Distributed Emotion in Online Courses: A Review of Literature

Courtney Glazer
The University of Texas at Austin

"We know that personal feelings do not arise in a social vacuum. They are refined in the cauldron of our collective experiences and emotional messages to be at once uniquely our own and shared by all." (Planalp, 1999, p. 159)

Emotions in Classrooms

Education has long been a field marked by a clear separation of cognition from emotion. Much of this stems from behaviorist learning theories that assert that learning can be broken down into discrete tasks (Gagne, 1970). Emotion was discounted in behaviorist theory (Brown & Farber, 1951). More recently, many educators have adopted a more constructivist learning theory that accounts for individuals constructing their own meaning in the course of their learning (e.g. Vygotsky, 1962). The constructivists bring the affective domain to learning situations, but have not yet given it the emphasis that it is due in terms of playing a part in assisting learning. As a result, "schools continue to operate on the theory that 'cognitive' & 'academic' are synonymous and both are apart from [emotions]" (Coles, 1999).

Today schools continue to focus on measurable, rational qualities as evidenced by most grade reporting practices and the pervasiveness of standardized testing. This emphasis on the cognitive to the exclusion of emotion is seen too often in schools that choose to cut out arts programs, which enable direct expression of students' emotions, when budgets get tight, as these expressive subjects are difficult to quantify (Sylwester, 1994). "While goal statements [of schools today] may include concern for such concepts as self-esteem, social relations, and cultural awareness, the fact remains that curricular plans are nearly always based on the learning of skills and content within various disciplines of knowledge" (J.A. Beane, as cited in Coles, 1999, p.2). According to Chester Finn (1991), longtime advocate for standards-based education, emotional growth will come through academic progress. Finn believes that teachers should provide vigorous academic instruction and that the confidence and self-esteem of students will automatically follow their success in the classroom.

The fact that schools have chosen to recognize a false supremacy of cognition over emotion has strongly impacted both the instruction and classroom management that occur on a daily basis. In a survey of contemporary schools, John Goodlad's (1984) impression was that classrooms did not show strong emotions either positively or negatively and that expression of strong emotions like enthusiasm and joy were kept under control. Considerable time is spent controlling students who display too much or too little emotion because our understanding of emotion is limited (Sylwester, 1994). As a result, schools tend to cater to those students who display the proper affective behaviors needed for success. Students who do not fit into this affective mold will be disciplined or labeled emotionally disturbed (Wager, 1998). Wager (1998) goes on to caution that this inattention to the emotional influence on learning leads not only to learning problems in students, but also to

larger social problems facing the United States. He proposes that the first steps to be taken in correcting this problem in schools are to recognize the complexity of the emotion / cognition connection so that educators and instructional designers can build learning environments which are supportive of knowledge and also which teach students about success and recognition (Wager, 1998).

The integration of emotion into traditional, cognitively-focused classrooms can improve student learning. Much of this integration began to spread among schools under the titles of brain-based research or emotional intelligence. The basis of both of these educational movements is that students are aware how they and others experience and express emotions. Both movements call for activities that emphasize social interaction and engage the whole body as providing emotional support for students as they learn. Such activities might look like games, cooperative learning, or field trips. Yet, while educators know that such activities enhance learning, they tend to use them as rewards, taking them away when budgets are tight or students misbehave (Sylwester, 1994). Typically this withdrawal of reward-type activities is the result of students expressing too much emotion in the classroom and thus being deemed "unruly."

I believe that expressing emotion in the classroom should not be treated as a reward because emotion is a vital part of any learning experience. What is considered to be a necessary component of learning is communication among students and teachers.

Communication is Informational and Emotional

All communication is both informational and emotional. Computer-mediated communication (CMC), specifically, can enhance both the informational and emotional connections of its users (Sproull & Kiesler, 1991). Most research has been conducted on the informational dimension of communication, both face-to-face and online. Little research has been conducted on the emotional side of communication. Yet nearly 30% of overall message content in CMC settings is socio-emotional, including that exchanged via professionally oriented networks in which users do not know one another (Rice & Love, 1987). This is a large percentage of message content that has received little attention in research. In order to understand online emotional communication, it is important to look at just how people communicate.

How We Communicate: A Metaphor

Traditionally, the metaphor used to describe communication is loading and unloading boxcars (Planalp, 1999). A sender fills a boxcar with her message and sends it along the track to a receiver. That receiver offloads the message and, perhaps, fills the same boxcar with a new load and sends it back to the sender. This metaphor is lacking in a number of areas. It does not account for communications that are directed at many people, contextual issues that can change interpretations of communicated messages, and messages' emotional content. If two people were trying to communicate their emotions according to this metaphor, a sad boxcar and an angry boxcar would meet on the tracks and one would have to cede to the other. An alternative metaphor, which seems to capture all the influences and nuances of actual communication, is weaving (Planalp, 1999). As weavers, senders select their threads carefully, sometimes in concert with others, sometimes independently. At times one thread may reflect a reaction to threads being used by others and, as a result, will change the pattern of the tapestry. While weaving, an angry thread and

a sad thread may create separate patterns, one thread may lead the other to create a pattern together, or they may become tangled together and work as one thread. Nevertheless, weaving involves multiple threads from multiple weavers and, unlike the messages on the boxcars, which are emptied of their content, the tapestry woven may remain over time in whole or in part.

