we argue that careful analyses of gestures provide support for the assumption that metaphor is a general cognitive principle and that metaphoric mappings may be processed on-line. We will report on empirical observations which document moreover that on-line metaphoric thought is highly creative, flexible, and culturally variable. In a nutshell we will suggest that metaphoricity is inherently dynamic and — ultimately and unquestionably — a form of embodied cognition.
At the end of this chapter we will provide a more systematic outline of how the study of gesture is relevant to this topic. But first we need to clarify our understanding of what constitutes a metaphoric gesture, and how metaphoric gestures may relate to speech.

What is a metaphoric gesture?

Metaphoric gestures have typically been conceived of as movements of the hands that represent or indicate the source domain of a metaphor (e.g., Bouvet 2001; Calbris & Porcher 1989; Calbris 1990, 2003; Cienki 1998, forthcoming; McNeill 1992; McNeill, Cassell, & Levy 1993; McNeill & Levy 1982; Müller 1998a, 2004b; Núñez & Sweetser 2001; Webb 1997). The first scholar to recognize that gestures may be used metaphorically was, however, the psychologist Wilhelm Wundt. He called gestures that transfer concepts from one domain to another “symbolic gestures,” and offered as an example the use of spatial gestures to represent temporal concepts (Wundt 1922). "Yet the general character of the symbolic gesture consists in transferring the concepts to be expressed from one field to another one, hence for example to indicate time concepts in terms of space, or to represent abstract concepts as perceptual ones.”¹ Note that this is exactly what our introductory example illustrates: Pointing ahead in space is used to indicate that an abstract object – here ‘the future’ – is situated ahead in time. Space is used to represent time and the pointing gesture which uses space to refer to time is considered a metaphoric gesture (cf. also Kita 2003).

This complements the extensive research on metaphors for time as space expressed in numerous languages of the world (e.g., Traugott 1975; Evans 2004). In many of these languages, though not in all, the future is talked about as being ahead (e.g., Fleischman 1982 on Romance languages; Moore 2000 on the Niger-Congo language Wolof; Shinohara 1999 on Japanese, Yu 1998 on Chinese).

¹ [Translation from German CM]: “Der allgemeine Charakter der symbolischen Gebärde besteht aber darin, daß sie die auszudrückenden Vorstellungen aus einem Anschauungsgebiet in ein anderes überträgt, also z.B. zeitliche Vorstellungen räumlich andeutet, oder daß sie abstrakte Begriffe sinnlich veranschaulicht” (Wundt 1922: 165). Wundt’s concept was taken up by Efron’s (1972/1941) category of ideographic gestures and McNeill’s (1992) concept of metaphoric gestures.
Scholars researching metaphoric gestures have often worked with a further specific ontological assumption, namely that the target domain of gestural metaphors is an abstract one. Hence the gesture would enact or depict the concrete grounds of an abstract concept. Geneviève Calbris (1990: 194-195) who was another one of the first researchers to identify metaphoric gestures, puts it in the following way: “In a way, gesture attests to the metaphor passing from (a) something concrete to (b) the physical representation of something abstract.” She gives the example of a gesture where the two palms facing each other are moved apart: in one context the gesture depicts the broadness of a concrete path, “(a) A path * this wide,“ while in another context it represents the broad range of work which has to be done, “(b) A fairly * extensive work to be put into images.” McNeill (1992: 14) argues along similar lines when contrasting metaphoric gestures with iconic ones: “Other gestures are ‘metaphoric’. These are like iconic gestures in that they are pictorial, but the pictorial content presents an abstract idea rather than a concrete object or event. The gesture presents an image of the invisible – an image of an abstraction.” Müller (1998a) argues that McNeill’s iconic and metaphorical gestures are in fact both equally iconic signs, but what distinguishes them is whether they depict aspects of the referent itself (concrete reference) — which could be an entity, action, or relation — or aspects of the entity, action, or relation in terms of which the referent is being characterized (metaphoric reference).

It is certainly often the case, that metaphoric gestures depict the abstract in terms of the concrete, yet we would like to point out that metaphoricity is not reduced to conceptualizing the abstract in terms of the concrete. Rather metaphor is a cognitive procedure of understanding one thing in terms of another and hence may also apply to two concrete entities – such as for instance characterizing a woman’s body gesturally in terms of an hourglass, or when accounting verbally for all kinds of objects in terms of body parts, as is the case in expressions such as: the foot of a mountain, the leg of a table, or the arm of chair. Therefore we are calling metaphoric gestures the ones which have the potential to engage an active cross-domain mapping, that is — the cognitive process of understanding something in terms of something else (cf. Cienki 1998, forthcoming; Müller 2004b).²

² Cf. Müller’s (2004b) concept of activation of a triadic structure based on Wittgenstein’s concept of “seeing as”, Lakoff’s and Johnson’s “understanding and experiencing one kind of thing in terms of another” (Lakoff & Johnson 1980: 5), and Richards’ cognitive
It is worth an historical aside that the study of human gestures is not restricted to gestural expressions of metaphors. In contrast the concept of metaphoric gestures has played a minor role in 2000 years of gesture studies, while the focus was on expressive, regulating and discursive functions of gestures – from Quintillian to Bulwer to Austin (cf. Kendon 2004; Müller 1998a, 2000, 2002, 2004b, in preparation). Theorists of rhetorical gesture since Quintillian have explicitly neglected and prohibited (!) the use of iconic gestures – because it was essential for the Roman orator to distinguish himself very clearly from the pantomimes who produced pantomimic performances of the ancient Greek dramas for the lower classes (cf. Quintilian: Inst. orat. XI 3, 89). Another important argument made against using and studying iconic gestures was that people who use too many gestures are unable to use vocal language in an adequate way. In other words despite a longstanding tradition of gesture studies, gestures which iconically depict something be it concrete or abstract only garnered the attention of gesture scholars in the 20th century.

