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Cultural Expectations in Expressing Disagreement: Differences between Japan and the United States

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Abstract
The article identifies problems between Japanese students with intermediate English proficiency and native English speakers in the United States when expressing disagreement. The survey results indicate that common ways by which Japanese students express disagreement are likely to be either misinterpreted or viewed negatively by Americans. For English education aimed at promoting intercultural understanding, it is not sufficient just to introduce Japanese students to formulaic patterns for expressing disagreement. The article explores the kind of instruction that is necessary to alleviate intercultural misunderstandings caused by differences in how disagreement is expressed. While the subjects of the article are Japanese students, the recommendations are applicable to other Asian students as well.

Keywords: Expressing disagreement, silence, ambiguity, clarity, alleviating intercultural misunderstandings.

Introduction

Language learners are expected to become intermediaries, mediating between potentially conflicting behaviors and belief systems in their own and other's social lives (Byram & Zarate,

1994). One behavior and belief system is the way in which we express disagreement. While in American culture expressing one's opinions openly and assertively is usually considered an admirable trait (Samovar & Porter, 2001), in Japanese culture conveying one's disagreement with another person indirectly is necessary for maintaining good human relationships (Nakayama, 1989). As such, it is important to determine the kinds of problems these cultural differences cause when Japanese students learn English.

Literature Review

A limited number of research studies (e.g. Beebe & Takahashi, 1989a, 1989b; Kreurel, 2007) have been conducted on how disagreement is expressed by Japanese staying in the United States or non-native speakers learning English. The study, carried out by Beebe and Takahashi (1989a, 1989b) based on responses to surveys completed by 15 Japanese staying in the United States and 15 Americans, concluded that Americans were not always more direct or explicit than Japanese. However, the sample was small with only 15 Japanese and 15 Americans. Also, communication styles employed by Japanese staying in the United States may differ greatly from those of Japanese living in Japan, and therefore, the Japanese sample is not generalizable to the general Japanese population. Moreover, hypothetical situations were included which might not be familiar to university-aged students. For example, a case was provided where the respondent was a corporate executive who disagreed with an assistant's proposal. It was probable that students without experience working as a corporate executive found it difficult to relate to the situation.

   The other study (Kreutel, 2007), based on a survey of 27 native speakers of American English and 27 non-native speakers learning English, reported that non-native speakers used mitigational devices, such as hedges or explanations, less frequently than native speakers. However, the focus of the research was not specifically on how Japanese expressed disagreement as there were only 6 Japanese respondents among the 27 non-native speakers.

Methodology

The question we raise here is: What specific difficulties do ordinary Japanese students in Japan have when expressing disagreement with native English speakers? To identify difficulties that occur in classroom settings, a questionnaire was administered, and distributed to 97 Japanese

university students with intermediate English proficiency. Respondents were asked to fill out the following questionnaire at home and return it to the instructor within a few days: "Have you ever experienced any communication problems when expressing disagreement with native English speakers? If you have, please describe specifically the situations and the words you (or another Japanese) used. Please describe how the native English speakers' response made you realize that the communication exchange had not been satisfactory." After analysis of the students' responses, 12 representative patterns, such as keeping silent and using euphemisms, emerged. A follow-up interview was conducted with some students to have them further clarify their responses and explain how they regarded their interactions with native English speakers.

Another questionnaire was organized based upon the results of the above survey, and was distributed to 90 students studying in a mid-Western college in the United States with or without experience learning a foreign language. They were asked to judge whether communication devices employed by Japanese to express disagreements were effective or ineffective. (For instance, an American teacher said, "Electronic dictionaries are useful because we can quickly examine words that we don't know. Also, we can carry electronic dictionaries with us." To express disagreement a Japanese student answered, "Probably.") They were also asked to briefly give reasons for their judgment, and explain how they would have responded in the same situation. In the last section, they were encouraged to share their own views on expressing disagreement in general.

The purpose of this paper is first to identify problems between Japanese students with intermediate English proficiency and native English speakers in the United States when expressing disagreement. A second purpose is to explore the kind of instruction that is necessary to alleviate intercultural misunderstandings caused by differences in how disagreement is expressed.

Differences in Cultural Expectations

Disagreement in General

American responses to Japanese students' expressions of disagreement in general contrasted sharply with Japanese cultural values. Specific examples from the perspective of American culture included: "I think that most of these answers are pretty ineffective. Answers should be direct and to the point. You either agree or disagree;" and "If this is how they really talk, they

need to learn to be more open, honest and straightforward." These American comments coincided with the main reasons why Japanese students judged their communication with native English speakers not to work well: The students were told by native English speakers, "Don't you have any opinions?" and "You agree with me, right?" Japanese students mentioned: "When I was thinking about how to express disagreement in English, I was told, 'Don't you have any opinions?' and I lost my motivation to learn;" and "I didn't agree with what the teacher said, and so I said, "Probably.' However, the teacher misinterpreted my message." Even when the Japanese students used euphemisms so as not to offend another person, Americans did not appreciate such consideration for the other person. On the contrary, many Americans found the communication styles ineffective because they regarded the styles as lacking a clear opinion. On the other hand, some Americans did convey understanding of Japanese culture by saying, "Japanese don't speak out if they don't agree;" and "The Japanese student is deferring to the opinion of his teacher."

Silence

Next, individual cases were examined. What Americans regarded most negatively was the situation where Japanese students kept silent when they did not agree with an American teacher's opinion regarding the issue of high school students' part-time jobs. The specific example was: An American teacher said, "Some high school students work part-time. I'm against this because high school students should concentrate on their studies. Also, they should enjoy their school life by taking part in club activities. To express their disagreement, Japanese students kept silent." The main reasons why Americans judged maintaining silence as an ineffective means of expressing disagreement were: "Keeping silent sounds like there is no opinion on the topic;" and "Neither disagrees nor agrees—indifferent."

Also, the Americans surveyed frequently replied that if they were put in the same situation, they would mention the merits of part-time jobs by saying something like: "I do not agree with that because working part-time during high school gives a good sense of responsibility;" and "I disagree because some students would like to make connections in the working world." This attitude contrasted sharply with that of most Japanese students. The Japanese students mentioned: "It's rude to express disagreement openly to the teacher's opinion in public;" and "I don't want to make the teacher feel uncomfortable." These ideas arise from Confucianism where

interlocutors are expected to pay special attention to their social status, and not take a defiant attitude toward their superiors. Therefore, in this case it is necessary for Japanese students to understand a different American cultural value where knowledge is considered to be relative and negotiable even in teacher-student relationships (Powell & Andersen, 1994).

Ambiguity

Other situations in which Americans passed negative judgments were when Japanese students used "Probably," "Maybe so," or "Maybe, I think so," for expressing disagreement. Many Americans stated: "Very indecisive," "Very confusing," and "Sounds like the student is not familiar with the topic." The remark, "Maybe you're right," also was negatively rated by Americans: "To me, that is submissive and sounds like agreement;" and "Agreement, but I don't think the student fully understands." In other words, Americans generally regarded Japanese ambiguity as a lack of knowledge, understanding and confidence.

A markedly clear difference was displayed in reaction to a situation in which a Japanese student responded, "Yes, I'll think about it." This reply was given when an American student said, "This project will be beneficial for both of us." Japanese students mentioned: "When I don't agree with the other person's suggestion, I usually say, 'I'll think about it.' The other person should know what I mean;" and "When declining someone's suggestion, I think it's a refined way to say, 'I'll think about it.'" That is, these words were used to hedge their negative response to a proposal in order to show respect for the other person's feelings and avoid confrontation. On the other hand, Americans showed a tendency to react negatively to the response by making statements such as: "Think about what?" and "There is nothing to think about plus he didn't say how he felt." Other American students misinterpreted the statement of "Yes, I'll think about it" to mean that "The Japanese student agrees that the project will be beneficial and will think about how to do it;" and "Agree, but I do not know how firmly." Put in the same situation, Americans generally replied that they would immediately try to communicate their lack of enthusiasm for engaging in the project with words like, "No, I don't want to do it;" "It will only benefit you;" and "Will it be beneficial for me?"

Both Japanese and Americans had difficulty understanding views that were vastly different from their own. Therefore, it is important to help them become more aware of cultural differences regarding how they value clarity vs. ambiguity.

Some Unexpected Responses from Americans

Some Americans' responses were significantly different from what had been expected. A situation was presented in which an Australian said, "Most Japanese work too hard. They only live to work. I feel sorry for them," and a Japanese answered, "You may feel that way." Some positive responses were identified: "This is obvious disagreement, but it is softer than the typical American, 'You're wrong;'" "This one shows disagreement, but in a polite way. I like this;" and "They [Japanese] are acknowledging that the Australian has a right to their opinion, but they may not feel the same way." However, more common answers from Americans were ones adding their own words to "You may feel that way," + "...but I think we need to work more;" or "…that's the way our culture is." There were some other variations: "I don't feel like that;" and "I'm sorry you feel that way."

Unexpected responses were also observed in situations such as when an American student said, "I really don't like this class," and a Japanese replied, "Yes, I understand." Some positive comments from Americans were: "That is a good response. You shouldn't force your own opinion on others. After all, everyone has their own opinions;" and "It shows disagreement without obvious expressions of disagreeing." On the other hand, some Americans stated that the Japanese answer left something to be desired by saying: "This is like an agreement, but the student does not want to give his/her real opinion;" and "They [Japanese] understand how the person feels, but they do not share their feelings." The latter coincides with common responses from Americans; that is, if they were in the same situation, they would ask "Why don't you like it?" or "Oh, really? Why is that so?"

Individual Differences

In contrast to the above cultural differences, some differences were identified depending on the individual's degree of understanding of Japanese cultural values, the individual's personality, and life experiences. A few Americans who were familiar with Japanese culture had a more objective understanding of both cultures, such as, "The Japanese may believe it rude to answer in a negative way directly, but for Americans, to answer indirectly when you mean 'no' is considered very rude." Also, regarding individual cases, there were such responses as "This could be sufficient for some Americans. A better answer as an American is: 'I don't really

agree.'" In addition, a few Americans who appeared to identify strongly with Japanese cultural values stated: "I often find myself answering in a similar way [to the Japanese] because I'd prefer to not argue over things that really don't matter." These Americans also gave positive comments such as: "Silence sometimes says more than word does;" and "This seems like a non-conflicting disagreement." Furthermore, Americans with more life experiences tended to consider many possibilities when interpreting the situations. When interpreting Japanese silence, for instance, they commented: "Either disagreement, no opinion either way or no comment out of respect for the teacher."

Applying the Survey Results to English Education

The above survey results indicate that common ways by which Japanese students express disagreement are likely to either be misinterpreted or viewed negatively by Americans. Although most Japanese students understood that their intended meanings had not been conveyed accurately from observing the reactions of native English speakers, they did not know how to express their disagreements effectively.

Then, what kind of instruction is necessary for Japanese students to overcome these intercultural problems? First, it is important for teachers to help Japanese students recognize that "understanding cultural meanings is a process of recognizing the interaction between one's own ways of meaning and one's understanding of others" (Roberts, etc., 2001, p.120). In order to implement this, teachers themselves have to be familiar with both cultural meanings. For example, keeping silent to express disagreement is usually viewed negatively by Americans in general as silence indicates that one either has no opinion or disrespects the other person. When teachers know only their own ways of meaning, they are apt to say, "Don't you have any opinions?" which will end up demotivating Japanese students. American teachers who are well versed in Japanese culture can comprehend accurately the cultural implication of silence, or devise ways of asking different questions so that they can elicit responses from Japanese students.