When viewed from a purely technological stance, computer-mediated communication (CMC) appears to support the boxcar metaphor as one individual sends a message via computer to another, who receives and also replies via computer. Rather, I believe CMC is like weaving. Multiple people can communicate online at one time and the resulting conversation contains several threads of discussion in which individuals act and react with one other. This weaving metaphor is important to keep in mind when looking at computer-mediated communication. This implies that the focus of any CMC research should look beyond simply the messages being loaded onto boxcars and the manifest detailing each boxcar's route. Instead, researchers should seek to capture the essence of the tapestry created by CMC users. Attention should also be paid to the weavers who are creating the tapestries, as well as the contexts in which the tapestries are woven.

Considering Context in Communication

The way that people respond to situations requiring communication will vary according to the setting (Siegel, Dubrovsky, Kiesler, & McGuire, 1986). For example, those who are adept at oral communication may falter at written or online communication. For this reason it is vital that any communication setting be understood as a complex environment consisting of people, tools, and temporal effects that may not be duplicated in other settings. Thus, the traditional view of the dyad as the sole unit of analysis for the communication process is not viable in a detailed study of the particular setting of CMC and, as such, the unit of analysis must be expanded to encompass all elements of such a complex system.

How We Communicate Online

When putting together an understanding of CMC as a complex communication setting, the first factor to consider is what the communication looks like via computer.

Hybrid of Spoken and Written

Researchers are beginning to notice that CMC has characteristics of both spoken and written communication (Kochen 1978, as cited in Rice & Love, 1987; Voiskounsky, 1998). For that reason they have dubbed CMC a hybrid form of communication. CMC also has characteristics of oral communication in the use of first names, treating colleagues unceremoniously, and the use of slang and jokes. All in all, this hybrid nature is represented by the reflective and informal natures of CMC, both of which can users to convey socio-emotional content to one another. Computer-mediated communication also involves the language intensity, verbal immediacy, argument framing, syntax structure, and editing ability of written communication. In fact, certain of these features are even enhanced through use of the computer with tools like spellcheckers and functions like cutting and pasting. As in written communication, the sender controls the composition of the message and those messages define the reasons for their being sent (Voiskounsky, 1998). To get a true feel for the nature of CMC as a form of communication, several characteristics of communication must be examined in detail: grammar, verbal immediacy, speech acts, non-/extra-verbal cues, and the reflective nature of the communication.

Grammar

Since people do not consciously regulate their grammar to reflect their emotional states, a close look at grammar can help in interpreting emotion.

> While we may be only vaguely aware of the structure of our sentences, these sentences nevertheless represent the structure of our reflective awareness (or that aspect of our reflective awareness that we are willing to discuss with others). Grammatical structure therefore provides an indication of how our conscious experience is structured. (Collier, 1985a, p. 154)

By considering carefully the grammatical structure of computer-mediated communication, we may find deeper insight into the emotional state of the writer. CMC users typically use more formal expressions in their online writing than they do in spoken expressions. This may be due to the fact that the act of typing causes people to consider their communications as more formal than that spoken or handwritten (Kiesler, Zubrow, Moses, & Geller, 1985). Although the communication may be more formal, such formal grammar can also convey the socio-emotional state of the user.

Collier (1985a) points to several grammatical characteristics that indicate unpleasant emotion. For example, people who are in a more negative emotional state will tend to compose longer and more grammatically complex sentences as they vent these emotions. They may also use more adverbial modification and phrases, which offer examples and details of their negative emotional state. People also tend to qualify statements more when those statements are counter to their actual attitudes or are made in retrospect.

Verbal Immediacy

Another aspect of grammar that gives insight into an individual's emotional state is verbal immediacy. Verbal immediacy is the degree to which speakers feel close to their listener and generally appears as a match between the attitudes toward an actual situation and those given off during a description of the situation. Similarly, verbal nonimmediacy can occur as the distance between the speaker and listener increase (Collier, 1985a). Grammatical clues indicating nonimmediacy fall into the following categories:

- spacial separation – the use of demonstratives for objects and adverbial phrases not required by the situation (e.g. saying "those people" when referring to a group in the same room)
- temporal separation – the distancing of a person from what is being described through tense shifts from present to perfect to past to past perfect (e.g. from "I am working on that," to "I have been working on that," to "I was working on that," to "I had been working on that")
- over- and under- inclusion – the use more general agents than the situation calls for which imply consensus and makes the agent difficult to identify (e.g. "Everyone was annoyed with your actions.")
- selective emphasis – putting the most important item first to show greater importance (e.g. "Barbara and Larry")
- agent-action-object relationships – the use of passive voice to manipulate responsibility for actions (e.g. "He asked me to help him" instead of "I helped him")
- modifiers – used to convey either doubt and uncertainty or strong certainty (e.g. "It might mean" or "It is obvious that")

- automatic phrases – used to imply doubt that a message is getting through to the listener (e.g. use of "you know" or "you understand" suggesting that the speaker and listener are not on the same wavelength)

Although the listener, or the reader in a CMC setting, may not be fully aware of these categories, the distancing effects are realized as these nonimmediacy cues increase, indicating the negative emotional states of the writer (Collier, 1985a).

Speech Acts

In addition to verbal immediacy or nonimmediacy indicating a person's emotional state, speech acts may state or imply underlying emotions (Searle, 1979). A speech act takes into consideration that every utterance is an action made with some goal in mind. They can have the goal behind them to show the difference in status between the speaker and the person being addressed. Such speech acts can appear as one of the following:

- assertives – telling people how things are in a way that can be assessed as true or false (e.g. saying "I worked harder on this project than I did on the last one.")
- directives – making requests and commands (e.g. asking of a collaborative group "Now that we have discussed our topic, can we decide who will be responsible for which parts of the project?")
- commissives – making promises and obligations that commit the speaker to do something (e.g. assuring a team "I'll complete the final edit on our paper.")
- expressives – expressing feelings and attitudes directly (e.g. "I'm sorry for being late.")
- declarations – making statements that in themselves bring about changes in the world (e.g. telling an employee who works for you, "You're fired.") (Searle, 1979).

While expressives allow a speaker to directly convey an emotion, in the case of directives and commissives, the speaker may be implying a sense of dissatisfaction over the current state of affairs (Collier, 1985a). For example, an individual requesting that his collaborative team move on to the assigning of roles for a project shows that he is no longer comfortable without having made that decision.

Non-/Extra-verbal Cues

Another clue into the socio-emotional content of communication is the use of non-verbal cues. Kiesler et al. (1985) found that computer users are prone to more excited and uninhibited communications due to a lack of nonverbal cues available such as body language or eye contact. Not only did their research show that these cues were lost – also they saw users over-attributing information from the remaining cues. This can lead to communications that are less accurate.

Other researchers have found, on the other hand, that while CMC systems disable the use of nonverbal cues, they offer tools to build new forms of expression (Baym, 1998; Voiskounsky, 1998). Therefore, some researchers have looked at different, extraverbal cues in order to get at the richness of CMC (Menges, 1996; Rivera, Cooke, Rowe, & Bauhs, 1994; Walther, 1992). Extraverbal cues are markers deliberately inserted into the text of CMC messages to convey socio-emotional content. Users have been inventive in their use of extraverbal cues as they create new ways to express their socio-emotional intent and have been eager to share these new expressions via online dictionaries and guidebooks as references for

other users (Baym, 1998). At the time that Kiesler et al. (1985) did their research, users of computer-mediated communication had just begun to adopt extraverbal cues as a way of conveying some of the information lost as a lack of nonverbal cues.

One of the most common extraverbal cues is the use of "emoticons" or emotional icons. Emoticons are created by compilations of punctuation marks, which, when looked at sideways, form various facial expressions from a basic smile to a face with a confused, wavy brow. These symbols can directly convey socio-emotional content within CMC. They have been found to make such communication more appealing while not detracting from decision-making or affecting users ability to conform to those with whom they are communicating (Rivera et al., 1994). Emoticons can draw attention to a particular emotional tenor that is often not communicated clearly face-to-face, as in the case of someone telling a joke that the listener "doesn't get." On the other hand, emoticons can have a flattening effect on the emotional content of a message, taking the sting out of a pointed remark. For example, someone may modify the tone of his CMC by following a demand with a smiling emoticon (Poole, 2000).

Another extraverbal cue is found in text-based, multi-user, real-time, computer-based environments, such as MOO's or MUD's. In these environments users are able to emote through specific text commands. In other words, users in a MOO can speak directly to others or can type in an action to convey their socio-emotional state, such as 'jumps up and down.' Another extraverbal cue, which arises out of this new hybrid communication, is the use of what is sometimes referred to as 'paralanguage,' such as intentional misspellings, absence of corrections, pointed use of capitalization, lexical replacements for vocal utterances, and spatial arrays or ASCII art (Walther, 1992). In her work with an online discussion list devoted to soap operas, Baym (1998) found that, in addition to this paralanguage, discussants also used acronyms to convey messages specific to their content. For example the acronym "IOAS" replaced the often-used phrase "it's only a soap" (Baym, 1998).