It is important to stress that due to its primary focus on expressive and regulatory aspects of bodily behavior, research on nonverbal communication has widely ignored the study of gestures as a companion of spoken language. Hence it is only with the cognitive turn in the eighties and nineties of the twentieth century that co-verbal gesturing was considered a valuable phenomenon to study. Although the pioneering work of David Efron (1972/1941), republished by Paul Ekman, made an important point for the study of gestures, it was only with the studies by Adam Kendon (1980) and David McNeill (1985) that gestures came to be widely recognized not only as ‘illustrators’ of speech (as Ekman’s and Friesen’s (1969) terminology suggests) but as intrinsic parts of an utterance. Kendon (1980: 211) characterizes this role of gestures accordingly “[...] as if the speech production process is manifested in two forms of activity simultaneously: in the vocal organs and also in bodily movement.” It is in the same line of thought that McNeill (1985, 1987, 1989, 1992) then puts forward a radically different theory of language, gesture, and thought, arguing that gestures are verbal, and not nonverbal as implied by the concept of nonverbal communication: “[...] that the whole of gesture and speech can be encompassed in a conceptualization of metaphor as having “[...] two thoughts of different things active together and supported by a single word, or phrase, whose meaning is a resultant of their interaction.” (Richards 1936: 93)
unified conception, with gesture as a part of the psychology of speaking, along with, and not fundamentally different from, speech itself” (McNeill 1985: 351). Since the publication of his monograph *Hand and Mind: What Gestures Reveal about Thought* (McNeill 1992) a few years later, the study of human gestures has turned into a vividly expanding field in psychology, psycholinguistics, artificial intelligence, engineering, cognitive and linguistic anthropology, cognitive linguistics, and more recently also in metaphor theory. Gesture is being studied to gain insights into issues such as the relationship between language and thought, embodiment and cognition, metaphor and thought, the structure of mind, linguistic relativity, thinking for speaking, the cognitive and social processes involved in the development of human semiosis, and the origin and nature of the human capacity for language.

Though we will be focusing here on gesture with spoken languages, one can also find examples of manual gesture in signed languages. Since the signs in a signed language are produced using the hands and forearms (in addition to other body parts), gesture has a different character than it does with spoken language. It is important to distinguish what manual forms, positions, and/or movements constitute canonical elements of the signs of the language and which have been optionally added. Liddell (2003b), for example, observes that properties of certain signs which are gradient in nature can be thought of as gestural, namely: the location of the sign (for pointing or depicting) or the orientation of the sign (for certain verbs) which may be overlaid on some signs (see also Okrent [2002] and Liddell [2003a]). Gestures can also occur interspersed between signs. Emmorey (1999) and Okrent (2002) each give examples of in which signers make a questioning gesture in between two signs of an utterance in American Sign Language. In both cases the gesture is made using two raised open hands (Emmorey glosses the questioning palm-up gesture in her example as “well-what”). While neither author specifically discusses these as metaphoric gestures, one could argue for a metaphorical motivation behind the upward hand position, reflecting the *UNKNOWN* as *UP*. (See Müller [2004a] on the frequent use of this gesture form to express the fact of not knowing, among other uses.) However Okrent (2002: 183) discusses these as “gestures that interrupt the sign stream” rather than as gestures co-occurring with sign. Therefore, in contrast with metaphoric gestures with speech, it appears that spontaneous metaphoric gestures do not occur as *independent* forms that are produced simultaneously with signs.
To summarize: we characterize metaphoric gestures, regardless of the context of their occurrence (sign or spoken language), as voluntary movements of the body which use a cross-domain mapping to express certain thoughts or feelings.

**How metaphoric gestures may relate to speech**

The relationship between metaphor and gesture is not always “straightforward.” Since the details of how and when metaphors are expressed gesturally can give us new insights into metaphor and thought, we will give some attention to the different kinds of relations that have been found between metaphoric gestures and the co-occurring speech.

**The same metaphor may be expressed in speech and in gesture**

Perhaps the least surprising use of a metaphoric gesture occurs when it accompanies an utterance with a verbal metaphoric expression. For example, in a data set recorded by Cienki, consisting of videotaped conversations among American students about what it means for them to take an exam honestly, one participant makes the following observation about some students.

(Ex. 1)

(1a) [And I think that they're willing to **PUSH** their moral **LIM**its, (...)]

(2a) to the **eXTENT**, that they **CAN** or cannot be **LAbelled** cheating.]³

While the speaker made gestures accompanying all of these phrases, let us focus on the two produced with the first transcribed line of speech. In gesture #1a, the speaker forms a fist with her dominant (left) hand, and in #1b she pushes the fist slightly forward. In gesture #2a she...