Similarly, using euphemisms is viewed negatively by most Americans, as such indirect responses convey indecisiveness and are easily misunderstood. When communicating with Americans who can figure out what the euphemism means, however, Japanese students can avoid intercultural misunderstandings, and learn how to give replies that are direct and to the

point. Japanese students will be able to view these situations where there is a disagreement as positive opportunities for exchanging and discussing ideas. In order to get good educational results, mutual understanding is indispensable.

On the other hand, the survey results also indicate, Americans use different degrees of directness to express disagreement, and Japanese students do not have to employ communication styles that the majority of Americans use. Take the above-mentioned situation, for instance. When expressing disagreement to an American student's opinion, "This project will be beneficial for both of us," many Americans replied, "No, I don't want to do it;" and "It will only benefit you." Japanese students who find these remarks to be overly direct or showing disregard for the other person's intention would benefit from learning other expressions with a less confrontational tone: "It may or may not be beneficial. I need time to think about it;" or "I'm not sure if it will benefit everyone."

Also, in the situation where an American student said, "When we do our homework, we should use the Internet. The Internet is a better source of information than any other source because we can find much information easily and quickly," many Americans expressed conflicting opinions. Such a position was expressed by words like: "I disagree because books are a more reliable source than the Internet;" and "I believe books, encyclopedias, databases are more accurate sources." However, some Americans expressed partial disagreement: "The Internet is not always the best source because anyone can put anything on there." Others argued back after acknowledging the other person's opinion: "The Internet may be a good source, but sometimes you have to go to good textbooks for more solid information." Japanese students would find such remarks with a less confrontational tone to be useful.

For English education aimed at promoting intercultural understanding, it is not sufficient just to introduce Japanese students to formulaic patterns for expressing disagreement such as: "I do not agree," "I disagree" or "I partially agree with you, but…." First, it is indispensable to help Japanese students identify ways in which disagreement is expressed in their own culture and in the target culture, and understand how misunderstandings are likely to occur because of cultural differences. Second, it is important to help Japanese students become aware of various expressions for indicating disagreement. There are expressions that they should avoid using in interactions with Americans, expressions that the majority of Americans use, and expressions used by Americans who prefer a less confrontational tone. After helping Japanese students

become familiar with a broad range of communication options, it is necessary to give Japanese students opportunities to practice using them in the classroom so that they are prepared in actual interactions with native English speakers.   While the target subjects of the article are Japanese students and the sample of the subjects is limited, the suggestions are extendable to other Asian students as well since Asian students share similar cultural values arising from Confucianism.

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Gesture, Speech, and Graphic Organizers as Semiotic Resources for Summarizing: A Two-Case Analysis of the Genesis of Meaning

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Abstract
By emphasizing the most noticeable part of gestures, the gesture stroke, this study investigated the spontaneous development of sign-systems created by two adult, non-native speakers of English while they summarized academic text for an audience. The focus of the study is on how participants integrated the sign systems of gesture, speech, and graphic organizers to make meaning across very short spans of time. This study illustrated how gesture can be used by classroom teachers and researchers to investigate the mutually affective relationship of oral speech, written language, and graphic displays of language during summarization activity. Moreover, the theoretical approach and methodology can be used to emphasize crucial points in the discourse where one part of the system is emphasized, at times, compensating for another part of the system during the meaning-making process. Findings have implications for a variety of language and literacy learning contexts, particularly for providing an interdisciplinary, practical, and accessible approach for classroom teachers, students, and researchers of language and literacy to investigate functional sign systems that language learners and speakers create to communicate in multilingual settings.

Keywords: Gesture, speech, graphic organizers, Vygotsky, semiotic resources, case study research, microgenesis.

Introduction

The focus of this study is on the interrelated, supportive features of gesture, the English language, and graphic organizers (e.g., flow charts, concept maps, tree diagrams) as these three sign systems *mediated* (Vygotsky, 1978; Wertsch, 1998, 2007) the formal, oral presentations of two female graduate students in a Masters of English as a Foreign Language (MATEFL) program at a university in northern Thailand. These participants were involved in the well-known literacy activity of formally summarizing academic text. Both were native speakers of Thai and had learned English as a foreign language. The overall purpose of the study is to inform teachers of language and literacy about how learners/speakers can position a variety of signs and sign systems available in the environment and use these signs to mediate meaning. This study is also an extension and adaptation of Unger's (2007) study on the integration of a concept map into a functional semiotic system, viewing gestures and graphic organizers as semiotic resources, which are part of sociocultural/historical semiotic systems (see also Van Lier, 2004). The major goal of Unger (ibid), which is extended, yet framed differently in the current study, is to make the understanding of gesture and an interdisciplinary approach grounded in Vygotskian-related theories accessible for classroom teachers, particularly for ESL, EFL, and Developmental Education teachers. Most important, the methodology and framework presented in this study is intended to be used to promote an action-based form of research that is practical for classroom teachers to implement, and in the process, promote the scholarship of teaching.

  The following research question guided the study: How did gesture and the graphic organizers support and/or constrain the English language and overall content during selected segments of data from oral presentations?

  Because the majority of studies reviewed for this article involve Vygotskian related theories and specific linguistic concepts necessary to investigate gesture, graphic organizers, and cognition, the theoretical framework is presented before a review of the literature.

Theoretical Framework

One of the major issues in investigating human interaction is a tendency of research to emphasize macro or micro features of human interactions, thus losing a more comprehensive perspective (see *analytic dualism* in Sawyer, 2002; Van Lier, 2004). Relatively recent research and theoretical proposals from social semiotics and language learning (Van Leeuwen, 2005; Van

Lier, 2004) and older, more traditional Vygotskian related theories (Wertsch, 1998, 2007; Vygotsky, 1978), along with many technological tools for data collection, provide effective means to overcome limitations on what teachers and researchers can emphasize and present. The theoretical framework presented here emphasizes five concepts and terms that are intended to provide reference points to understand the dynamic, sign-filled world of the language/literacy classroom. These concepts and terms are Signification, Mediation, Semiotic Resources, the Genesis of Meaning, and the Utterance.

Signification, Mediation, and the Genesis of Signs and Meaning

To gain a multidirectional perspective on human interaction with signs and investigate the cacophony of influences present during any moment of human communication, and at the same time have points of reference within the interaction on which teachers and classroom researchers can focus; the theoretical approach and methodology presented in this study emphasize the processes of *signification* and *mediation*. With the resources of video technology, teachers, students, and researchers of language and literacy can begin to closely examine how signification and mediation unfold in the data they record.

Signification can be generally defined as the assigning of meaning to objects, ourselves, and the world around us; mediation is generally understood as the use of concrete objects and abstract signs to enact, monitor, and/or regulate mental activity (Wertsch, 1998, 2007; Wells, 1999). Signification is a central term in the field of semiotics, the study of sign making and sign using practices (Chandler, 2002; Martin & Ringham, 2006; Van Lier, 2004), and mediation is a central term in Vygotskian theories (Wertsch, 2007).

Another important concept from Vygotsky used for the present study is *microgenesis*. Microgenesis is the creation and use of signs for mediating human activity over short periods of time; as short as seconds or minutes, or over longer, successive periods of learning how to use one or more signs for planning, organizing, and problem-solving (Wells, 1999; Wertsch, 1985, 2007; see also Chinn, 2006, for a contrasting perspective). Wertsch (1985) provided useful definitions of two types of microgenesis:

> "The first type of microgenesis identified by Vygotsky concerns the short-term formation of a psychological process. The study of this domain requires observations of subjects repeated trials in a task setting. . . . The second type of

microgenesis is the unfolding of an individual perceptual or conceptual act, often for the course of milliseconds (p.55)".

Both of these definitions apply to classroom language and literacy learning activity. However, the present study emphasizes the second type of microgenesis.

The term *moments* is used throughout the present study to identify and describe the temporary and permeable boundaries of the genesis of meaning in the data. The term moments is used in the present study as the term *episode* was defined by Harré and Secord (1972). They described episode as "any sequence of happenings in which human beings engage which has some principle of unity. Episodes have a beginning and an end that can be identified" (Harré & Secord, 1972, p. 10). The present study uses the term *moment* rather than episode to emphasize Bakhtin's notion of interconnected moments implied by his definition of utterance. Moreover, the term moment emphasizes the transient, illusory, yet tangible nature of creating meaning with representational sign systems as this activity unfolds in digital video data.

In the present study, Case One and Case Two illustrate how the participants are creating "perceptual" and "conceptual" *moments* of signification (Wertsch, 1985, p. 55). Crucial to being able to follow this genesis happening "right before one's eyes" (Vygotsky, 1978, p. 61; see also Werner, 1978) is the ability to find temporary delineations of *speech-image-gesture moments*. These segments can be used to illustrate the genesis of individual signs, and demonstrate how these signs are a part of larger sociocultural/historical semiotic systems (for these data, the *image* is the graphic organizers).

Semiotic Resources and the Utterance

Semiotic resources refer to the meaning potential that actions and objects *afford* (Van Lier, 1996, 2004) as these become central and comprise meaning during human interaction. This meaning potential is both theoretical and actual: the theoretical semiotic potential is "constituted by all their [the actions and objects] past uses and all their potential uses" (Van Leeuwen, 2005, p.4); actual semiotic potential is construed by users of the resource during interaction and "by such potential uses as might be uncovered by the users on the basis of their specific needs and interests" (ibid). As semiotic resources become a part of semiotic systems enacted by discourse participants, these resources are transformed into the *utterance*.

Bakhtin (1986) described the utterance as a grunt, a word, a sentence, a phrase, a novel, a

scientific paper, and this description can be extended to many other features of communication (e.g., a certain stare; a look on one's face; a webpage; a stop sign). The main feature of the utterance that is applicable to the current study, and to discourse analysis in general, is the notion that the utterance is bounded by the possibility of responding to it (Bakhtin, 1986, p. 71). For example, if one says hello and stops, there is a bounded moment for a response, which in this case could be a vast array of expected and unexpected utterances, such as a return of hello or silence. Although utterances do have ends and beginnings, utterances are always linked to prior utterances, the current co-constructed utterance, and the utterances that follow. For the data presented here, the most important feature of the utterance is where borders can be found in segments of utterances; that is, where one segment of utterance ends, and where another segment of an utterance or a complete utterance begins. To enhance the ability to find the boundaries of utterances in video and audio data, particularly when written text is a salient feature of the interaction, the concept of the *psychological predicate* was integrated with Bakhtin's notion of utterance.

The *psychological predicate* (McNeill, 1992; Wertsch, 1985; Vygotsky, 1986) is another Vygotskian term used for delineating utterances for the analysis and methodology presented here, particularly for empowering classroom teachers to observe the permeable boundary of one moment of thought to another. The most often-cited example of the psychological predicate is of a crowd waiting for a bus. As the bus comes into view, *coming* might be articulated as a thought or word. Waiting passengers would not be uttering an entire sentence aloud or silently to themselves; the sense and context of the *waiting* for the bus is now transformed into the *coming* of the bus. A grand shift from one textually- and cognitively- situated moment to the next has occurred; the permeable boundaries of one moment of thought to the next can be found (see also McNeill, 1992, 2005, *Growth Point*).