Reflective Nature

As opposed to face-to-face communication, computer-mediated communication can be more thought out, organized, and richer than face-to-face conversation (McConnell, 1993; Rice & Love, 1987; Steinfield, 1986). A user has several opportunities for reflection within the course of CMC: before composing his message, before sending his message, after reading another's message, and after reading a reply to his message. A user can reflect on conversations when he is away from the computer and will typically reflect on prior conversations when he returns to the computer. As a part of such reflection, a user of CMC can "re-visit [and restart] 'old' conversations" with more ease than in a face-to-face conversation (McConnell, 1993).

Audience Effects

Users of CMC take on both the roles of sender and receiver at different times during the communication. Therefore, when examining the users of CMC, it is valuable to consider them as both participants and audience members.

Mono-, Dia-, and Polylogical Communication

CMC is considered a hybrid with regard to the number of people involved in each communication act, each of whom helps to shape the socio-emotional content of the communications. Monological speech occurs when one speaker communicates to a silent audience. CMC serves as monological speech through the authoritative

attitude that some users take, the simple requests that pepper the content, and the fact that some audience questions remain unanswered (Voiskounsky, 1998). Dialogical speech occurs when two speakers engage in communication back and forth. CMC takes on the characteristics of dialogical speech through the quick response factor and the questioning and answering that may occur regularly in private email exchanges or public discussions (Voiskounsky, 1998).

While CMC shares traits with monologues and dialogues, it is the traits of polylogical communication that appear to be the most characteristic of this hybrid. Polylogical communication occurs when multiple speakers communicate with one another. One form of polylogical communication, as studied in a computer bulletin board that allowed users to communicate one to many, showed more socio-emotional content than one-to-one forms of CMC (Walther, 1992). As with any polylogical communication, CMC does not assume turn taking; users produce on their own, and at the same time as each other; users take the initiative in both sending and receiving messages; users are aware that communication is taking place even if they choose to ignore it; statements are publicly debated; and users often feel the need to repeat colleagues' views in order to register their agreement or to bring a topic back to the attention of others (Voiskounsky, 1998). CMC even includes many tools and functions enabling these polylogical traits, such as cues to indicate when a new message is received and the ability to reply to a message including a quotation from the original.

Temporal Nature

As users communicate through CMC they engage in periods of time that are linear or cyclical. Linear time focuses on the length of a behavior, action, experience, or relationship. It is also marked by a pattern of nonrecurrent, changing activities (Hesse, Werner, & Altman, 1988). In an online course, an example of linear time would be the communications of users introducing themselves to one another. Cyclical time, on the other hand, focuses on the duration of recurrent events and the length of the intervals between recurrences. It is also marked by an emphasis on a pattern (Hesse et al., 1988). In an online course, an example of cyclical time would be the communications of a collaborative group as they begin each of the six projects planned for the course.

Individual users of computer-mediated communication will find the scale, or duration of communication events, expanded as they experience more time to edit, compose, send, and retrieve messages. That being so, users can also over- or underestimate others' rate of response to their postings. Individual users find that they can transmit a great deal of information in a short period of time. This can be both empowering, as they are able to contribute more to class discussion, and debilitating, as they feel the effects of information overload which will be discussed later (Hesse et al., 1988).

One particular temporal feature of CMC, the time displayed on the message sent, has specifically been shown to provide socio-emotional information regarding users. This time stamping of messages, or chronemics, can provide valuable information. For example, if a person responds immediately to a message, this quick response may indicate a heightened emotional state (Walther, 1992).

Self- and Other-Awareness

Since computer-mediated communication involves users as both participants and audience members, it is important to note the effects of their awareness in both

roles. As a participant, a user may choose to use email to avoid the unwanted social interactions that would be mandatory in a face-to-face setting with audience members. Consequently, users will actively take steps to avoid any negative outcomes of their communication with audience members (Markus, 1994). Conversely, and as mentioned previously, Kiesler et al. (1985) found that computer users are more likely to directly speak their minds without regard to the feelings of audience members. In a CMC setting, this uninhibited conversation is called flaming: the sending of "messages that precipitate, often personally derogatory, ad hominem attacks directed toward someone due to a position taken in a message distributed (posted) to the group" (Mabry, 1998, p. 14). Siegel, et al. (1986, p. 160) conceded that

> [t]he relative absence of social context information and social feedback in computer-mediated communication might lead to uninhibited behavior because these gaps are not yet replaced by shared norms for conveying or interpreting the social meaning of what is communicated. Although computer professionals have used computer communication for two decades, and they comprise a subculture whose norms influence computer users and computer communication, no strong etiquette as yet applies to how electronic communication should be used.

This explains why some people today consider flaming as part of a sporting or playful relationship (Baym, 1998). How communications like these are interpreted depends on the contexts of those communications, the relationships between sender and receiver, each individual's past experiences and characteristics, and established behavioral norms.