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³ The following conventions are used in this paper for transcribing speech: capitalization indicates emphasis; ‘(...)’ indicates an ellipsis in the transcript; ‘:’ indicates lengthening; ‘(.)’ indicates micropause; ‘(-)’ indicates a slightly longer pause; ‘/’ indicates rising intonation; ‘\’ indicates falling intonation. In transcribing gestures, ‘[ ]’ indicate the beginning and end of a gesture phrase, and bold type indicates the main stroke phase of a gesture.
changes her left hand shape so that it is half-open with fingers together, making a solid, curved form, palm vertical, facing center space. In #2b she moves the hand shape outward from herself. The speech and gesture describe a scene in which the possibilities for which behaviors can be considered moral are mapped onto the amount of space in which one can physically move. This correlates with the metaphor which Lakoff (1996/2002) and others have analyzed as **MORAL ACTION IS BOUNDED MOVEMENT**. This is the model according to which we understand behavior as motion along a path, and immoral behavior as straying from the path of what is right. (Evidence of how this metaphor has persisted over time can be found in the origins of the word *deviance*, from the Latin spatial meaning of ‘away from the road’ — *de via*.) Extending the potential for evaluating some behavior as moral or not is described here verbally as **pushing a moral limit**, which is shown with the formation and movement outward of the fist. In addition, the notion of **MORAL CONCEPTS AS BOUNDED SPACES** is invoked in speech with reference to **moral limits**. This is also depicted in manual form as a curved surface with the hand. The scenario of the moral limits being pushed is shown as the curved hand moves outward from the speaker. Compare the notion that **TO CHANGE ONE’S BEHAVIOR IS TO MOVE FROM ONE SPACE TO ANOTHER**, as seen in expressions like *overstepping one’s bounds*, *sailing into unknown waters*, and *crossing the line* (discussed in Cienki 1997). In our example above, the questionable nature of the ethics involved is expressed in speech and gesture as an alteration being made in the location of the moral boundary.

Also note that here, as in many instances, the formation of the gesture preceded the utterance of its lexical affiliate, the word that relates to it semantically. McNeill and Duncan (2000) argue that the fact that gestures frequently precede their lexical affiliates is evidence in support of the hypothesis that visual and verbal elements are integrated in an idea unit, and then “unpacked” as it is expressed in speech and gesture.

In another example (this one from Müller 2004b), a German speaker describes her relationship with her first boyfriend as having been **klebrig** (“sticky”), as he was too dependent on her. The gesture she makes during the quoted example, leading up to using the word **klebrig**, consists of her slowly and repeatedly pressing the palms of her two open hands together.
Rather than depicting a source domain object mentioned in speech, as in the previous example, this speaker portrays the manner of interacting with a sticky substance, which she likens to the quality of the emotional interaction in this relationship. Once again, the metaphor was expressed gesturally before it was verbalized.

To conclude: gestural metaphors may be semantically co-expressive with speech but temporally detached from the verbal metaphor: they can begin before the co-expressive verbal item is produced, overlap with it and proceed after it is uttered. Gesture and speech therefore appear to share the communicative burden to express one and the same metaphor, which means that metaphor is not limited to the verbal medium of expression. In other words, it can be multi-modal, appearing as a verbo-gestural metaphoric expression (see Müller 2004b).

A metaphor may be expressed in gesture, but not in the co-occurring speech

Consider the following example (analyzed in Cienki 1998) from the student conversations about honesty, mentioned above. One speaker says, with several restarts,

(Ex. 3)

lh flat OH, PC

Like dishonest suggests, like, um, not truthful, like, [the **TRUTH** is what], like, ⁴

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⁴ Henceforth the following additional conventions will be used in transcribing gestures: ‘rh’ for right hand; ‘lh’ for left hand; ‘bh’ for both hands; ‘PU’ for palm up; ‘PV’ for palm vertical; ‘PC’ for palm toward center; ‘PD’ for palm down; ‘OH’ for open hand; ‘||’ for change of hand configuration within one gesture phrase.
On the word “truth” (uttered with emphasis, indicated by the capital letters) he makes a flat-hand gesture with his left hand in the vertical plane, fingers pointing away from his body. Though he does not say anything in this context (or in the subsequent utterances) characterizing TRUTH as metaphorically STRAIGHT, that is what appears to be represented in the gesture. The fact that there are linguistic expressions in English which reflect a conceptualization of TRUTH or HONESTY AS STRAIGHT, for example referring to honest speech as straight talk, supports the interpretation that this common metaphor in the culture may have been behind the production of this gesture in this context.

Calbris (1990; Calbris & Porcher 1989) note the following context of gesture use in which a metaphor is expressed in the gesture, but not in the co-occurring speech: while uttering a word with an abstract meaning, one sometimes produces a gesture which reflects the concrete origins of the word. Calbris (1990: 196-198) refers to these as etymological gestures. For example, talking about a repetition of an event while making a vertical loop with one hand (in Calbris’ notation, an asterisk * indicates the occurrence of the gesture): “No, paid programs * for retraining.” In the original French, the speaker used the verb se recycler, which is from the Greek kuklos, ‘circle’. Another example is cited in Müller (2004b: 95-99) in which a speaker talks about psychological depression with the phrase “durch dieses depressive” (‘because of this depressiveness’) and repeatedly makes a slow, downward movement with her right hand palm down, thumb and forefinger forming a ring shape. Yet the origin of German Depressivität in the Latin verb deprimere / depresso ‘to press down’ is not transparent to the average German speaker of today, for whom this spatial concept would be expressed with a different verb: drücken. But the notion that SAD IS DOWN, apparent in the development of the word’s abstract meaning, reappears in a gesture with speech. How can this be? Apparently a conceptual metaphor which motivated the extension of a word to an abstract domain can still be active in a culture and continue to constitute an imagistic way of thinking about the idea, even if it is no longer transparent in the form of the word itself. This may be manifested in a gesture, even if the metaphoric source domain is not explicitly mentioned in the utterance, or ever as a metaphorical expression in the contemporary language. Lakoff and Turner (1989) discuss this issue in the context of rejecting what they term the ‘Dead Metaphor Theory’. They argue that metaphors may appear dead on the verbal level but still have the potential to be vital conceptually; in other words they are no longer used to refer literally; hence “comprehend” is no longer used in the
sense of “to grasp” as in Latin, but the conceptual metaphor UNDERSTANDING IS GRASPING is alive and active in contemporary English (as in “to grasp what someone else is saying”).