Describing and Distinguishing Types of Gestures

The types of gestures analyzed for this study are *gesticulations*; that is, they are spontaneous, idiosyncratic, and determined by situation and context, unlike emblems, such as giving someone the thumbs-up sign to indicate things are going well, or gang signs, or any other more formalized styles of gesture (McNeill, 1992, 2005). However, emblems and other more formal gestures routinely enter the speech-image-gesture interaction.

The major dimensions for the gestures in the present study were *iconic, metaphoric, beats,* and *deictic* gestures (McNeill, 2005). Gesture dimensions overlap considerably; for example, iconic gestures can have the movements of beats in a metaphoric space (ibid). Iconic gestures could be realized by making wing movements with the hands while describing a bird flying, or by making typing motions with the fingers and hands while using the phrase *write an e-mail*. These two examples of iconics also exhibit characteristics of metaphoric gestures by illustrating actions happening in a space imagined and created by the speaker. A further example of metaphoric gestures would be when a speaker is describing an event like avoiding a dog in the road while driving. The speaker might actually hold the steering wheel in her hand and turn her head sideways to represent how she was talking to a passenger in the car (see Kita, 2000, *spatio-motoric thinking*). While describing a movie, she might move her hands about two feet apart, with her palms angled open toward the ceiling, thus holding the movie in a metaphoric space in her hands. Perhaps during the description of the movie, the speaker would add beats by moving her fist up and down for emphasis. McNeill (1992) described beats as noticeable for their two movements of "in/out, up/down, etc" (p. 15). This same speaker might use a deictic gesture by casually pointing to the floor at her feet while talking about how one of the actors was from the town where the current conversation is taking place. Deictic gestures point somewhere, indexing a concrete object and/or abstract space (ibid). Deictic types of gestures are particularly important for the suggested classroom applications presented at the end of this paper.

To summarize the theoretical approach to the data: human activity is mediated by semiotic resources as these are integrated into goal-oriented, problem-solving activity. By using the utterance as a unit of analysis, segments of semiotic, discursive activity can be temporarily bound for analytical purposes. As the utterance unfolds, we can use the gesture dimensions of iconic, metaphoric, beats, and deictics to investigate the spontaneously created links among three separate, yet interrelated sign systems: speech, text-image (i.e., the graphic organizers), and gesture (see also Van Leeuwen, 2005; Van Leeuwen & Jewitt, 2006; Van Lier, 2004).

Relevant Literature

A great many journal articles and books have investigated gesture from a wide variety of disciplines and theoretical perspectives (Gullberg & McCafferty, 2008; Kendon, 2004). Several of these studies have focused on the processes by which language learners use gesture when

learning and communicating in the L2 (McCafferty, 1998; McCafferty and Ahmed, 2000; McCafferty, 2008; Roebuck & Wagner, 2004). Studies included in the review were those that had the most direct relevance to understanding how graphic organizers worked with gesture and speech to mediate meaning; specifically, as these studies could be linked to understanding gesture as a semiotic resource, which is part of larger semiotic systems. Besides Unger (2007), no studies could be found that directly investigated how gestures, speech, and graphic organizers work together to create meaning during the oral summarization of academic text for an audience.

One of the more applicable studies to the current research, with regards to the creation of a collaborative space using gesture, was McCafferty (2004). McCafferty found that, for a native English speaker and a Taiwanese international student with English as the L2, the physical and metaphoric movement, as signified through the use of language, the hands, and the interlocutors' bodies to create metaphoric space, proved crucial to successful communication. Moreover, McCafferty described gesture as a "self-organizing form of mediation for L2 learning" (p. 149), which is relevant for the current two-case analysis. In the McCafferty study the two participants were discussing the movement of forms of writing across Asia; in this example, the way writing moved between China, Korea, and Japan. The participants marked the space in front of them with their hands and body positions while discussing this historically sequenced movement of language; they collaboratively created metaphoric space that represented the actual locations of these countries on a map. This focus on the way gesture worked as a form of mediation has also been emphasized in other studies.

Lazaraton (2004) examined the use of gestures by an ESL teacher when the teacher was making unplanned explanations of vocabulary items. English was also the teacher's L2. Lazaraton found that the teacher used gestures extensively during these explanations, including a high level of iconics and metaphorics to illustrate the meaning of words. Her study provides data about the gestures used by an individual who is trying to communicate meaning to a student audience in her L2, but it differs from the present study in discussing any ecological resources (i.e. graphic organizer) used during the interaction.

Gullberg (2008) considered how gestures might be used to compensate for learners' incomplete acquisition of L2 grammar and how gesture can reduce the cognitive burden of L2 discourse (p. 203). Her findings support the idea that gesture simultaneously mediates cognition and meaning. In a related study, Lee (2008) investigated Korean students' gestures as private

speech (i.e., *speech for oneself*, Wertsch, 1979) as a mediational means as they studied for final exams alone or with tutors. While Lee's findings only included the integration of graphics and gestures in private speech, she calls for a better understanding of how these systems interact in second language acquisition.

Kita (2000) used the same types of gesture categories used in the present study to describe and propose types of thinking that underlie representational gestures (e.g., iconics) called *spatio-motoric thinking*. He proposed that "spatio-motoric thinking can be applied to the virtual environment that is internally created as imagery. Representational gestures are actions in the virtual environment" (ibid, p.165). Because humans use their senses to move through the world, then it follows that they create visualizations as background context, then create multiple representations against this background. An example would be when participants in the McCafferty (2004) study created a background kind of map in which to place the countries of China, Japan and Korea; then the speaker with English as the L2 used iconic types of gesture to signify the movement of writing from one place to another.

Sime (2008) used the EFL classroom as a site to investigate the meaning that students assigned to the gestures of their native English speaking teachers. She found that learners seemed to be particularly interested in gestures that in some way supported their learning, particularly when meaning was vague. Sime also suggests that gesture be given more attention in the EFL classroom, possibly even providing some kind of explicit instruction about gesture, although beyond increasing teachers' awareness of gestures, she does not provide any specifics.

Kida (2008), in the same collection of gesture studies edited by McCafferty and Stam (2008), advised against the teaching of gesture, warning that the teaching of gesture might prompt learners to focus on gesture and exclude other visual resources. Kida's study investigated the role of gesture in improving comprehension in the L2. She found that visual information is important to comprehending the speaker using the L2. Although Kida's caution in teaching gesture is worth considering, emphasizing to learners how gesture is just one integrated piece of a functional, dynamic sign system is a way to resist this tendency.

Unger (2007) is the only study that could be found that emphasizes the importance of gesture, speech, and graphic organizers as part of a functional semiotic system, viewing gesture as a semiotic resource, and as mentioned earlier, the present study is an extension and expansion of the earlier study with some major differences. Unger (ibid) presented data of a speaker using a

concept map during the oral summarization of academic text. Findings included the importance of using gesture (specifically the gesture stroke) as a reference point to describe and understand how the participant was visualizing concepts from the academic text, although the way gesture could inform teachers and participants was as not as strongly emphasized as in the current study. Also, in Unger (ibid), the data analysis included the use of *motion events* and the concept of *thinking for speaking* as additional dimensions in the data, which are not included in the present study (see McNeill, 2005; Slobin, 2003, 2005).

Overall, the literature on gesture, SLA, and ESL/EFL classrooms emphasizes the central and crucial nature of gesture in negotiating meaning. As far as the authors of the current study know, most noticeably lacking from the large body of research on gesture and SLA is a practical, truly interdisciplinary framework for classroom teachers to use video and other digital resources to collect and collaboratively analyze, with students, other teachers, scholars, or alone, the semiotic systems created during academic summaries and presentations; these semiotic systems include gesture. Most important for classroom teachers and the current investigation, the study of gesture provides a window into cognition (McNeill, 1992, 2005; McNeill & Duncan, 2000), and this insight into cognition has the potential to inform teachers on the types of problems L2 learners are having in summarizing academic text, along with understanding other difficulties students are having with language (see also Stam, 2008). With regards to where the present study fits in the vast amount of research on gesture in general, and the growing body of research on gesture and second languages (see McCafferty and Gullberg, 2008), the present study addresses the gap in the literature on how gesture works with graphic organizers and the L2 (in these two cases, English) to form a functional semiotic system during oral summaries of academic text. Also, few of the ESL/EFL and other studies on gesture and the L2 consider the data from case study and ethnographic perspectives, which can provide teachers and students with specific information on how they can use gesture as a reference point to better understand and improve language/literacy lessons.

Method

For this paper, contrasting data segments from each participant were selected for presentation as part of a two-case design (Yin, 2003a, see also Van Wynsberghe & Khan, 2007). A variety of ethnographic data were also used as reference points to understand the data selected for

microanalysis (e.g., the articles that generated the summaries; interview data; observation of participants at work in their teaching contexts).

The Site

Most of the research revolved around the activities that occurred over a sixteen-week semester with nine students in an advanced reading course that was part of the MATEFL (Masters of Arts in Teaching English as a Foreign Language) program at a university in northern Thailand. For the study, the University is referred to as Northern University, which is located in a large city, called Northern City, also a pseudonym.

The Participants

The nine student-participants in the overall study were from the United States, Thailand, China, Turkey, and the Netherlands; all but two learned English as a foreign language. The two participants chosen for this analysis, Nathanee (Nat) and Mawngpleurn (Mawng), were both Thai and in their mid twenties at the time of the study. Both also taught in different contexts in Northern City.

When the data were collected, gesture was not a focus of the research. The research questions for the study from which these data were selected for analysis revolved around the structure, content, and participant history with graphic organizers. Gesture and a concept map were emphasized with only one participant late into the data collection period (see Unger, 2007). At no time during data collection were participants aware that their gestures would be foregrounded, and for most of the data collection period, neither was the primary researcher. As data analysis proceeded, other participants' use of gesture became a focus; hence the current study.[i]

The General Context for Generating the Data

For these oral presentations, students were asked to summarize academically-oriented readings and to use only a flow chart and a concept-map as visual aids. Prior to the specific class period recorded, which took place approximately half-way through the semester, students had worked on different types of graphic organizers with a variety of readings and types of teaching and presenting situations. The primary focus for this paper is on specific segments from each participant's summary and presentation of academic text in which moments of meaning in the

speech/image/gesture stream were created through a reorganization of semiotic resources. These moments occurred when meaning became a challenge for the participant to express, or when one salient part of the semiotic system of speech, image, and gesture needed to be supported through an emphasis on using another part. For Nat, Case One, one of these moments of reorganization was prompted by a conflict between the written text on the graphic organizer and her oral speech; for Mawng, Case Two, moments of reorganizing semiotic resources involved a gesture substitution for a word that Mawng could not orally supply. For both segments of data, almost all segments of oral speech were prompted by framed textual spaces on each of the participants' graphic organizers (see words and/or phrases in the rectangles and square boxes in Figures 1 to 3).

Data Collection

Data for the current paper consisted of audio from two Panasonic tape recorders, video from a Sony analog camera, and the graphic organizers (see Figures 1 to 3). A research assistant was located at the back corner of the small classroom with the camera, and he monitored the tape recorders. With the exception of the first class, the video camera and tape recorders were present the entire sixteen-week semester. In addition, data from the larger data pool (e.g. field notes, exams, interviews, teaching observations) were used for triangulation.