Behavioral Norms

The nature of the audience involved in CMC and the awareness that users have of themselves and others oftentimes leads to the creation of behavioral norms. Many of these norms grow out of the larger community of CMC users, while smaller groups of CMC users may develop other, more content-specific norms. In the case of all CMC users, and like extraverbal cues used online, many behavioral norms have been codified into informational postings to new users, dictionaries and handbooks available online – even courses devoted to "netiquette," or appropriate and polite online behavior (Baym, 1998). Hiltz and Turoff (1985) recommend that CMC systems be designed to encourage the emergence of groups that can exert control over others' behavior as behavioral watchdogs of a sort. Considering the context of an online classroom, most likely the teacher would suggest and enforce behavioral norms. For new CMC users, teachers will typically either provide direct instruction or offer links to basic norms of a computer-mediated environment.

Small groups of users can determine behavioral norms, albeit flexible ones, based specifically on the temporal nature of computer-mediated communication. For example, as individuals do in face-to-face and telephone settings, CMC groups can determine the appropriate length of utterances. The sequence of topics and use of transitions are also established by the group (Hesse et al., 1988). For example, the group in Baym's (1998) study of soap opera fans using computer-mediated communication determined that one inappropriate behavior was to post a response more than four or five days after an original posting was made.

Baym's soap opera users also created group-specific vocabulary. For instance, when a character named Natalie was involved in a storyline where she died in a car

accident, users changed their references to the character from Nat to “Splat” (Baym, 1998). Furthermore, these group members established norms regarding the information given in the subject line of their email messages to the group. Specifically, abbreviations, decided on by the group, served to represent the name of each soap opera. For example, All My Children became AMC. Group members expected to see an abbreviation in every subject line and if a new member did not comply, she typically received several messages explaining this specific behavioral norm (Baym, 1998). Like the users of the soap opera forum, students in an online classroom can work together to establish the structure of CMC norms that are used within their collaborative teams (Wilson, 2000).

The Social Nature of Emotion

Much of the discussion up to this point has focused on emotion and the individual. In keeping with a broader focus, we must look at the social nature of emotions.

Most current emotional theory looks at discrete emotions in individuals. Most research on emotions relies on the non-social manipulation of a single, passive person presented with emotional material (Parkinson, 1996). While this is valuable to some degree, "[i]n many cases, emotion arises not from within an individual's authorial consciousness but emerges in the dialogue of an ongoing interaction as a function of what might be called distributed or socially shared cognition." (Parkinson, 1996 p.675) As a result, emotion must be examined also from a social perspective.

One of the leading emotional theories is that of emotional appraisal. Appraisal theory posits that something has to be meaningful to a person to cause an emotion. Although cognitive processes play a major role in appraisal theory, appraisals are also mediated by social interactions and cultural factors (Parkinson, 1996). It is important to consider what makes something matter. Events achieve significance in the course of social interactions and the development of relationships, both of which make social variables like relationships with others and context vital (Parkinson, 1996). An event may also be appraised as more significant than other events as it helps people further their goals, which are partially culturally determined. Culturally determined goals may include wealth, social standing, or independence. Furthermore, culture promotes implicit and explicit expectations, which impact appraisals. This cultural impact on personal appraisals can affect interpersonal relations and, as a result, how emotions are played out interpersonally. For example, an individual may choose to prove their self-assertiveness through anger at another. In some cultures this emotional display would be admirable, but others it would be unacceptable.

Beyond social context helping to shape personal emotions, emotions themselves have social impact on others. The emotional reactions of others are often hard to ignore and seem to demand interpersonal response. In fact, everyone’s emotions carry social meanings derived from their evaluations of the object of that emotion. As such, those evaluations are open to acceptance or rejection by other people (Parkinson, 1996).

Emotions also seem to have a social function. As an emotional response makes a claim about something in a shared situation, perhaps one purpose of expressing that emotion is to achieve a particular interpersonal effect (Parkinson,

1996). Emotions have a performance aspect. A person's emotions may be more attuned to others than simply being a spontaneous reflection of an internal experience. For example, Kraut and Johnston (1979) conducted a study of bowlers. They observed the facial displays of each bowler when he first saw the number of pins he knocked down and then again when he turned to walk back to those who were bowling with him. They found that the most observable facial displays were those directed at the watchers rather than those in response to the emotional event. Often emotional expressions are intended as communicative acts directed at others instead of simply reflecting our internal states. At times people even get emotional to let their audience know how they should behave (Parkinson, 1996). While people do experience emotions without an audience physically present, perhaps in the expression of emotions they have an implicit audience in mind. Here CMC shows itself to be a hybrid again with an invisible, but very real audience at the end of an Internet connection, which must be firmly in the user's mind.

Emotional Content of CMC

Because emotion serves both individual and social purposes, and because emotion is a part of communication, the way in which that emotion is conveyed will impact the social context of CMC. So, after looking at how users communicate online and to whom they are communicating, we should turn attention to what emotional content is being communicated.