McNeill (1992) discusses another category of metaphoric gestures which occur without the utterance of explicit metaphoric expressions. They consist of instances in which mention of a topic of conversation or a question is accompanied by the hands in a position as if holding an object, as in the following example (McNeill 1992: 148).

(Ex. 4)

bh OH rise up, PC || bh move outward and down PU as three outer fingers close

[it was a Sylvestor and Tweety cartoon]

During the first bracketed phrase, the speaker, who is sitting, has his elbows on the arms of his chair, and raises both hands up, palms open and facing each other. During the second phrase in bold type, his hands move apart, forearms rotating outward at the elbows, while three fingers on each hand close (middle, ring, and pinky), leaving the pointers and thumbs extended. Here the topic being referred to was a specific example of a genre, that of a type of cartoon. McNeill describes the first gesture as one like holding up an object, and the second one like pulling the object open. (Note also that the thumbs and forefingers which remain extended could be interpreted as still showing the outer boundaries of the object.) McNeill argues that this and similar gestures are examples of what Reddy (1993/1979) found in his analysis of our language about language, namely that we often talk (and presumably think) about units of language (words, sentences, whole texts, and even genres) as if they were containers for meaning. Consequently, we often conceptualize, and talk about, communication as if it entailed a simple transfer of language-objects from one person to another. Comprehension should therefore be a simple matter of taking out the meaning that is in the container of language. Although a bit of reflection reveals that effective communication indeed involves more effort than our folk model implies. Reddy refers to this as the conduit metaphor, although as Lakoff and Johnson (1980: 10) note, several conceptual metaphors can come into play, such as LINGUISTIC EXPRESSIONS ARE CONTAINERS, IDEAS ARE OBJECTS, and COMMUNICATION IS SENDING. With the example above, we see that even when no mention is made of the metaphor in the accompanying speech, the
metaphor of CARTOON AS OBJECT appears in the gesture. The gesture shows the metaphoric objectification of the genre referred to in speech. Perhaps because McNeill’s (1992) book was the first widely distributed volume in English on gesture studies, this one type of metaphoric gesture (expressing the CONDUIT metaphor) has become frequently cited as the kind of gesture that is metaphoric, leading to assumptions that metaphoric gestures can only serve this one function. Although it is a frequently occurring type of metaphoric gesture, it is just one type among many.

It is important to note that gestures discussed as examples of the conduit metaphor actually fall into several groups. The type discussed above concerns a medium of expression as a container. Another type of conduit metaphoric gestures concern what is in the metaphoric container, namely the idea(s). These gestures express the metaphor of IDEA AS OBJECT. Müller (2004a) studies uses of the palm-up open-hand gesture, and suggests that its functional core is to present the speaker’s idea, as if it were an object on the flat open hand, available for joint inspection. Note the implicit relation to the metaphor of KNOWING IS SEEING here: the gesture proposes a common means of looking at the presented object, and metaphorically it offers knowledge to be shared. We can think of this as a shared perspective, in both senses of the word (a visual point of view, and a particular way of understanding something).

Müller (2004a: 242) provides an example of a Spanish speaker proposing her perspective of what happens to the characters in a particular novel, and it is a perspective which she knows differs from that of her interlocutor. She says,

(Ex. 5)

PUOH lh PUOH lh PVOH lh up & down, repeated

(... [las pasa bruta (.)] eso si

they experience brutal things yes indeed

During the bracketed phrase the speaker moves her left hand, open with palm up, in a downward motion and then holds it there. The metaphoric reference is not directed to a specific lexical item in the utterance, like in the examples we have seen earlier, but instead the target referent is the fact of presenting an idea. Here the palm-up open hand is a metaphoric gesture that is serving a different function in that it relates to the meta-narrative level; it reflects the fact that an idea is
being presented, rather than reflecting particularities of the idea itself. In this way, it can be considered a pragmatic use of a metaphoric gesture.

McNeill, Cassell and Levy (1993: 12) discuss another kind of gesture which functions at the meta-narrative level, namely pointing to spaces in front of the speaker when introducing a new event in a story. In their example, the speaker is retelling the story of a movie to someone who has not seen it. After describing how one scene ends, the speaker says,

(Ex. 6)

\[
\text{point down right}
\]

and then the next time we see [anyone]

and points down to the right. McNeill et al. classify this as a deictic gesture which indicates the position of a new scene. We would argue that this use of abstract deixis could also be considered metaphoric, if the gesture is interpreted as pointing to an EVENT (a new scene) AS AN OBJECT. McNeill et al. contrast this with pointing which relates to elements in the narrative itself, for example, pointing to where characters physically were in the scene when they are first mentioned; we would consider this another form of metaphoric use of pointing gestures.

Another context in which metaphoric gestures occur independent of metaphoric speech is when a logical relation that is being talked about is shown gesturally as a spatial opposition. In the data from students discussing exam-taking practices, one participant talks about factors which determine the amount of effort that one will put into preparing for an exam. She concludes, “It depends on the student, but it also depends on the teacher.” While uttering the word “depends” the first time, she sets her two hands, palms down, into a space on her right side. She then lifts them and places them back down, but on her left side when she utters “also” at the start of the second phrase. The two gestures lay out the two conditions in her argument as separate spaces in front of her. This provides another example of metaphoric gesture at the pragmatic level, here: distinguishing different parts of the argument being made as separate spaces. (See also McNeill’s [1992: 155] example of a speaker setting up contrasting spaces for different moral statuses of the characters he is describing — the “good guys” versus the “bad guy.”)
Finally, ideas can be indicated not only as points in space, but also in an objective way by using parts of the hands as objects to stand for them. Sweetser (1998) notes how even the common gesture of using the index finger of one hand to point to successive fingers of the other hand while listing ideas or making different points of an argument is an example of gesturally manifesting the metaphor of IDEAS AS OBJECTS.