Nat and Mawng were selected as *exemplar* cases for comparison (Yin 2003b) from the larger sample[ii] mainly due to the striking similarities in oral competence; energy and enthusiasm for the assignments; some interesting similarities in their histories with English; the differences in presentation and creation of different types, yet typical features of graphic organizers; and finally, their similar, heavy teaching loads and contrasting language teaching contexts in the community.

Transcription Protocol

Transcription protocol was adapted from McNeill (1992; 2005), McCafferty (2004), and Wells (1999). It should be noted here that the adaptations used in this paper evolved from McNeill's (1992, p. 387) suggestions to cover more breadth of interaction, though with a sacrifice on precision. McNeill's early transcription protocols have since been extended and refined by Susan Duncan in McNeill (2005). The protocol used here is intended to be used by teachers and, if

possible when researchers truly engage classroom teachers, can be forwarded, along with the relevant data, to other collaborating researchers to investigate the data further and/or to teachers who want to use the more refined protocol suggested by Duncan (ibid). Of course, limitations apply as to what can be interpreted from the present data; therefore, the path from the data to interpretation is made as transparent as possible.[iii]

The main task for classroom teachers is to work around and outward from the stroke, which is, as mentioned, the most salient part of the gesture (McNeill, 1992; 2005). The stroke is intended to work as a reference point; this is what teachers and learners can easily observe happening and use to better understand adjustments they might make to lessons, or gain a deeper understanding of different language and presentation issues they need to improve. Although some might warn of the dangers of handling the gesture data this way, the potential benefits outweigh the risks. Besides, the procedure here is not primarily intended to contribute to theoretical research findings of gesture and speech, though it can. The point here is to try and integrate research, theory, and practice (see Van Lier, 1996).

Coding the gestures

A data management and analysis cycle proposed by Huberman and Miles (1998) was used for determining the parameters for interpreting the gestures as falling into the dimensions of iconicity, metaphoricity, deixis, or beats, or combinations of these; a constant-comparative approach was used for coding the data (ibid). This coding was accomplished by moving back and forth between the transcriptions of gesture, video, audio, and parameters of gesture dimensions (e.g., iconicity, metaphoricity, indexicality, beats); then repeating the process to describe where different types of gesture occurred in relation to speech and the graphic organizers. Repeated viewings of the video data were accomplished by using the InterVideo WinDVD program on a laptop computer, viewing the data at different speeds; then transcripts were refined during each viewing session to increase the accuracy in describing precisely where gestures were occurring.

The two transcribed segments selected for presentation in the Results section are *moments* of gesture/speech/image that occurred around what is known as the *gesture stroke*; the starting point for teachers and learners to understand how speakers are creating and using semiotic resources is the stroke. Of course, other, more precise phases of the gesture could be gleaned from the data, as mentioned earlier, particularly if researchers would be able to work in collaboration with

teachers and students. The remaining transcripts for each of the segments of data, without the central transcribed segments presented in the Results/Discussion, are in the Appendix.

Data Analysis

For the current paper, the main focus is on two segments of data: Segment One, a twenty-one second segment from Nat, and Segment Two, a twenty-two second segment from Mawng. Segments One and Two were purposely selected to illustrate moments of signification. These episodes, along with the scans and photos of Mawng and Nat's graphic organizers (GOs), were exemplary data (see also *critical incident data* in Schensul, LeCompte, Nastasi, & Borgatti, S. 1999, p. 22) used to answer the research questions. For this study, both Segment One and Segment Two were viewed as episodes of microgenesis. This developmental approach is derived from Cole (1996), Vygotsky, (1978, 1986), Wertsch (1985, 1991), Wells (1999), and Werner (1978).

During the transcribing and analysis process, the concept of the psychological predicate and the utterance were used to guide the ending of one line of text and the beginning of a new line of text in the transcription. That is, as the background context of meaning seemed to change and participants visibly shifted to another speech/GO/gesture moment, one line of text ended and another line began. Gesturally, this visible shift was generally marked by the hands and arms in a position to begin a new gesture or in a resting position; in other words, one *gesture phrase* ends and another begins (McNeill, 2005; see also Kendon, 2004). The recognition of these kinds of permeable boundaries can reveal tensions among different types of semiotic resources and a type of *catharsis* as these tensions in the discourse are resolved (see Robbins, 2003, p. 33). For the analysis presented here, the focus was on a salient reorganization of semiotic resources, and as mentioned throughout the manuscript, the area around the stroke as a part of the gesture/speech/image stream was foregrounded for analyses.

Limitations

As in all research there were many limitations to this study. Despite extensive triangulation of the findings with a variety of data from the larger study, and an objective approach to the data, the findings are ultimately subjective. Member checks were also limited to graphic organizer use in general and not the present gesture analysis. In addition, generalizability of the findings is

limited. To counter a variety of limitations, data interpreted for the present paper are displayed for readers to make their own judgments about the verifiability of the findings; that is, a sincere attempt has been made to create a transparent path from the data to the Results and Discussion (Huberman &Miles, 1998; see also Altheide & Johnson, 1998).

Results

The data and interpretations from Case One, labeled Nat and Permafrost, are presented first. This is followed by the data and interpretation from Case Two, labeled Mawng and Highlight.

Case One: Nat and Permafrost

Nathanee (Nat) is a native speaker of Thai at an advanced level of English. At the time of the study, she was teaching English for Special Purposes at a vocational school in Northern City and was working on her MATEFL degree part time. Her undergraduate degree was in English, she spent a year in the U.S. during high school, and at the time of the current research, she had studied English in one context or another since she was five years old.

Figures 1 and 2 are different representations of Nat's Graphic. The rectangles in Figure 1 express sequential order and the general context of *underground water on mars*, and partly explain Nat's reorganization of meaning while she defines *permafrost*, which is expressed by the rectangle indicated by the arrow in Figure 1 and appears alone in Figure 2.

At her vocational school, she primarily used Thai when she was teaching English, and her students were generally regarded by her and other members of the local society as low-academically-achieving students who were training to work in a variety of service-oriented professions, such as computer operators, hotel and tourism staff, various maintenance staff, car and motorcycle mechanics, etc. At her school, English was not emphasized, and most staff encountered during a field visit to the school did not use English. Of course, some may have been more proficient than they revealed, and this lack of English in this school environment is perfectly understandable; all subject material, including English, was taught using Thai.
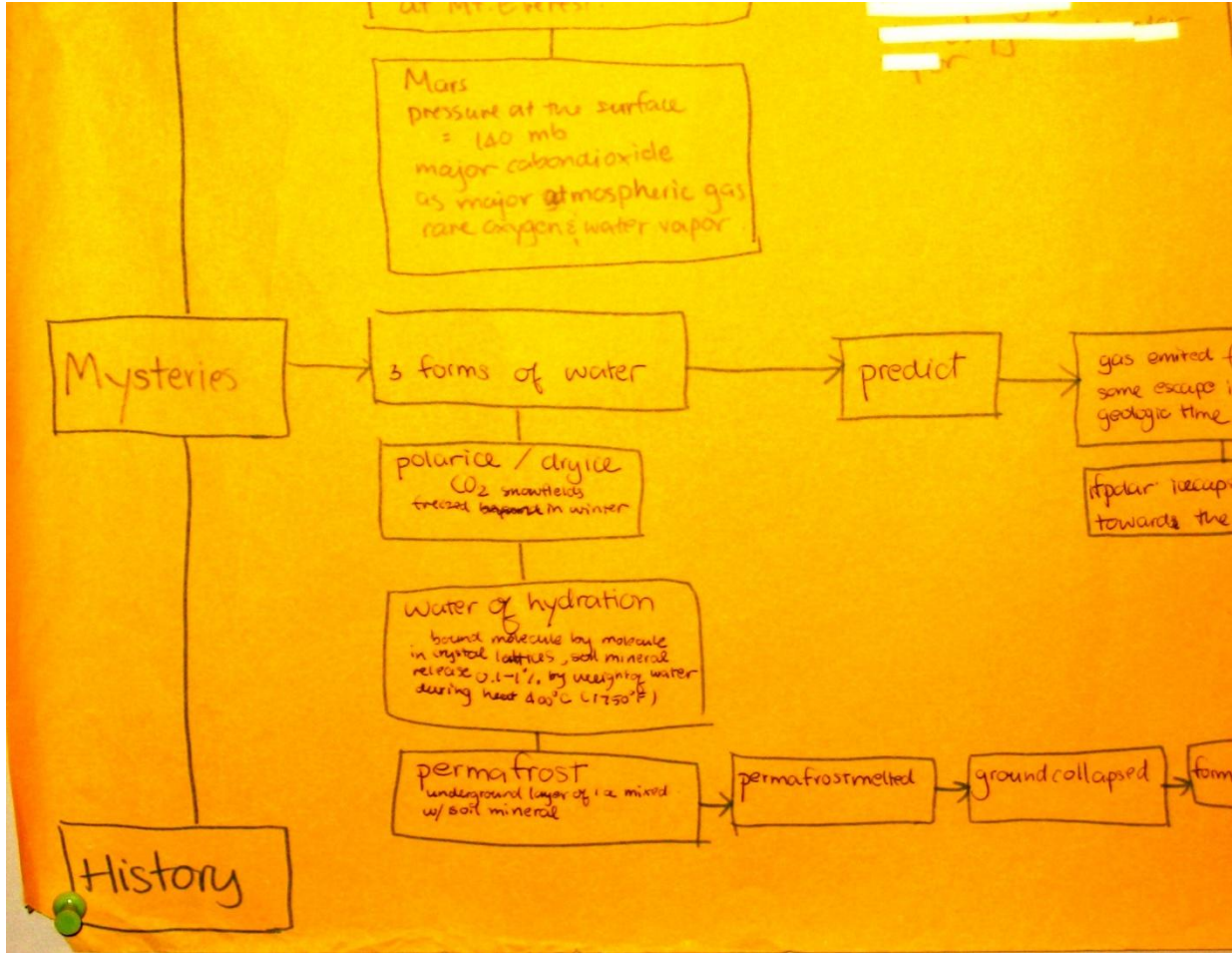
Figure 1: The rectangle that prompted the discourse for Nat, and the surrounding rectangles, which express content related to the substitution "mist" for "mixed" in line 3 of Nat's data.
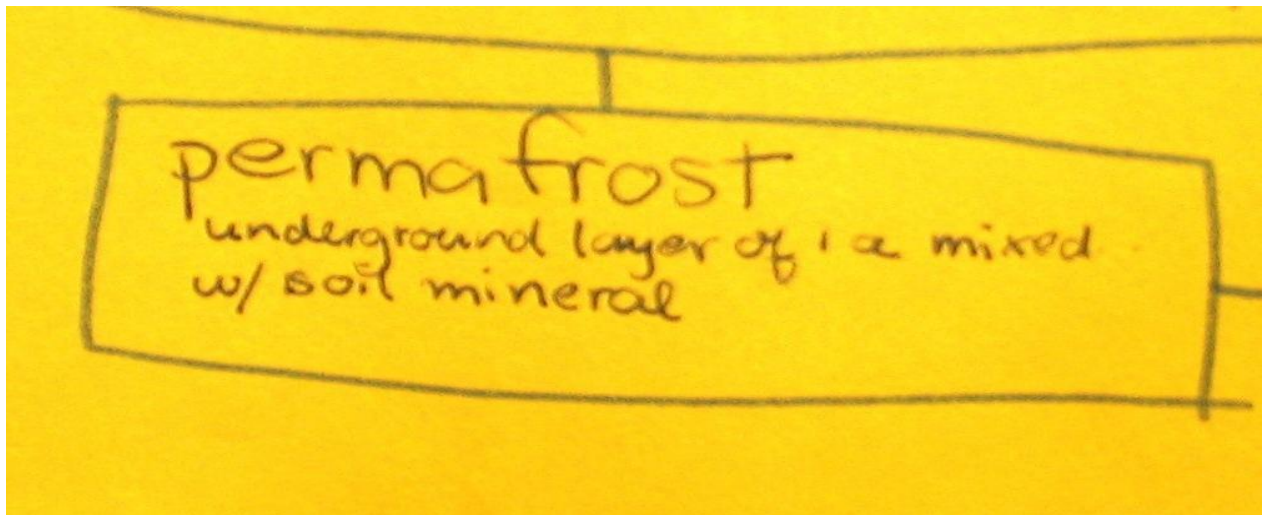