Language and Emotion

The relationship between language and emotions is different than the instinctive relationship between nonverbal cues and emotions. In the case of computer-mediated communication, users can show as much socio-emotional content in the language they use as in their face-to-face communication (Lea & Spears, 1995, as cited in Chenault, 1997; Walther, 1992).

Direct Communication of Emotion

Having to put emotions into words may help the writer better understand her own emotions (Planalp, 1999) and can help her to express those emotions more clearly to others (Rice & Love, 1987). An individual's use of language to express her emotions represents an effort to describe her feelings to herself and to others. While this makes the direct communication of emotion sound easy, there is room for misperception when the individual cannot clearly identify her feelings. To avoid this misperception it is important to remember that the words used to identify emotions are merely labels and are not the emotions themselves (Collier, 1985b).

Indirect Communication of Emotion

In writing about verbal communication of emotion, Collier (1985b) describes three ways of getting at what an individual means by the labels chosen for her emotions. First, the repetition of themes within interactions can be a sign of a preoccupation with a topic. If an emotional communication is overlooked by readers the first time, it is likely to recur in a different and potentially more understandable way. In most computer-mediated communication environments, messages are archived by the system and can also be saved by users. By using past messages as references, users are more likely to note recurring emotional content and can respond appropriately.

Also, a cursory reading of the content of communications will often not reveal what the writer is feeling. As a result, readers may need to read between the lines to interpret the real emotional meaning (Collier, 1985b). The reader can do this by

drawing connections among events that seem dissimilar. To do this, readers should first consider the meanings of individual words and phrases used in the communication and then look specifically for elements like metaphor, insinuation, and irony which may imply more than what is actually being communicated. Readers should recognize that people qualify statements with which they do not completely agree and, although the writer has chosen to communicate her message using a qualifier, she is least likely to see any hidden meanings (Collier, 1985b).

Finally, readers could look for Freudian slips, which will give insight into the subconscious emotions of the individual. A Freudian slip occurs when a person substitutes a word or makes an error that gives an observer insight into their true feelings. Freudian slips are less likely to occur in CMC due to the reflective nature of postings and the multiple possibilities for editing (Collier, 1985b).

User Control over Emotional Communication

While users can directly and indirectly communicate their emotions, it is questionable how much control they truly have over their emotions and how others react to them. Emotional content of computer-mediated messages can appear in many forms. For instance, a user's emotional involvement and the framing devices they employ in their communications are systematically related (Mabry, 1998). As the emotionality of messages becomes stronger, conciliation and apology increase and as the emotion in messages decreases, confrontation and challenge increase (Mabry, 1998). In other words, the increase in overall emotion in CMC will lead to more emotions that are valuable in maintaining positive group relations, while the lack of emotion will lead to dissolution of positive group relations.

That said, in a site-based study of CMC usage in a distributed company, Markus (1994, p. 123) found that sometimes a user's emotional state was in conflict with how she hoped to be "heard" by others. In this case, users claimed they could effectively mask their emotions through their careful use of CMC. At other times, users deliberately tried to keep the emotional content of their communication low. One respondent shared in a questionnaire that "[w]ith email I find myself answering w/o [sic] all the kindness necessary to keep people happy with their job. Sometimes I will answer more pointedly" (Markus, 1994, p. 139). Both findings show that employees are aware of their emotional states when they communicate online but that they put at least an equal emphasis on how those emotions will come across to others reading their messages, much like how their tone of voice might be interpreted in a face-to-face setting. One way that individuals often consider how emotion comes across in CMC is in email use which, in one study, involved employees' feelings of dislike or intimidation. Employees who felt one or both of those emotions chose to communicate via computer more often than any other means of communication. Similarly, an employee of this large company who was angry or fearful that her recipient would object to the content of a message was more likely to choose to communicate via computer (Markus, 1994).

Because of this awareness of the potential emotional content of CMC, users in this business setting felt comfortable using email for work-related communication but decided that email was not appropriate when handling personnel matters. Issues of personnel were either deemed confidential or were deliberately handled face-to-face because the emotions evoked by such communication required "delicate handling" (Markus, 1994, p. 133). All of this attention to emotion is important to note, though "even the most conscious and deliberate form of emotional expression

has expressive features that may escape the [communicator's] attention" (Collier, 1985b, p. 167). In other words, a user can make intentional choices regarding the emotional content of her messages, but can still unconsciously convey her emotions. While individuals have some degree of control over their conscious emotional communications, other factors influence the amount of emotion that comes across in computer-mediated communication.