**Different metaphors may be expressed in speech and gesture**

In some instances, one metaphor may be expressed in speech, while at the same time the target domain for that metaphor is being characterized via a different source domain in a gesture. In example (7) from Cienki (forthcoming), the speaker is talking about moral qualities in two categories, as either black or white.

(Ex. 7)

1  [y'know, there- there is no gradations.

   lh F UOH, and repeats slight-
   rh P V strikes lh ly to right repeats to left to right repeats

2  Either you're right you're wrong 'r black 'r white, y'know.]

At the same time she is making a chopping gesture with the side of her right hand against the flat palm of her left hand, as if dividing space; so, we have a “color” metaphor in speech, but a spatial metaphor in gesture. However, the two characterizations of the target domain cohere in that the two source domains can constitute different qualities of the same scene, namely two spatial areas clearly delimited, with one black and one white.

While in this example the source domain mentioned verbally could not be represented spatially (with a “black” or “white” gesture), it remains to be seen in future research whether different verbal and gestural representations only occur in this circumstance, or whether in some instances a potentially “gesturable” source domain that is verbalized is not used in favor of a different one in order to highlight multiple aspects of a source domain scene. It is worth noting that this kind of independence between the content conveyed in gesture and in speech is not restricted to metaphoric gesture and speech: witness the gesture-speech mismatches researched by Goldin-Meadow (2003). Studying children as they tried to solve Piagetian conservation tasks
and math problems, she found that children may give gestural evidence of understanding some concept before they can verbally articulate the same idea.

**A metaphor may be expressed in gesture which is not one that is used in the language**

In some cases, a metaphorical gesture accompanies non-metaphorical language, and the metaphor structuring the gesture is never used in the language system itself. There is an elaborate example in Cienki (1998) of a student setting up two different events in time: the preparation for an exam, and the taking (writing) of the exam. Ex. (8) is an excerpt.

(Ex. 8)

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1   bh PD on right   bh PD on right, rh fingers curl
    [and you're taking this test,
     bh PD move to left
    2   but you have this guilt beforehand,
     bh make rotating motion as they move from left to right
    3   but it doesn’t save (...)]
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The speaker explicitly sets up two time frames in separate spaces, prior time to the left and later time to the right. This arrangement of *time as space* is familiar to speakers of Indo-European languages (among others), and likely relates to the fact that our writing systems have a left-to-right orientation (Calbris 1990; Müller 2000). We can also cite the role of this visuo-spatial metaphor in mathematical graphs, in which the “progression” from lower to higher values is to the right, and in time lines, normally oriented with the future to the right. However, one does not say in English that someone did X “to the left of” Y to mean that someone did X before Y. Therefore, we see that gesture can be a source of data on (conceptual) metaphors which are employed by members of a culture, and which may relate to visuo-spatial thinking, but which may not appear in verbal/linguistic modes of expression.

**Metaphoric gestures in different cultures**

In the relatively short span of history in which there has been research on metaphoric gestures, there is evidence of their existence from a variety of cultures. As noted earlier, Calbris’ study from 1990 is based on French speakers. The research we have cited above is based on

However, these studies all concern languages of European origin. While some research on non-Indo-European languages indicates similarities with the findings discussed above (such as the use in Georgian of a cup-shaped palm-up hand when presenting an idea [McNeill 1992: 151-152]), other studies reveal some significant differences.

For example, the metaphor of the FUTURE AS AHEAD does not hold universally: witness the native South American language Aymara, whose speakers talk and gesture about the future as behind oneself, rather than ahead (Nuñez & Sweetser 2001). Here the motivation is a different experiential basis for the conceptual metaphor. Based on the metaphor that KNOWING IS SEEING, the future is unknown, and thus behind us, where we cannot see. This contrasts with the metaphor in this culture that the PAST IS AHEAD, because it is known, and therefore in the realm in front of us, which we can see.

Some other cross-cultural research, much of it originating at the Max Planck Institute for Psycholinguistics in Nijmegen, The Netherlands, has revealed notable differences in gesture systems which raise questions for the study of metaphoric gestures. One important difference is that in some languages and cultures, the default frame of spatial reference is based on the surrounding geography, rather than being relative with respect to the objects in question and the perspective of them that is assumed — e.g., saying in English that “the man is standing to the left of the tree”. In the Australian language Arrernte, for example, one would say the equivalent of “the man is standing on the east side” of the tree, if that cardinal direction was accurate given the physical positions of the man and tree at the moment (Pederson et al. 1998). This is not just a matter of language, but has been shown to be a factor of using what some call an absolute frame of reference in spatial reasoning. (See Levinson [2003] for a survey of the research on cross-cultural diversity regarding space in language and cognition). Spontaneous gestures by speakers of such languages are affected accordingly. Haviland (2000: 13) notes that speakers of another Australian language, Guugu Yimidhirr, “assiduously orient pointing gestures in the ‘correct’ compass directions” when talking about location or motion as part of a story about an event, regardless of the angle at which they are seated when telling the story. Such findings raise
questions for future research about how speakers of spatially “absolute” languages gesture metaphorically.