Figure 2: The rectangle from Nat's graphic that prompted the selected episode of discourse

Nat is summarizing a chapter from a book about Mars. The topic covered in this broad section of the graphic organizer is Mysteries, with a focus on three types of underground water (the water source is a mystery). The rectangle emphasizing "permafrost" prompted the current moments of discourse and is displayed in Figure 2. Nat's entire presentation lasted 21 minutes and 27 seconds. The 21-second segment prompted by the rectangle in Figure 2 occurs approximately 12 minutes into the presentation.

The transcript of the oral speech without gesture for the entire 21 seconds reads as follows.

Nat and Permafrost, Transcript without Gesture

1: The next one is the most important things about ah Permafrost

2: Is.. . Is ah. . . permafrost is underground layer. . .

3: . .. is a underground layer of a mist

4. Ah of ah. . . of the water underground layer

5. This is called [under the earth]

6. of on in the earth [aroun marn]

Lines 2, 3, and 4 are placed in the foreground as part of the Results and Discussion. The remaining gesture/language transcriptions of this segment are presented in the Appendix. Although this segment revolves around the rectangle displayed in Figure 2, Nat visibly, and very briefly, refers to a large concept map that is hanging next to the flow diagram/concept map displayed (see the transcription under line 1 in the Appendix). One of the more striking moments in this discourse segment is the speech/gesture/GO depiction of permafrost, which involves a major reorganization of speech through the use of several iconic gestures that unfold in metaphoric space. One of the most important features of how the semiotic resources are continually organized and reorganized is how the iconics unfolding in metaphoric space create a deictic display, pointing the audience toward specific understandings of intended meaning. In the following segment, the semiotic resources are reorganized and point the audience toward an abstract image of the process and implied product of underground water on mars: the process, *mixing*; and the product, a kind of *mist.*

The segment presented for analysis here, lines 2 through 4, begins with Nat in a relaxed stance (see Appendix transcription of line 1). She is leaning comfortably, with her hand on the corner of

the desk, her left side toward the whiteboard, her right side toward the audience, with the front of her body more toward the audience than the whiteboard. In line 2, Nat uses gestures to create a space in which the "layer" of "permafrost" concretely exists for herself and the audience. She locates this space below shoulder level; "underground" is slightly below this. As the transcript below is reviewed, note how the location of the layer is established as she begins this utterance; then her hand dips slightly at "underground," and rises to the same general level below her shoulder/upper chest area on "layer". Also notice how Nat positions the layer of permafrost in the space between herself and her GOs on the whiteboard. She gesturally maintains this layer as she begins line 3 (similar to what McNeill (2005) describes as a *post-stroke hold*). As mentioned previously, the positions of the whiteboard and Nat to the audience provide a concrete and abstract space for shared attention, which could be interpreted as Nat offering the image of *the underground layer of permafrost on Mars* to the audience. This semiotic display, the-underground-layer-of-permafrost-on-Mars, is a momentary representational sign system derived from Nat's gestures, her speech and the bounded space created by the positionings of the whiteboard, the GOs, Nat, her gestures, and the audience. This semiotic display can be understood in the summarization process as a deictic, simultaneously pointing the audience and speaker to a specific idea from the information being summarized. This overlap of the gesture dimensions of iconic and metaphoric, with an emphasis on deictic features, is important for possible classroom applications presented at the end of this paper.

2: Is. . Is ah. . . [permafrost is underground layer]. . . .
On Is ah her left hand rises, palm open toward the ceiling. During the pause after ah, her hand swings slightly down, then up, rising to shoulder level as she begins permafrost.

On permafrost her hand faces the ceiling, palm up, fingers slightly curled, as if she is holding something, her hand making a very slight series of small twisting beats as she says permafrost, her palm still facing the ceiling. There are stronger, more distinctive beats on the first syllables of under and layer, in addition to the overall positioning of the height of her hands, which is signifying where the layer is in front of her.

On underground, her hand begins to open, moving markedly downward, fingertips angling toward the floor with her hand slightly more open than before.

On layer, her palm rises to the same general shape and almost to the same level it had on

permafrost; her hand is open to the ceiling, fingers slightly curled as before. Her hand is just a few inches lower than it was at the beginning of this segment. As she finishes layer, she is facing the audience and maintaining her hand as if holding and presenting a layer to the audience.

The end of line two marks the end of a salient contextual background established through the interweaving of the three semiotic systems of speech, gesture, and the GO. An observable shift in thought has occurred: a shift between talking to the audience without written text to using the written text to mediate the next speech segment. It is important here to note a shift between an emphasis on oral speech and gesture as more independent of the written text on the GO until line 3. In the first three seconds of line 3, Nat is visibly reading the rectangle shown in Figure 2: "underground layer of a mixed w/a soil mineral." As pointed out in the transcript below, she says "mist," when the word in the rectangle says "mixed." Also note the indefinite article before *mixed*, and the little mark next to the "a" as if some other grapheme may have been intended and begun, but not included. To profoundly understand the summarization process and evident tensions in different parts of this system, which also reveal a history of thought "unfolding in front of our eyes" when the entire presentation is considered, it is revealing to contrast this uttering of "mist" with the information surrounding the rectangle (see Figure 2).

The broad category in this section of the flow diagram is "3 forms of water"; the rectangle that Nat is reading for line three is the third rectangle down from this heading. Note the lexical items that would prompt the notion of the underground layer being a kind of "mist." These include "polar ice/dry ice" and "CO2" in the rectangle closest to the heading "3 forms of water," and in the rectangle directly above the one Nat is reading, the following salient lexical items: "water of hydration," "molecule," "crystal lattices," "soil mineral release by 0.1-1% by weight of water during heat"; then some high heat measurements are given. Surely, "mist" is a natural word to use here in the context of the technical language presented by the GO.

One second after she says the word "mist" at the end of line 3, Nat's entire demeanor changes; this visible display of demeanor, which is exhibited through a change of physical positioning and gestures, marks another change in context, and of thought. This movement and salient, permeable boundary from one moment of thought to the next occurs at the end of line 3 and beginning of line 4, where the reorganization of the semiotic resources begins in earnest.

3: .. . is a underground layer of a <u>mist</u>.

Nat turns from the audience to the flow chart after completing line 2. In the first three seconds of line 3, she is looking directly at the rectangle and presumably reading the text; she is still holding her hand, palm up, fingers a little straighter, pointing toward the flow chart. As she is reading, she utters <u>mist</u>, which is assumed to coincide with her encountering the word "mixed" in the rectangle on the flow chart (see Figure 2).

Approximately one second after <u>mist</u>, Nat begins to move from her relaxed stance; her right hand leaves the desk, her hand moving to the palm-up position as it begins to move toward her midsection where it will synchronize with her left hand in the next moment of discourse.

Line 4 begins the building of the image that Nat will supply as this next moment of gesture/speech/GO unfolds, and this involves a new depiction of the underground layer of permafrost that she has been attempting to describe since the beginning of the overall 21-second segment. She was only using one hand in a relaxed stance until she said "mist." The change is quite striking when she turns back to the audience, with both palms open to the ceiling; then she begins to circle her right hand around with the index finger pointed up, as described in this next transcribed segment, as if mixing water with her right hand while marking where this layer is with her left hand.

4. Ah of <u>ah</u>. . . <u>of</u> <u>the</u> <u>water</u> <u>underground</u> <u>layer</u>

Nat turns back to the audience on the second <u>of</u> and moves her hands slightly above her midsection with both palms up, her left hand higher than her right; her hands are at a similar height as when she said <u>layer</u> in line 3.

Nat makes a distinctive shift from looking at the graphic to addressing the audience on <u>of the</u>, with her two hands, palms up, outstretched to the audience.

At the beginning of <u>water</u>, her right forefinger is extended, and her right hand begins to swirl in a clockwise direction, marking a position where the layer of water was located in segment 3 when both hands were palms up and flat, facing the ceiling. Also on <u>water</u>, her left hand begins to move in a clockwise direction, but slower than her right hand, with this movement slowing on <u>underground</u> and coming to a complete stop by the end of <u>underground</u>. Her left hand is palm open, fingers straight. Her right hand swirls continuously on <u>underground</u>, <u>water</u>, and <u>layer</u>,

seeming to mark the syllables with small beats during the swirl.

As she completes <u>layer</u>*, her left hand stops, and her right hand continues to swirl, forefinger extended, the swirling becoming a slightly tighter circle and stopping as she begins line 5.*

Case Two: Mawng and Highlight

Mawng is a revealing case to contrast with Nat because of their similar ages and communicative levels in English, yet very different histories of teaching and literacy with English in Northern City. Mawng also had a B.A. in English at the time of the study, but from what the locals regarded as a more prestigious university in the city. Both Nat and Mawng began studying English at about 5 years of age and were classmates in some of their elementary school classes. During data collection, Mawng was teaching Thai at a Christian-oriented international school to mainly native-English-speaking grade-four through grade-twelve students who were the children of missionaries and other members of the ex-pat community in the city (many Australian, Canadian, U.S., New Zealand, and UK citizens). Mawng was surrounded by English in her professional life at this school: the curriculum was in English, and most of the faculty were native speakers of English. During the data collection period, Mawng was also teaching English to a variety of college-aged students in Northern City as an employee of a small language center, and as a private tutor on her own. She also had an American boyfriend whom she later married. In contrast, recall that Nat taught English to young-adult (16-22) vocational students, using Thai as the major vehicle of instruction; she was surrounded by Thai in her professional life.

The general topic Mawng is presenting is Drama. For this presentation Mawng used both a flow chart and a tree-diagram/flow chart type of graphic. Both of these were on overhead transparencies; the flow chart is not included in the present analysis, as it was only used at the very beginning of her talk. The specific rectangle, which is prompting this segment of Mawng's talk, displays only three lexical items: "Electric/ round" and "(20th century)" (see Figure 3).