Course Content and Emotion

When specifically looking at CMC in a classroom setting, the course content will affect the communication occurring. Graduate students who participated in CMC as part of both a statistics course and a social science course felt that the online environment seemed more appropriate for the more discussion-based social science course (Vaverek & Saunders, 1993). One of the reasons given was that discussion-based courses require less of a rigid knowledge base for participation. Participants in this study believed that in courses such as statistics, which require more calculations and detailed knowledge, CMC is less appropriate. These students felt that a course looking for one "right answer," did not lend itself to CMC discussions in the same way as a course looking for multiple "right answers." The increased amount of discussion used in such a course allows students more opportunities for socio-emotional expression as they debate and agree on different points. Interestingly in this study, the non-discussion-based courses had greater socio-emotional content than the discussion-based courses, but that content was negative (Vaverek & Saunders, 1993). Perhaps this was due to the lack of ease that some students have in their search for that one "right answer."

Although there are ways of deliberately communicating emotions and clues to interpreting the true emotions of others, there is no clean objective method for understanding emotional communication, even online. The hard part is that emotion is merely one piece of the complex system of communication. This system involves varied ways of communicating emotion, such as extraverbally and varied goals for that communication such as maintaining the social balance among individuals.

Distributed Emotion

As mentioned before, traditionally when looking at communication, the emotional side has long been neglected. This neglect has been strongly felt in education. I believe the social components of emotion make it a rich and compelling topic for research. Since the informational side of classrooms, face-to-face and online, has been the focus of more research to date, it will serve as a starting point for discussion of theoretical frameworks applicable to both cognition and emotion.

Distributed Cognition

Cognitive science is the field of study dedicated to understanding "the mind." Specifically, cognitive scientists look at such questions as: How do we remember things? What processes are used in decision-making? In what ways do we make inferences and engage in other types of reasoning? and How do we learn? Cognitive scientists also focus their research on the "propagation and transformation of representational states" (Hutchins, 2000, p. 1). In other words, how does the mind shape the same idea in many different ways? For example, a symphony by Mozart can be represented by the sounds of an orchestra or by the musical notes printed on a page.

In the mid-80's, three theoretical works laid the groundwork for the broad theoretical framework now known as distributed cognition. The first of these works

was Vygotsky's Mind in Society (1978), which theorized that every high-level cognitive function occurs twice: interpsychologically (within an individual) and then intrapsychologically (between or among people). The second was Minsky's Society of the Mind (1986), which used the language of social groups to describe the individual mind. The final work was Rumelhart, McLelland, & The PDP Research Group's Parallel Distributed Processing (1986), a theory sometimes referred to as connectionism, which looked at neural networking and theorized that all cognitive activity should be thought of in terms of massive parallel processing, multiple streams of cognition occurring at the same time while influencing each other (Hutchins, 2000).

These works all look at the concept of multiple agents performing the work that previously was believed to have been completed by the individual. In Vygotsky's case, the agents were people (Vygotsky, 1978); for Minsky, the agents were different parts of the brain (Minsky, 1986); and, for Rumelhart, et al. (1986) the agents took on psychological and biological forms as computational tools. Distributed cognition considers the idea of multiple agency and, in response to the question of what organizes these various agents, proposes the solution as coordination among internal agents such as memory and external agents such as tools and artifacts (Hutchins, 2000). Hutchins (1995, p. xiii) describes "the emphasis on finding and describing 'knowledge structures' that are somewhere 'inside' the individual." Because of this, distributed cognition is committed to expanding the boundaries of the unit of analysis for cognition beyond the individual as it considers a larger range of cognitive mechanisms (Hutchins, 1995; Syverson, 1999; Varela, Thompson, & Rosch, 1991). "The distributed cognition perspective aspires to rebuild cognitive science from the outside in, beginning with the social and material setting of cognitive activity, so that culture, context, and history can be linked with the core concepts of cognition" (Hutchins, 2000, p.10). In other words, distributed cognition looks beyond the individual to more socially- and contextually-based forms of cognition. Returning to the Mozart example, distributed cognition adds many more representations of a symphony beyond just written musical notes to include interpretations by a conductor and orchestra members, a simplified version of the symphony in a beginning piano student's workbook, producers of various symphonic recordings, and the varied understandings of different audience members. Note that these added representations require other people or tools found outside the individual.

Ultimately, distributed cognition can be distilled into three main properties:
(1) Cognition is distributed across members of social groups.

In the example of a child learning to read, the necessary cognitive processes are found distributed among that child, his teacher, his peers, and cultural artifacts such as books. These distributed processes work together to form the activity of teaching or learning to read. In fact, this system of child and adult can synchronize the act of reading before the child is able to read for himself (Cole & Engestrom, 1993).

(2) Cognition is coordinated between external (material or environmental) structures and internal structures.

This coordination may involve the use of material structures, or tools, which have previously been viewed as unimportant in cognitive processing (Pea, 1993).

Cognitive scientists commonly see tools as amplifying the cognition of individuals, such as writing something down to amplify one's memory. Proponents of distributed cognition point out that the act of writing something down and then referring to it later requires different functional skills than memory (Hutchins, 2000).

