Abstract

If emotions are oriented to other people's actions and reactions, then their expression will be affected by available modes of access to interpersonal feedback. This theoretical review paper applies such a relation-alignment perspective to emotions experienced in co-present and remote interpersonal interactions. The role of actual, anticipated, and imagined responses of others in emotion maintenance and adjustment is highlighted. In particular, it is argued that different modes of interpersonal contact afford different styles of emotion presentation, and encourage distinctive varieties of emotional creativity. Thus, although emotion may take different forms in social arrangements distributed through a virtual world, this need not result in more limited forms of interpersonal contact.

Key words: emotion; anger; emotional labour; nonverbal communication; communication technology

Emotions in Direct and Remote Social Interaction:
Getting Through the Spaces Between Us

What difference does it make to social interaction if the other person is at the end of a phone line, email connection, or video link, rather than physically present? Do we get through to them in the same way in every case or does a distinctive communication style develop around each particular mode of contact? Are some media simply better than others for certain kinds of collaboration or competition? What about our emotions? Are they too affected by the channels used for sending and receiving them, and for calibrating their presentation with other people's responses?

This paper addresses these questions by extending Parkinson, Fischer, and Manstead's (2005) relation-alignment perspective, which formulates emotions as modes of engagement with the social (and practical) world. The article is mainly theoretical in content, but also provides illustrative data (some of it unpublished) to clarify the arguments that are developed. Its underlying assumption is that many of our emotions are intrinsically attuned to the actual, anticipated, or imagined reactions of others. For example, "anger" serves to draw others' attention to forces that obstruct ongoing action, and will therefore tend to persist or intensify until its function is fulfilled (or until competing processes overwhelm it). The course of anger episodes therefore depend on the dynamic availability of different kinds of interpersonal feedback (e.g., Parkinson, 2001).

Real-time face-to-face anger encourages direct nonverbal adjustment (backing off, supplicating) and may serve its purposes before it is ever reflectively characterised as an instance of this particular emotion. By contrast, anger expressed by email needs to be formulated more explicitly as an instance of this emotion (by sender or receiver), with all its associated conventional meanings and consequences. It becomes a means of communicating other-blame appraisals, whose interpersonal consequences are anticipated on the basis of

socialised anger scripts rather than directly fed back. Because of the temporal and physical remoteness of the other, context-based interpretations may become miscalibrated and ineffective. However, the explicit availability of shared and negotiable emotion scripts in these mediated interactions may also afford more flexibility and emotional creativity.

Although different communication media constrain some of the options for emotion presentation, they do not dictate the nature of the interaction style adopted, nor do they impose particular manners of emoting on their users. Instead, people are capable of exploiting the different possibilities offered by available channels when within the articulated mode of emotion presentation, and of selectively deploying the various tools that are available to them in different contexts. Although some messages may be easier to transmit via certain kinds of channel, information loss always also opens options for selective emphasis or concealment. Indeed, communicative media that are low in so-called social cues or presence (e.g., Short, Williams, & Christie, 1976) may afford more flexibility in emotion presentation and allow creative deployment of communicative resources.

This paper is structured as follows. The first section provides the theoretical background to the arguments presented here, and uses the example of anger to illustrate how emotions are more generally attuned to their dynamic effects on others with whom we are interacting. The second section focuses on the effects of different communication media and modes of interpersonal contact on the process of relation alignment. Examples are presented of how constraints in informational access to another person (e.g., absence of communication channels, physical distance, temporal resolution) impact on the styles and outcomes of emotional engagement. In the third section, the paper raises the possibility that users may learn to counteract some of the limitations of communication media under certain circumstances. For instance, sophisticated email users know when to supplement their text with annotations such as emoticons in order to avert potential misinterpretations of informal

text. The fourth section suggests that people may sometimes exploit constraints in communication channels in an interaction, and that there are advantages as well as disadvantages to using media that are less information-rich. For example, Walther has argued that internet chat may afford hyperpersonal communication in certain interpersonal relationships, partly because attention can be devoted to composing and interpreting the words themselves without the distraction of monitoring and regulating nonverbal and other cues.

The overall intention of the paper is to clarify the various ways in which emotions interlock with other psychological and social processes in "real" and "virtual" distributed social arrangements. A secondary aim is to encourage further research into the communicative functions of emotions across different communicative media. The present paper draws its conclusions mainly on the basis of theoretical arguments, but the illustrative data presented here already confirm the viability of the relation-alignment perspective. Future investigations will need to develop and refine this approach.

Emotion as Relation Alignment

Many psychologists treat emotions as private, passive reactions (e.g., Laird & Bresler, 1992; Schwarz & Clore, 1988). Their research focus falls on subjective aspects of emotional experience, and how these aspects are affected by (and in turn affect) external events and internal processes. For such theorists, emotions only ever have an indirect relation to the social world. Although there is little doubt that individual feelings are central to everyday understandings of how emotions unfold, the relation-alignment approach to be developed here argues that these experiences do not constitute a separable essence or core (e.g., Russell, 2003), but only attain specifiable meaning because of their connections with broader inter-individual processes. Emotions are always *about* something (or someone's relation to something), and the nature of their aboutness (e.g., Gordon, 1974) or intentionality is what

gives them significance and purpose.