As with the Data from Nathanee, only data that occur around an obvious and salient reorganization of semiotic resources of the speech/GO/gesture stream is presented in the Results and Discussion; for Mawng, these are transcribed gestures from lines 3 through 6. Full transcriptions of lines 1 and 2 are in the Appendix. The segment presented here moves from the most central segment of the gesture to the end of this segment, and lasts approximately 9 seconds. Near the end of this segment, Nathanee, as an audience member, supplied the word

"lights," as discussed below.

Mawng and Highlight: Transcript without Gesture

1: Mawng: <u>Alright</u> <u>and</u> <u>then</u> <u>in</u> <u>twe</u>ntieth <u>century</u> <u>there's more</u> like develop<u>ment</u>

2. <u>they</u> have elec<u>tric</u> <u>city</u>

3. [<u>to help</u>, you <u>know</u> <u>Boop</u> <u>Boop</u>, you know, help to highlight] the story

4. <u>to</u> make <u>it</u> <u>much</u> <u>more</u> <u>like</u>

5. Nathanee: <u>lights</u>—

6. Mawng: <u>exciting</u> <u>uh-huh</u>. And the last one

The general theme for this segment is how development and electricity is related to *highlighting* "the story." The speech, gestures, and graphic organizer suggest that the image Mawng created includes more than "lights," provided by Nat, and the image is intended to include these additional consequences of twentieth-century technologies.

   One of the most striking gesture/speech/GO moments that clearly illustrate a reorganization of three different semiotic systems occurs around the words "Boop Boop" in line 3. The predominant supporting gesture here is a mix of a series of iconic beats that are *sent out to* the audience. Again, as with the data with Nat, the iconics, including the addition of sound, create a semiotic display that acts as a deictic, intending the audience to have a specific understanding of the summarized text. Moreover, the opening and closing of the hands resemble the local emblems used to let folks know that their vehicle lights are on in the daytime. Although these are iconics and beats occurring in a metaphoric space, the overall effect is a deictic, prompting an audience member (Nat) to a specific type of response. Again, a functional semiotic system is created from gesture, speech, and image.

3. [<u>to help</u>, you <u>know</u> <u>Boop</u> <u>Boop</u>, you know, help to highlight] the story
At the beginning of <u>to help</u>, Mawng has both hands and arms spread apart, slightly higher than her shoulders. The first <u>help</u> and <u>know</u> are marked by iconic-like beats; with each beat, she opens her hands, her fingers splaying outwards after tensing against her thumbs, fingertips at the end of each beat pointing toward the ceiling, her palm open to the audience, her fingers spread apart as if flashing the number five at the audience.

On <u>Boop Boop</u> she continues the same gesture as she did on <u>help</u> and <u>know</u>. From the beginning of this long series of beats that starts with <u>help</u> and finally dissipates on the word <u>highlight</u> and beginning of <u>the</u> <u>story</u>, it's almost as if she is gently sprinkling light on the audience, with her palms open to the audience at the end of each beat; then her fingers close against her thumb again to repeat the motion. These iconic-like beats are all part of a continuous, fluid motion of her arms and hands marking the space in front of her. On the second <u>you</u> <u>know,</u> following Boop Boop, she is drawing her left hand inward toward her chest, her hand closing into a fist as she moves it to her chest. Her left hand pauses for a moment as her right hand performs one sprinkling beat between <u>you</u> <u>know</u> and <u>help</u>, approximately where the comma is located in the transcript.
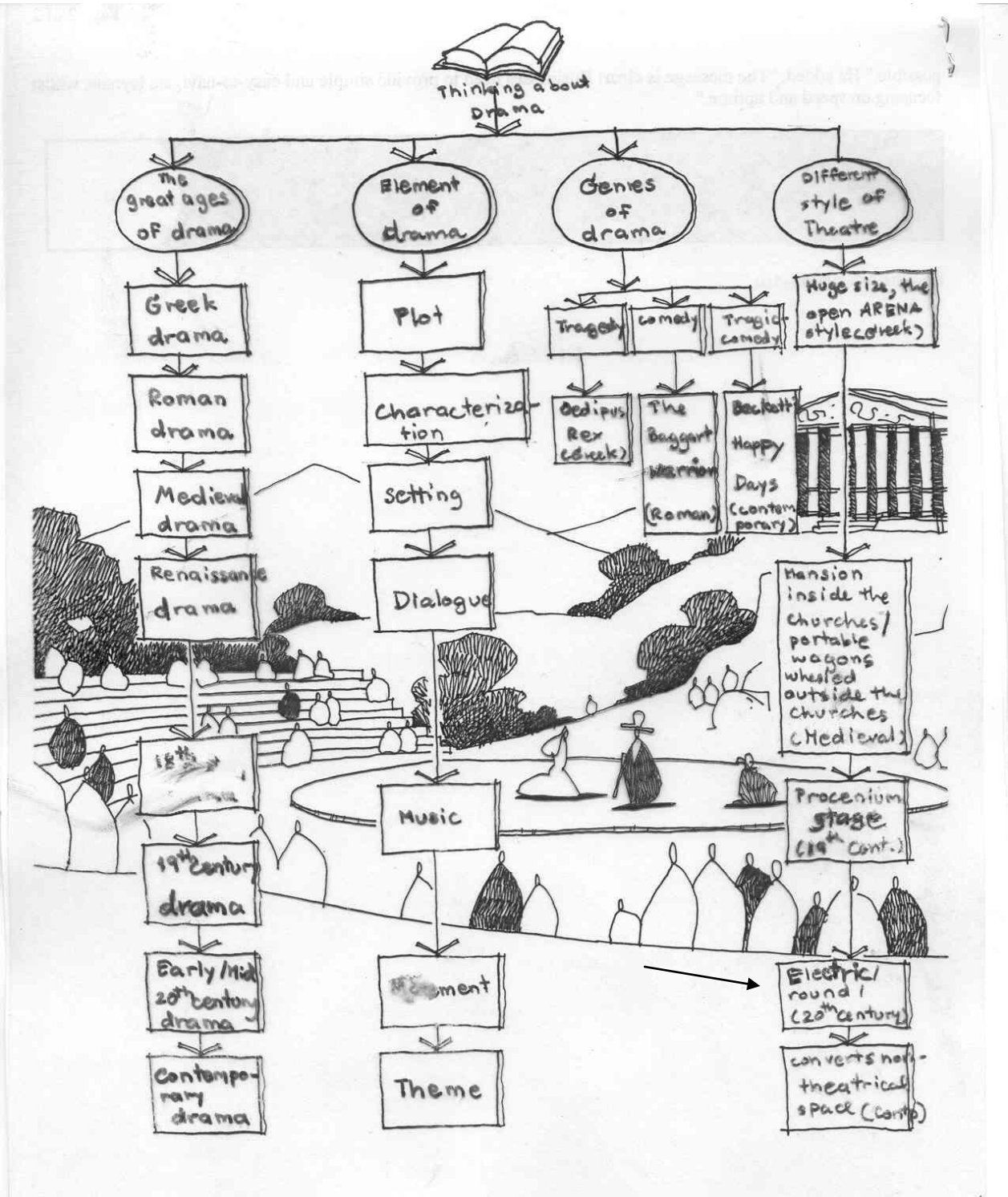
Figure 3: The Overhead transparency that Mawng used. The arrow points to the rectangle that Mawng is using. Written inside is "Electric/ round/ (20th Century)"

On the second <u>help</u> before the infinitive, her right hand is drawing inward and closing in preparation of repeating the beat on the <u>to</u> of <u>to</u> <u>highlight</u>, as her left hand stays relatively motionless again. On <u>highlight</u> her left hand moves away from her chest and opens on <u>light</u>; simultaneously, her right hand is open, but not as directly open to the audience as it sways gently toward the overhead projector. At the end of the iconic-like beat on <u>highlight</u>, and as she begins <u>story</u>, Mawng begins to circle her hands and forearms around each other in a kind of barrel shape as she has done frequently throughout her entire presentation. On <u>the story</u>, she glances down at the overhead projector.

At the end of line 3, when Mawng is shifting her arms from *highlighting* (i.e., the sprinkling beats), she is also shifting to a different topic: the background to the utterance and the image Mawng wants to portray is changed from "highlight the story" to "exciting". This is marked by the look down at the overhead projector and transparency, and the shifting of her hands away from the highlight gesture to begin *rolling the hands around each other*.

On line four she moves more into rolling her hands around each other, which she has done frequently throughout her talk. As noted in the transcript, as Mawng is completing this segment of utterance and beginning to reach toward the overhead, Nat speaks out to provide the word that she presumes that Mawng was missing: "Lights."

Another salient feature of this last chunk of discourse is the delay and gestures that occur before the word "exciting". The delay seems prompted by two things: the reaching down for the overhead and Nat's insertion of the word "lights." The rolling of the hands in wide, barrel-shaped rolls is the most prominent feature of this chunk of discourse before Mawng reaches for the overhead.

4. <u>to</u> make <u>it</u> <u>much</u> <u>more</u> <u>like</u>

On the <u>to</u>, both of her hands briefly pause in the barrel-shaped movement, and she looks up from the overhead to the audience. Her right hand very briefly pauses in the continuous roll with palm-up, positioned slightly above her waist, and her left hand is closed. On <u>it</u>, Mawng's hands continue their roll around each other as they did before; her left hand slightly off the roll and moving inwards; then her left hand shifts to become a part of the continuous rolling of the hands through <u>much</u> and <u>more.</u>

On <u>like</u>, she is continuing the rolling of her hands around each other and nods her head at the end of <u>like</u>. By the end of <u>like</u>, and immediately after the slight nod, she glances down at the overhead and begins to reach for the pen with her right hand. This is when Nathanee contributes "<u>lights.</u>"

5. Nathanee: <u>lights</u>—

6. Mawng: <u>exciting</u> <u>uh-huh</u>. <u>And</u> <u>the</u> <u>last</u>

Recall that the remaining transcript of this segment with gestures is in the Appendix.

One of the most noticeable features of both Nat and Mawng's discourse is the way they create, reorganize, and recreate momentary semiotic systems as utterances. That is, as interrelated sign systems, the gesture, speech, and graphic organizers provide mutually supportive features; each system provides more emphasis than another when needed. Just as Nat's gestures produced an iconic image that illustrated the underground layer on Mars, Mawng created an image illustrating the theme of *highlighting the story*. The story involved more than the image of lights. Mawng also emphasized sound with the phrase, "Boop Boop," which was synchronized with the hand gestures. Mawng created eight distinctive closing and opening of the hands, of varying saliency, throughout line 3, and these supported the central sound/image of "Boop Boop."

In terms of creating a metaphor, *highlight* belongs both to the abstract, as in "highlight the story," and to the concrete, as when a light would shine on something (see Pragglejaz Group, 2007, for more on identifying metaphors). This gesture seems to be more in the dimension of metaphoricity than iconicity, though again here, the overall effect is to point the audience toward a specific intended meaning, which is linked to the summarized text.

Discussion

Although the data analysis here does not fit into the rigorous and exclusive procedure of gesture analysis promoted by Duncan in McNeill (2005), which is out of reach of most classroom teachers, the approach outlined here is an adaptation proposed by McNeill (1992), which has been refined through the definitions of utterance, signification, and mediation provided in the theoretical framework. By using this overall approach, teachers, students, and researchers can use gestures as a reference point to glimpse the boundaries of one literate thought to the next. As

students move from recording episodes of speech to writing, these permeable boundaries can be used to understand some of the abstract nature of critical thinking relationships (i.e. the relationships between supporting details, main ideas, and theses). These possibilities are reviewed in the last section of this paper.