Another factor to consider when looking at cognition using tools is that each tool represents the knowledge of others who invented it, as well as the decision by communities to maintain it for use by others (Pea, 1993). A measuring tape, for example, provides a way to represent a problem, plan a solution, and check that solution. Additionally, it contains a social history of practice and, as a tool, draws on the user's memory regarding how to use it.

The coordination may also involve the use of environmental structures. The work of Lave, Murtaugh, & de la Rocha (1984), which followed people in the grocery store to capture the practical math being used there, clearly explains the use of environmental structures as part of distributed cognition. While grocery shopping, one informant found a package of cheese in a bin and, after examining the label, suspected that the price was incorrect. This shopper was able to infer which package was priced correctly after examining one package of the same weight and one package of a different weight from the bin. According the Lave, et al. (1984), "had he not transferred the calculation to the environment, he would have had to divide weight into price, mentally, and compare the result with the price per pound printed on the label, a much more effortful and less reliable procedure" (p. 77).

(3) Cognition is distributed through time.

Products of an earlier event can transform the nature of later events. For example, a summer graduate level course, which causes a teacher to reflect on her beliefs and practices, can change the way that she approaches her classroom in the fall. Overall, distributed cognition demands that we look at the complex social and cultural context that cannot help but affect the human cognition situated in it.

Cognition and Emotion are Inextricably Linked

Historically, researchers have seen cognition as completely separate from emotion. This separation was the result of choices made by researchers as they began working in the newly forming field of cognitive psychology. These early cognitive scientists were faced with the question of how to handle quantitatively "messy" emotions in their experimental designs. Some chose to manipulate emotions and examine those effects, while most chose to keep emotions constant in order to ignore them as they focused on cognition (Pett, 2000). Out of this research tendency grew the idea that humans were problem solvers like computers. Thus affect was seen as "a regrettable flaw in an otherwise perfect cognitive machine" (Scherer, as quoted in McLeod, 1991). In fact, a more or less explicit decision was made early in the history of cognitive science to ignore the impact of emotion, as well as culture, context, and history because the inclusion of these factors made understanding cognition more complex (Gardner, 1985).

Many researchers now believe that the idea of cognition without emotion is incomplete; without emotion, cognition lacks the richness of life (LeDoux, 1996; Vygotsky, 1962). According to LeDoux (1996, p.8), cognition can only be the study of part of the mind because "thinking, reasoning, and intellect" are tempered by "desires, fear, sorrow, pains, and pleasures." As a result of beliefs like this, many theories have emerged in recent literature to explain the relationship between cognition and emotion. These theories take several different approaches:

- evolutionary – cognition and emotion can be understood in terms of adaptation (Cosmides & Tooby, 2000; Sloman, 1998)
- biological – emotion and cognition are functions of the same biological system (Damasio, 1994)
- physiological – emotions stem from uncontrollable bodily responses (LeDoux, 1996; Pett, 2000)
- linear - cognition occurs first, affecting emotion (Lazarus, 1982; Ratner, 2000) or emotion occurs first, affecting cognition (Dutton & Aron, 1974; Izard, 1984)
- coexisting – emotion and cognition are two different aspects of the same thing and must be looked at as interrelated (Coles, 1999; Dewey, 1895; Fleckenstein, 1992; Ratner, 2000; Vygotsky, 1962).

Not only are there a variety of explanations about the relationship between cognition and emotion – there are numerous factors that impact the relationship such as context (Kaufman, 1996) and culture.

Since none of these theories seems to account for the many factors influencing that relationship between cognition and emotion, I believe that no single theory can be used to explain the whole relationship. Rather, I choose to place emphasis on the fact that these two concepts are closely related and, as a result of this relationship, theories about one may be applicable to the other.

Distributed Emotion

In light of the aforementioned theoretical framework of distributed cognition and the belief that cognition and emotion are inextricably linked, I believe that there can also be an understanding of distributed emotion. Furthermore, I agree with Brian Parkinson's (1996,p. 678) belief that "it is necessary to consider the communicator, addressee and the surrounding socio-cultural context in order to understand the emotion process completely, and that cognitive or physiological models are therefore only capable of providing partial accounts of the phenomena in question." As a result, CMC research must begin to look at the entire context of computer-mediated communication for evidence of emotion.

Within the specific context of an online class, emotions may be coordinated between internal structures of the individual and the external structures of, for example, the computer environment or physical workspace. For example, an individual who is frustrated by a particular class assignment may choose to convey her frustration to her peers online. Her level of frustration may increase or decrease based upon how long she must wait for a response or the nature of the responses she receives. In this way she has coordinated her internal feelings with the external structures of her computer and her classmates. I believe that the close inspection of emotion as part of an online course will yield support that the three principles of distributed cognition can be applied to a new theoretical concept of distributed emotion.

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