To conclude: metaphoric gestures may indeed relate to speech in a variety of ways and there is variation as well as consistency across cultures. The specific forms of the interplay between gesture and speech reveals that the issue of metaphor and gesture is not reducible to a mere ‘illustration’ of metaphoric lexemes through a gestural depiction of a source domain. It is also not reducible to metaphoric discursive gestures. Rather gestures appear as an articulatory independent mode of expression which is used flexibly, and not only to illustrate the semantic content expressed verbally, nor only to treat abstract discourse objects metaphorically (cf. Bohle 2004).

The study of gesture, metaphor, and thought

In this section we offer an overview of the range and the nature of insights to be gained when studying gesture in relation to metaphor and thought. Although this whole field of research is still in its beginnings, there is already a significant range of observations and findings, some of which carry challenging implications for current theories of metaphor as well as for future research.

What does the study of gesture reveal about metaphor and thought?

Metaphor as a general cognitive principle

The fact that metaphors may be realized in gestures as well as in speech adds support to the assumption that the creation of metaphors is based on a general cognitive principle rather than being a property of language only (cf. Cienki 1998; Lakoff & Johnson 1980, 1999; Johnson 1987; Müller 2004b). We should therefore be prepared to think about metaphors independently from a specific modality and – as a further consequence – take metaphors as fundamentally multi-modal. Metaphors are not only instantiated in gestures, in pictures (Forceville 1996), in ritual (Shore 1996; Strauss & Quinn 1997), and of course in spoken and in written language, but
they also appear in combinations: there are verbo-pictorial metaphors (Forceville 1996), verbo-gestural metaphors (Müller 2004b), combinations of differing verbal and gestural metaphors (Cienki 1998). Metaphors may also be realized on the verbal level but not on the pictorial or gestural level (Cienki 1998; Müller 2004b), and, as we have documented above, there are gestural metaphors only – without any metaphoric expression in the co-occurring speech (Cienki 1998). Finally, gestures drawing upon the source domains of conceptual metaphors may indicate that conceptual metaphors function widely as a vital and productive basis of verbal metaphoric expressions. Metaphoricity is therefore to be conceived of as a general cognitive principle resulting in metaphoric expressions of various modalities as well as in the creation of new conceptual metaphors.

Metaphoric mappings and on-line processing
Gibbs and Colston (1995: 354) note, “Psychologists often contend that cognitive linguistic research suffers from circular reasoning in that it starts with an analysis of language to infer something about the mind and body which in turn motivates different aspects of linguistic structure and behavior.” Conceptual metaphor theory, as one of the original areas of cognitive linguistic research, can be considered one of the objects of this critique: the argument is made that metaphoric expressions in language are evidence of certain conceptual metaphors, and that we know this because we find these conceptual metaphors in the language. Gesture, while a co-verbal behavior, involves a different modality of expression than speech, and so provides another source of evidence for conceptual metaphors. In particular, gesture data can support arguments about the employment of conceptual metaphors in thought processes while speaking (see below). This provides one response to the criticism that “the linguistic evidence by itself [cited in research on conceptual metaphor theory] is dubious, because it assumes that a certain pattern in speech directly reflects conceptual structure” (Murphy 1997). Gesture provides another window to understand how we structure concepts, and how we use those structures while speaking.

Gestures can indicate that conceptual metaphors are also cognitively activated when not present in speech. This offers further support for the psychological reality of conceptual metaphors independent from the existing data based of spoken and written examples. Conceptual metaphors can function as active cognitive structures even when they do not trigger verbal metaphoric expressions.
Finally the analysis of verbo-gestural metaphors shows that seemingly ‘dead’ verbal metaphors (i.e. highly conventionalized metaphors) may still be processed actively as metaphoric expressions. This contrasts with one of the fundamental assumptions of established metaphor theories (in the rhetoric tradition), namely that a conventionalized verbal metaphor is no metaphors at all because it “no longer has a pregnant metaphorical use” (Black 1993: 25). Gestures enacting the source of a conventionalized verbal metaphor provide significant evidence that this assumption is false (see Müller 2004b).

It appears noteworthy to add that gestures are not just of scholarly interest, as windows onto thought, but they appear to be relevant for language understanding in everyday communication. Beattie and colleagues have shown in multiple experimental studies that recipients take up and use the information encoded gesturally. Both modalities – gesture and speech – appear to share the burden of conveying information, yet sometimes information given gesturally has a higher impact and is better remembered than information given only verbally (cf., Beattie 2003; Beattie & Shovelton 2001). This suggests that metaphoric mappings embodied gesturally may also be understood as metaphors. But at present this is a conjecture which remains to be grounded in empirical studies.

Flexibility of on-line metaphoric thought

The study of gesture and metaphor may be taken as a window onto thought in McNeill’s terms and offer insights into the dynamic development of processes and forms of imagistic, visuo-spatial, embodied thinking underlying metaphoric expressions. McNeill (1992, 1997), drawing on work by Vygotsky, has given particular attention to how the expression of thought via speech and gesture is not a unidirectional process. Rather, thought, speech, and gesture interact and shape each other as the speaker expresses an idea unit (what McNeill calls a “growth point”) in which imagistic and propositional modes of thinking interact. Similarly, Slobin (1987 and elsewhere) has been exploring the dynamic interrelations between thought and speech, and specifically, the “special form of thought that is mobilized for communication,” which he calls “thinking for speaking.” McNeill and Duncan (2000) integrate these strands of research, arguing that the growth point consists of the imagistic nature of an idea as it is being integrated into the linguistic categories available for its expression in the language. In this regard, metaphoric gestures appear to play an important role for speakers in various ways as they formulate their
imagistic understanding of abstract concepts into linguistic expressions. Indeed, there is some evidence to suggest that gestures just produced could even prompt the realization of new images as one is thinking for speaking, and so initiate thinking in terms of new metaphors, giving rise to the use of other verbal metaphoric expressions in the subsequent speech (Cienki 2000).