As in some of the prior research mentioned, this study goes along with the findings of Lee (2008) with regards to the importance of a visual in a dialogic relationship with gesture and cognition, though the findings and the approach in the present paper are quite different from Lee's work due to the difference in theoretical framework and methodology. The present study emphasizes gesture, speech, and the visuals (i.e., the graphic organizers) operating as a functional semiotic system during a presentation of a summary to an audience. Consequently, viewing the episodes of communication as a functioning interwoven system to present information to an audience precludes making judgments about whether speech is for "oneself" (i.e. self-regulation) or an "other." However, as reported by Sime (2008), and as in the response "lights" that Nat produces during Mawng's presentation, an audience member focused on a gesture of local importance when the speaker's meaning was unclear.

As with McCafferty (2004) and others (McNeill, 1992; McCafferty, 2002), the data in the present study suggest that speakers create a functional system (see Luria, 1979) that becomes a regulatory space, and each part of the system is involved with other parts of the system to mediate meaning, though the participants emphasize different parts during the course of the summarization process. As with McCafferty (1998; 2004) and Unger (2007), beats were prominent when speakers were having difficulty making meaning. In many ways, the data from Case One and Two are also related to Lazaraton (2004), who found large numbers of iconics and metaphorics used by English teachers with English as the L2. McCafferty and Gullberg (2008) also report extensive use of representational gestures in many studies when the L2 is used.

In the data from Nat, she clearly emphasized a specific level of the ground on Mars by using representational gestures in a metaphorical space when she mentions "underground." The way these iconics and metaphorics act as deictic displays for the audience, as well as pointing back to the summarized text is important to notice. She represents the level of underground by signifying a specific level of ground through the positioning of her hands in relation to her body and the graphics on the whiteboard. This series of movements signifies the top of the ground for the audience and for Nat; then she clearly refers back to this level to position the concept of under-

the-ground during other utterances in this segment. In this way she is creating a similar reference point as in McCafferty (2002, 2004), and returns to this point as a part of the ongoing discourse. Creating a reference point to describe a specific type of concept clearly indicates one of the definitions of microgenesis from Wertsch (1985): "the unfolding of an individual perceptual or conceptual act" (55). In most of the data, this genesis of meaning could be observed by using the stroke as a reference point, around which other semiotic resources are organized, particularly during moments when one part of this semiotic system began to weaken and another part of the system compensated. By closely observing this genesis of meaning teachers and learners can observe how speakers are creating deictic displays to share attention on a specific idea from the reading they are summarizing. In other words, the speaker is intending for the audience to understand a major piece of information from the text summarized, through the use of abstract and concrete use of iconics, metaphorics, and beats to create deictics.

A deeper understanding of what speakers are referring to and what they are visualizing when they create gestures as semiotic resources can also be seen when examining the present study in light of Kita's (2000) study. Recall Kita's position that "spatio-motoric thinking can be applied to the virtual environment that is internally created as imagery. Representational gestures are actions in the virtual environment" (p.165). This idea seems particularly useful to investigate how learners use representational gestures as semiotic resources during summaries, and how investigating gestures as semiotic resources can reveal what material from the summarized text is prominent in the minds of the speakers. In other words, teachers and learners can better understand how speakers visualize the content of text.

As the participants in the current study created semiotic systems, both created gestures that illustrated how they were conceptualizing concepts and words, including what seemed to be the most important information from the text they were summarizing. Both seemed to place themselves as a part of the virtual environment to illustrate the locations of items they were defining. Nat signified the notion of "underground layers" of water, existing as "permafrost" on Mars, by building layers in the physical space in front of her for the audience to view; which supported the idea of a mixing of elements when she further swirled her finger in a circle. Recall that she moved into swirling her finger after having said the word "mist" while reading "mix." After recognizing a mismatch between her speech and the graphic, she completely reorganized gesture, speech, and the graphic organizers, expressing, as Kita (2000) said, an "action in the

virtual environment" (165); in this moment, the environment of Mars. Also, the words mist and mix reflect the history of the information in the rectangles close by, which may be related to an earlier mistake when she was creating the graphic (e.g., the use of the article "a" before "mixed" in Figure 1). The subtleties of the summarization process can be found by taking this kind of approach to the data.

Another example of the data illustrating process features of summarizing academic text is Nat's use of the word "mist" and her efforts to emphasize the concept of "mix" in the iconic type of beat. The information in the other rectangles arranged hierarchically cover the topic of water on Mars in this area of the Graphic (See Figure 1 and 2) and emphasize "mix" as a common theme, in addition to the prevalence of "mist". Permafrost is a mixing of all these elements, which exist "underground," and each of the other types of water expressed in the other triangles present a mixture of solids and gasses. With her gestures working with the graphic organizer on the white board next to her, Nat spent quite a bit of time and energy creating a large metaphoric space, hierarchically creating a level in front of her that provided a context for under-the-ground. Indeed, if a written revision was part of the process, this entire section of the graphic could be reduced to the notion of permafrost and other types of water on Mars as mixtures of ice, soil, and gaseous mists; taken all together, a major theme for a written summary can be found in this segment of the overall semiotic system.

Most important for the classroom literacy applications presented at the end of this paper, and what stands out in the segments of data from both Nat and Mawng, is how the organization of the semiotic resources of gesture, speech, and graphic organizers create moments of shared thinking (see *joint attentional scenes* in Tomasello, 1999; 2003). The iconics and metaphorics become noticeable reference points in the way these gesture dimensions overlap to create a deictic display; that is, the iconics and metaphorics position language and meaning to simultaneously point the speaker and the audience to specific ideas from the summarized text. The speakers are strongly guiding the audience in signification.

Recall that Mawng used a well known iconic from the surrounding community (i.e, the opening and closing of the hand to signify the turning off of car or motorcycle lights) to illustrate the lights of a twentieth century theatre, which was the topic of the rectangle (i.e., the visual utterance from the graphic organizer). Overall, this segment from Mawng's summary clearly illustrated the general theme of "highlight", which would provide a reference point to indicate

what might be important information to include in a final summary. Indeed, the representational gestures used in both Case One and Two clearly illustrated how the speakers were bringing their original academic summaries to life for the audience.

With regards to understanding the linguistic and image-based semiotic resources that are synthesized during these moments of interaction happening in the video, it is important to note the multidirectional, discursive nature of signification. This emphasis on process includes inventorying semiotic resources through the use of digital-video resources. Moreover, using this type of procedure could provide the type of repeated interactions needed to investigate the first type of microgenesis mentioned by Wertsch (1985): "the short-term formation of a psychological process. The study of this domain requires observations of subjects repeated trials in a task setting" (p. 55). Learners could be tracked over several lessons, or across different types of curriculum requirements (e.g., writing across the curriculum).

As proposed in the theoretical framework, in order to look in multiple directions at the genesis of sign creation and use in these data and other similar situations, the overlapping ebb and flow of signification and mediation that occur during communication must be recognized as existing simultaneously in multiple domains of human activity, as a part of socioculturally-generated subjectivity and individual ontology. In other words, our momentary selves, particularly our cognitive, sociocultural/historical adult selves in language/literacy learning contexts, unfold as an interdiscursive/intradiscursive activity that depends greatly on what type of semiotic resources can be created and used during the ebb and flow of one literate moment to the next. Students and teachers can use a close examination of the video data, with the gesture stroke as reference points in the overall semiotic system, to gain insight into what information should be included in summaries and other types of presentations, in addition to content that should be included in a final piece of writing. The oral summaries can serve as an intermediate step in the overall writing process.

Implications/Applications for ESL/EFL Classes and other Language/Literacy Learning contexts

Since collecting the original video data in the early part of the past decade, the first author has been working with and presenting this data, other related gesture and graphic organizer data, and a variety of information on gesture to different groups of English language learners and teachers.

These groups have included students in undergraduate linguistics and graduate TESOL and literacy courses and students who are learning English in ESL and developmental English courses as domestic or international students. Consistently, the value in teaching native and non-native English speakers about gesture data has been to strongly prompt students and teachers to note how communicative events, particularly presentation types of events, are created from dynamic, complex systems of gesture, speech, and any visuals supporting the event (see also Van Lier, 2004). As students begin to understand communicative events as complex systems, the emphasis is shifted to deictic types of gestures and the relationships of deictics to transition words and phrases (i.e., as a result of; as compared to; also; therefore). This relationship between deictics, visual aids, and transition words are highlighted during a range of classroom applications that bring students from interacting with narrative text (literary; story-telling) to expository text (non-literary; informational). All these activities have evolved from this original gesture data and from different groups of students over the years. As flip video cameras have become more affordable and recordings with cell phones have become more common, students have been able to record themselves. The video recordings can become powerful tools for students to closely observe their own and others' activity with oral speech, visual aids, and gesture, and finally, guide them into writing formal drafts of academic text.

   The goals of the classroom applications evolving from the gesture research are intended to prompt the students to:

1) Create a variety of representations on inexpensive poster paper, such as main idea statements, quoted phrases, graphic organizers, collages, etc, as part of the reading comprehension, reader response, summarizing, and writing process;

2) Use inexpensive flip-video cameras to record oral explanations of the relationships between main ideas and supporting details, including thesis statements and main points of summarized readings, film, music, and other media presentations;

3) View videos with an emphasis on prompting students to notice the relationships between deictic types of gestures (pointing) and transition words to explain relationships;

4) Write formal explanations of the relationships of supporting detail to main ideas and thesis statements;

5) Move back and forth across phases in this entire series of applications, emphasizing the deictic types of gestures and words used to express relationships, particularly the representations and

explanation between supporting details, main idea statements, thesis statements, and summaries of academic text.

The current integration of the gesture data and digital resources has been for remedial literacy curriculum for developmental literacy students. These students are a mix of native English speakers, and many have Navajo and Zuni (languages indigenous to the southwestern U.S.) as their L1 and L2, or Spanish as their L1. Course objectives include prompting students to recognize and produce thesis statements, topic sentences, main ideas, supporting details, overall essay and textbook structures, and use specific types of well-known transition words, such as *for example, as a result of, results in, before, furthermore, thirdly, instead of, similarly*. Recall that transition words express relationships among different ideas expressed by text, in addition to expressing the overall rhetorical styles, such as *compare and contrast, cause and effect, process,* etc. Across all the courses, the gesture data provides a starting point; and after a brief introduction into different types of gestures, which are all returned to periodically during the semester, students are prompted into noticing how deictic and other types of gestures point audiences to specific meaning. These students were not covered underneath Institutional Research Protocol, as with Case One and Two, so only indirect reports of classroom applications are presented here

Phase One, the Creation of the Visual
Before the students begin creating the poster, Case One and Two video-data segments are shown to the students, as well as many other examples of graphic organizers and gesture data from other studies. During this past academic year, the current groups of students have opted to stay off camera, with only one or both of their hands appearing on the screen; students' hands and voices direct the audience's attention to areas of the graphic; words and phrases on the graphic become reference points to longer oral explanations. Although this process has been different from other semesters when students were willing to speak on camera, this narrowing of physical action on the screen provided a powerful way to focus on relationships between ideas. Moreover, the deictic gestures highlighted different parts of the content that needed to be related to other parts of the content. This can lead students to understand, in concrete terms, the abstract nature of the grammatical functions of the transition words. In formal writing, transition words very often replace deictic gestures, along with iconics, metaphorics, and other important nonverbal cues

present in oral text.

For the first phase of extending the study of gesture into EFL/ESL and remedial literacy courses, after students view examples of how gesture, speech, and a visual aid work together, students are taught a simple process that displays main idea statements and supporting details from a reading on a sheet of poster paper; then they use the poster paper as a visual aid in video presentation. To enhance student interest and motivation for the first time learning this new strategy, students are asked to choose a favorite song and **to use** the lyrics in English as reading content. Of course, this will normally be some type of narrative text, and these days, some of the language might be inappropriate, depending on the students and culture, but using a song also prompts students to confront the abstract meaning of this type of text. However, these first steps are to familiarize the students with the process of creating the poster, using the video camera, and responding to the videos they create.

For the Poster Paper, students are asked to write the title of the song and the name of the artist at the top of the poster paper, with a user name at the top right corner (either a pseudonym or a variation on the spelling of their real name). Below the title, students write the heading Main Idea Statement and create one or two sentences in their own words that express the main idea of the song. Below the Main Idea Statements, students write the heading Supporting Details/Evidence, and are guided into picking three different words, phrases, clauses, or sentences that can be strongly related to the Main Idea Statement. In contrast to creating Main Idea Statements in their own words, Supporting Details are copied, word-for-word, directly from the reading they are working with; in this phase, song lyrics. Students are prompted to using quotes around this material, and this use of quotes is connected to a wide array of common critical reading and writing standards (integrating evidence into writing; using quotes as evidence; avoiding plagiarism). With regards to gesture, one of the phenomena students can observe on the video is how they explain the relationship between Main Idea Statements and Supporting Details. Students directly observe how they and their classmates use deictic words and gesture to go back and forth between Supporting Details (e.g., the quoted material) and Main Idea Statements. Although they are not necessarily concerned or notice the change in their role and knowledge as students, they are actually researching their creation of semiotic systems.

Phase Two, Creating the Video for the Main Idea and Supporting Details Statements or Summaries

As mentioned previously, one of the main differences in using video data with different groups of students is if they are comfortable appearing on camera and what happens to the video. Of course, these standards depend heavily on local cultural and legal issues, along with local technological constraints and affordances. With the most recent application of these procedures over the past academic year, two methods of distributing video to students have been used: 1) Video was uploaded to the Internet for viewing. An online storage and retrieval system was purchased and video data were linked to pages on a Wordpress Blog for the 2009-2010 Academic year. During the 2008-2009 Academic Year, a different University maintained server space, and up to 15 minutes of video could be uploaded and viewed on Blackboard (an online distance learning system used in the U.S.). 2) Students used laptops that were checked out during class time from a portable computer cart and video was distributed through the use of portable flash drives.

With the current implementation of video recordings, the bandwidth at the teaching site is not sufficient, many of the students do not have internet access, and some do not own computers. However, distributing the video on flash drives, which is the current strategy, seems a reasonable option for many teaching sites if more sophisticated technology is not available.

For the recording part of the activity, students are ideally divided into triads, with one student as the Actor, another as Director, and another as Camera Operator. However, because students work at vastly different stages throughout all phases, students have ended up in a variety of groups; a tolerance for chaos is necessary.

After students use the song lyrics as a way to become familiar with the procedures, they move on to working with paragraphs, essays, and sections of expository text from academic courses and applied technologies, always with a copy of transition words close by to keep the focus on the different types of words and rhetorical styles (e.g., words and phrases for cause and effect; words and phrases for comparison/contrast). Before moving to summarizing activity, students present main idea and supporting details using the same basic procedures as with the song lyrics. Throughout this process, students are repeatedly shown a variety of gesture data again, including their own video recordings, to remind them of the relationship between deictics, transition words, oral speech, and visual aids.

Phase Three, Responding to the Video

In the remedial reading courses, a series of questions and tasks guide students in identifying the deictic nature of their rhetoric; that is, students are prompted to note the ways in which a speaker is connecting evidence (i.e., the supporting details) to main idea and/or thesis statements. For example, students are asked to identify which words and phrases they pointed to on their poster paper while they were talking. Also, they were asked to identify which types of words and phrases they used when they were speaking. The emphasis here was on guiding them to identify which transition types of words or phrases they used, and what did they point at when they were using specific words during moments of their presentation. Also, they were asked to critically evaluate which Supporting Detail could be most strongly related to the Main Idea Statement, and what phrases would be appropriate to highlight one part of their overall meaning over another part. Finally, they are asked how effective their overall presentation was and choose one moment and/or item they would change.

Conclusion

Of course, these suggestions for integrating gesture study in the classroom are still evolving. Additional extensions of using gesture in the classroom involve guiding students into identifying metaphoric gestures in moments of speech and comparing these to metaphors expressed in different types of readings and other media (e.g., film; digital games). Overall, access to cameras and methods for distributing video to students are the biggest challenges to integrating the study of gestures, graphic organizers, and their interaction with each other and speech into different literacy/language learning contexts. However, despite the challenges, the potential benefits are ultimately only limited by the imagination and institutional, curriculum, and cultural constraints.

By having teachers and students use gesture as a reference point around which to inventory semiotic resources, which includes noticing how these resources are created and evident as utterances that are a part of larger systems of utterances and semiotic resources, teachers and students of language and literacy at all levels can increase their ability to identify what information they are noticing and decide what to include in their summaries and other types of interpretation and creation of text. The study of gesture and the suggested applications for the classroom demonstrate how gesture can be used to make judgments about language and cognition and enhance literacy learning across a number of multilingual/multicultural contexts.

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Appendix

Gesture/Speech/GO Transcripts for Nathanee and Mawng

Case One: Nathanee and Permafrost

1: The next one is <u>the most important things</u> about ah Permafrost

With her left hand, Nat is pointing at a small rectangle of information in the bottom left-hand corner of her flow diagram (See Figures 1 and 2). She is standing about two feet from a large, portable whiteboard in the corner. The whiteboard is angled toward the audience, the left and right corners of the board almost touching two walls and blocking off the corner of the room; Nat is leaning comfortably with her right hand on a desk as she is pointing with her left hand at her flow chart taped on the whiteboard.

Nat's left side is angled toward her two yellow-tinted graphic organizers, both on poster paper that is about 30.5 inches long and 20.5 inches wide each. Most of the right side and front of her body face the audience. This position of herself to the graphics and the audience creates a situation in which she alternates from looking at the board to looking at the audience.

As she says most important things *she looks over at the detailed concept map (see Figure 1) hanging on the whiteboard next to the flow chart. She visibly shifts to looking at the concept map on* most *and shifts back to looking at the flow chart on* things*.*

At ah*, she pauses to read the flow chart with her finger against the poster paper. Her finger makes a noise as she gently leans toward the board, touching the poster paper just below the rectangle in Figure 2; this touching of the poster paper can be clearly heard as she presses in and moves away after* ah *and begins* permafrost*.*

On permafrost *she moves her hand from the graphic and drops her left hand to her side after completing* frost*.*

Note: The written utterance expressed by the rectangle (see Figure 2). This written utterance is closely connected to her speech and accompanying movements presented in line 3. Note the phrasing of the written utterance, specifically "underground layer of a mixed". This is what she is reading before beginning the utterance on line 2.

LINES 2, 3 AND 4 ARE PRESENTED IN THE BODY OF THE PAPER

5. This is called [under the earth]

On this is called*, her hands move in three short sweeps from palm up to palm down, fingers straight, both palms angled sharply toward the floor. Each word is marked by slight, perceptible beats on each sweep of her hands and arms.*

On under*, her hand makes the first of three jabs toward the ground with fingers straight, palms angled toward her legs, the back of her hands facing the audience, her fingers pointing toward the floor. On* the*, her hands hesitate just a moment on the downward stroke. On completing the last section of the stroke, she slightly hesitates at the* ea *in* earth *about halfway down to the bottom of the stroke. This hesitation is expressed by a barely noticeable pausing of both hands on the way down.*

6. of on in the earth [aroun marn]

On of, her left hand is rising to point to the graphic again with her hand beginning to turn gently back and forth, as if she is tuning an old radio, turning the dial back and forth. By the time she reaches on, her hand is level with the graphic, though her arm is not completely rigid. Her fingers begin to close more tightly in a grasping shape as she gently moves her hand in the tuning motion, her hand gently twisting back and forth as she says in the earth.

Her right arm begins to bend at the elbow, moving back toward her body at the end of earth. As she says aroun marn, the turning back and forth of her hand becomes more noticeable as her hand is in the process of dropping to her side.

Case Two: Mawng and Highlight

1: Alright and then in twentieth century there's more like development

On alright, Mawng is bending toward the overhead transparency projector and is reaching for the pen on the overhead. Alright seems to mark the end of the previous utterance and Mawng is preparing to move the pen to a new rectangle on the overhead to mark the topic she will talk about next.

On and then in, Mawng is picking up the pen and resting it on the overhead with the cap of the pen pointing at the rectangle on the tree-diagram (see Figure 3).

On the beginning of twentieth, her right hand finishes placing the pen down on the overhead and her hand begins the movement away from the overhead and toward her body. On the ce in century, her hands almost meet in front of her just below her waist.

On there's more, Mawng begins a sweep of her arms upwards and inwards with a wide barrel-shaped movement that is open to the audience. She completes one sweep on there's more, and one full sweep on like development. As she is saying more, her arms are open to the audience. It should be noted that she almost continuously used these kinds of sweeping motions when she was facing the audience throughout her entire talk.

2. they have electric city

At the end of development in line 1, and on they in line 2, Mawng begins to make a closed hand with her index finger of her left hand sticking out as if counting off something, which she does on electric. Note here that the word electricity is split into two syllables with electric and city as

separate words. On <u>city</u>, her right finger extends from her closed hand and swings up, and she spreads both hands in front of her.

LINES 3 THROUGH 6 ARE PRESENTED IN THE BODY OF THE PAPER

[i] Human Subject Protocol was supervised by the Office for the Protection of Human Subjects at the primary researcher's U.S.-based university. All participants signed consent forms specifically consenting to video and audio recordings of classroom activity and some data from professional activity in the community.

[ii] Although gender is always an issue as positions are construed by interlocutors, it is beyond the scope of the present study to foreground gender because the focus for this study is on broad language/thinking types of questions that tend to vary across languages regardless of gender. However, because gender is not mentioned as a salient issue in any of the Vygotskian-related literature reviewed for this study, it certainly bears a closer investigation in further research.

[iii] Spoken speech is in regular font; Descriptions of gesture are in italics. Periods mark approximated one second pauses (i.e., one-one thousand, two one thousand, etc). The underlining of words signifies which words and phrases appear most synchronized with the gesture. In addition, underlined words indicate which words and phrases will be discussed in the gesture description, which is transcribed in italics directly below spoken speech. The same words underlined in the transcription of speech are underlined in the transcription of gesture. For descriptive purposes, brackets were sometimes used to highlight specific moments of the speech/gesture/image stream, particularly those moments of speech in which participants used metaphoric gestures.