Investigations into questions of linguistic relativity and/or universals have profited much from using gesture analyses as windows onto active thought patterns during speaking. This cross-cultural research has once more documented that the study of gestures may provide crucial insights into forms of thought active during speaking, independent of what can be gleaned from spoken language alone. Using the gesture space to perform deictic gestures in an absolute frame of reference, as in Haviland’s (1993, 2000) Guugu Yimithirr narration, indicates that the linguistic categories and the semiotics of the gesture system draw on the same cognitive frame of reference. Further research on language and cultures which commonly use absolute spatial reference would provide a more complete picture about which ways of using gestures metaphorically appear to be more universal, and which are more culture-specific.

Metaphoricity is dynamic and gradable

So far metaphorictiy has been primarily conceived of as a stable property of words and/or concepts; a verbal expression or a conceptual metaphor tended to be regarded as either vital / productive, or as dead / unproductive. However, a number of researchers (e.g., Fauconnier and Turner 1998; Grady, Oakley, and Coulson 1999; Steen 2002; Cameron 2003) have pointed out that the salience of metaphors, particularly the recognizability of verbal metaphoric expressions, differs according to various factors such as grammatical category, semantics, context within the text, and genre. Metaphoricity is thus gradable, and factors such as these influence whether someone will realize an expression as metaphoric or not.

Looking at the ways in which verbal and gestural metaphors are integrated into ongoing utterances is a way in which we uncover how metaphoricity is gradable, and hence a dynamic, not a static, property. The argument is an iconic and an interactive one: the more cues that direct the attention of the interlocutors to the metaphoric quality of a verbal metaphoric expression, the higher the degree of cognitive activation of metaphoricity in the speaker (and also potentially the addressee). One case would be metaphoric gestures which constitute an obligatory part of an utterance in the sense that they contain necessary information and fill a lexical and syntactic gap.
If they furthermore receive the speaker’s and listener’s gaze, and draw upon the same source domain as the verbal metaphoric expression, they must be conceived as foregrounded, as receiving focused attention from both the speaker and the listener, and as displaying a high degree of speaker-internal activation of metaphoricity. When comparing metaphors which receive these attention getting cues with others that go ‘unnoticed’ (i.e. which are only expressed in one modality and are not accompanied by any cues such as prosodic stress or gaze direction), it is clear that the latter type are not in the focus of interpersonal attention in the same way. Put another way, these clusters of attention-getting cues produce interactive foregrounding of metaphoricity and since what is interactively foregrounded is also intrapersonally foregrounded, metaphoricity should in these cases be highly activated intrapersonally. In short, the close interaction between the modalities and their verbal, bodily and interactive context indicates that metaphoricity is a dynamic property and not a static one — that is, dynamic not only in gestural motion, but also in cognition (cf. Müller 2004b).

**Metaphor, gesture, and embodied cognition**

Gestures can spatially depict elements from the source domain of a metaphor, something which is not possible for metaphoric expressions in spoken languages. Many gestures, metaphoric and otherwise, take their form from everyday embodied activities, recreating them iconically. Müller (1998a, b) distinguishes four gestural modes of representation, i.e. four forms of practices of gesture ‘creation’. Three of them bear directly upon embodied mundane practices of the hands: 1. hands act as if they would perform an instrumental action (opening a window, holding a steering wheel, presenting an object on the open hand; 2. hands mould short-lived sculptures (the frame of a picture, the shape of globe, a round object as representation for a love relationship); 3. hands draw routes on a map, the shape of a picture frame, or outline the ups and downs of a love relation as a graph. The interesting point is that the modes of representation are used not only to depict concrete activities or objects or properties of concrete object but also to represent abstract metaphoric concepts. This fact supports the hypothesis in cognitive linguistics that (many) metaphors are grounded in embodied action. (See Gibbs and Berg [2002] on the broader questions about mental imagery and embodied activity, as well as the responses to their article in that journal issue. See also Gibbs [forthcoming] for a summary of different perspectives in the literature on speech and gesture and how these relate to larger questions about embodiment and
cognition.) Compare also research on sign languages, in which the physical depiction of metaphorical source domains has been shown to play a clear role in the use of metaphor (Wilcox 2000, Taub 2001).

**Implications of gesture studies for future research into metaphor and thought**

Taking the analysis of metaphoric gesture as a serious part of a cognitive linguistic analysis has some important implications for future research. It affects the data as well as the theoretical concepts.

**Reconsider data and methods of analysis used in metaphor research**

Lakoff and Johnson (1980) not only laid the groundwork for a new theoretical direction in the study of metaphor; this work also implicitly supported a particular kind of research methodology, one which takes constructed, but intuitively plausible, sentences as data. Only recently has more research appeared which draws on examples from naturally occurring spoken interaction, existing written texts, and/or data from larger corpora. In gesture studies, some research may cite plausible but constructed examples, but the very nature of spontaneous gesture with speech — the fact that it is usually produced unwittingly and that it lacks standards of form (cf. McNeill 1992) — weighs against the use of constructed data. Particularly in recent research on metaphor in gesture, the data are almost exclusively video recordings of spontaneously produced co-verbal behavior. This also means that gesture researchers have been confronting the accompanying methodological questions of using natural data in their research on metaphoric gestures. In this way, gesture research can not only help develop metaphor theories, it might also have an influence on the kinds of data that are studied and the methods by which they are examined. This could include giving greater prominence to spoken language data (and methods for working with it) in metaphor research. The focus on spoken language in the physical setting of its use, inherently part of the video recorded data used in most gesture studies, could help give greater attention to other questions in the study of metaphor. These include the role of where metaphor occurs in the discourse context, the function of metaphor in the interaction between participants in conversation, and the role of the physical setting (the context of interaction) as a prompt for, or grounding of, the use of specific metaphors.
With greater use of naturally occurring linguistic data in the field of metaphor studies, the methodology/ies for identifying metaphorical expressions in spoken discourse and written texts has begun to receive more attention in the research literature. For example, one group of researchers which is trying to devise a reliable procedure for metaphor identification in texts is “Pragglejaz,” named after the first initials of the ten group members. Perhaps a similar research group should be formed to develop reliable procedures or guidelines for the identification of metaphoric gestures. However, it is important to note that the scope of what counts as a metaphorical expression, be it in language or gesture, will vary according to the goals of the research project. Some projects may have a broad scope, encompassing any expression with potential metaphoricity, while others may focus more narrowly on expressions which appear to indicate metaphoric processing by the speaker in real time. The important thing is to make one’s methodology for metaphor identification clear and appropriate for the goals of one’s research.

An additional topic, which can only be touched on briefly here, concerns the method of presenting examples of metaphoric gestures in research presentations and publications. Some, such as the journal *Gesture*, allow video data to be included in publications by providing a CD in each issue with relevant examples. Some studies refer to web cites where the video examples can be seen. But otherwise we are left with drawings or verbal descriptions, for which there is no standard accepted in the field. Indeed, drawings and verbal descriptions are already interpretations of the data themselves, just as written transcriptions of speech are, and such renderings inherently involve theoretical choices about inclusion and exclusion of detail, which need to be explicitly articulated in presentations of one’s research. By way of comparison, research published on metaphor in sign language usually employs written glosses from the dominant language of the country in which the sign language is used, but this is not possible with spontaneous gestures since the relation between form and meaning is not conventionalized.

*Labelling of conceptual metaphors*

Gestures range from those with commonly accepted forms and meanings (emblems) to those with spontaneously created forms, whose meanings are hidden in the subconscious of the

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5 See http://letlx.let.vu.nl/project/pragglejaz/index.html
gesturer. Since spontaneous gesture with speech does not constitute a symbolic system of communication like language itself does, we are confronted not only with challenges in describing the forms of the gestures, mentioned above, but also with questions about labelling the conceptual metaphors which they may be expressing. In the framework of conceptual metaphor theory, it has not been seen as problematic to label the proposed cross-domain mappings in terms of words, in the formula “TARGET DOMAIN IS SOURCE DOMAIN.” However, the examination of gestures and speech makes the potential problems with this method more obvious. To begin with, it entails the interpretation of a gestural form, and of the concept it might represent, in terms of a word or phrase. But it can be very difficult (not to mention inadequate) to capture an embodied action which comprises a source domain in the form of a word or phrase. One solution might be to follow the model of cognitive grammar (Langacker 1987, 1991) in using diagrams in the mechanics of the analysis, as suggested in Cienki (2005). However, this would require careful motivation for the schematic formation of the diagrams used, as has been observed in cognitive grammar analyses. Since gesture, and embodied concepts, involve motion, this should be incorporated as well in the exposition of the analysis. This is not an unrealistic expectation, given the developing use of computer graphics in the study of gesture. (See, for example, the method of image processing known as Vector Coherence Mapping, employed in McNeill et al. 2001.)

**Conclusion: How the study of gesture advances our understanding of the research into metaphor and thought**

In this chapter we have assembled a range of arguments in support of a position that re-orient the database of metaphor research from primarily relying on speaker-internal intuitions and dictionary knowledge of verbal metaphors towards the study of (spontaneous) spoken language along with the gestures that speakers produce unwittingly whenever they talk. We have indicated that this new view of metaphors sheds light on fundamental issues of metaphor theory such as the still (after two millennia of scholarly reflection) non-trivial question of *what is metaphor.* *How do we find out what metaphor is?* We have argued that this depends strongly upon the empirical sources considered. Looking at gestures and speech shows that metaphor is a general
cognitive principle and is not restricted to language alone. In this regard our findings offer support for a fundamental assumption of conceptual metaphor theory, although, notably, they break the vicious argumentative circle that cognitive linguistics in general has been criticized for.

Yet, what do we find out about metaphor when we look at gesture and speech? We find that metaphor — or more precisely the establishment of metaphoricity — is a cognitive activity which takes place on-line during the process of speaking. We find that metaphor is clearly not restricted to language nor a specific linguistic or poetic principle. Rather it turns out that metaphor is a way thought is organized, and it is because the products of metaphoric thought have been studied mostly in their verbal forms that metaphor has been traditionally conceived of as a uniquely linguistic and poetic phenomenon. Taking spoken language and gestures into consideration uncovers that metaphors may be instantiated in various modalities, notably without necessarily drawing upon one and the same conceptual metaphor. Imagistic, embodied, and propositional modes of thinking interact during speaking (witness McNeill’s concept of the growth point) and gestures may trigger new verbal metaphoric expressions. Furthermore the close analysis of the syntactic, semantic, prosodic, and bodily context of verbal and gestural metaphoric expressions reveals that metaphoricity is a dynamic not a static property of linguistic items, which may be more or less foregrounded, and so may receive more or less focused attention. Studying metaphor, gesture, and speech in relation to thought opens up a range of new phenomena and facets of metaphor for further investigation – making a strong case for the need to incorporate the study of language use (including gesture) into research on metaphor and thought.
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