In my view, emotions are episodic modes of evaluative engagement with the social and practical world rather than simply responses to events. Acting emotionally primarily implies taking a particular (dynamic) affective stance towards some social, physical or abstract object[1]. Further, from the time that infants are able to orient to other people's directed actions (*secondary intersubjectivity*, Trevarthen & Hubley, 1978), their emotions can take into account someone else's conflicting or compatible stances towards objects too.

This developmental shift from object-directed to relation-oriented emotions may be illustrated by reference to the ontogenesis of the mode of engagement that ultimately acquires articulated meaning as "anger." The earliest origins of this emotion are observable in the escalating display of struggle against sustained physical resistance (one of anger's earliest intentional objects) shown by infants subjected to continuing arm restraint (e.g., Camras et al., 1992; Watson, 1929) and in their distress at the removal of expected reward (e.g., Lewis, Alessandri, & Sullivan, 1990).

Caregivers apprehend the intentionality behind such "anger" presentations, and are often inclined to co-operate with infants' apparent desires by releasing any obstacle or obstruction (cf Vygotsky, 1978). However, the extent of co-operation also depends on whether these desires are perceived as legitimate, and whether there is good reason to resist their fulfilment. Thus, depending on cultural and more local norms, infants quickly learn when and how anger works as a means of affecting others' responses as well as changing the practical situation Incorporation of this partly socialised interpersonal influence function increases the range of relations that can be aligned using anger and further specifies the implicit communicative meaning of this emotion.

Later in development, more explicit rules about normatively appropriate contexts for anger are learnt. At this point anger stops simply being an unselfconsciously deployed tactic

for social influence (*prereflective* anger) and also becomes oriented to cultural scripts about how anger ought to proceed and about how others ought to react to it (*articulated* anger). Adults can refer to these scripts when commenting on the appropriateness of their own and others' anger, and can modulate their anger presentations in line with the scripted prescriptions to some extent. In particular, showing anger in appropriate contexts comes to be used as a means of allocating blame, and communicating associated appraisals (e.g., Lazarus, 1991) to others.

Articulated, rule-governed anger never entirely supplants its earlier pre-reflective form in development. Even as adults, jammed drawers, painfully slow computers, and intrusive interruptions to activity or conversation can induce antagonistic feelings. Indeed, the blameworthy acts dignified as proper causes of angry reactions in Anglo-American cultural scripts only represent only a subset of the frustrating events that induce similar feelings. However, as soon as we attribute anger to ourselves on the basis of our orientation to frustrating situations, this automatically activates associated perceptions of other-blame (e.g., think of Basil Fawlty bashing at his car bonnet with a tree-branch). Thus, the implicit (prereflective) and explicit (articulated) modes of anger often interpenetrate during adult interaction, but the balance between them varies.

It is also possible for someone to get angry at the implicit level and exert influence on others without realising either that they are angry or that their anger presentation serves a purpose for them (e.g., Frijda, 1986; 2005). We know how to get through certain situations using particular expressive movements and need not register their specific emotional implications at the time or even subsequently. For example, someone else might point out our apparent aggressiveness to us before we have noticed that we are acting in an angry way, even in circumstances when we would explicitly deny that we are angry.

Many of the interpersonal effects of prereflective anger presentation depend on there

being direct face-to-face contact between interactants. For example, real-time co-ordination of nonverbal movements and on-line attunement of vocal timbre and pitch are clearly impossible when the two parties are involved in sequential text-based interchanges. Relation alignment therefore needs to be achieved by other means, and emotional influence may be exerted at a more explicit level. This explicitness allows different ways of reworking and reframing the interaction with reference to shared (but still negotiable) scripted understandings.

Just as anger may operate in both pre-reflective and articulated modes, so too with many other kinds of emotions, including supposedly "basic" and "non-basic" ones (Draghi-Lorenz, Reddy, & Costall, 2001). In my view, what gives each emotion its original relational meaning is its dynamic pattern of embodied engagement with others and objects in the shared field of action. However, in each case, a selective representation of this meaning gets abstracted and articulated over the course of development and comes to be enactable in a variety of alternative ways. Distinctions between the prereflective and articulated modes of emotion presentation are set out in Table 1.

Emotion reciprocation

The focus so far has fallen on the other-orientation of one person's emotion. The picture becomes more complicated when the other person's interlocking role in the unfolding relational process is also considered. This other person may be closely attuned to the first person's presentation and pursuing compatible lines of action, or may have competing demands on attention or conflicting concerns. In either case, each party's emotion presentation will adjust to take into account the other's ongoing actions and reactions.

Anger already implies some disruption in relations, and its function is to solicit co-operation or apology from an initially resistant other. If all goes well, the fixed stare characterising one person's prereflective anger may successfully redirect the other's attention

to its object, and her evident contending movements may attract co-operation in the ongoing struggle. However, removing the source of frustration may be insufficient to defuse anger, and some degree of relational repair may also be demanded. Since the prior situation cannot usually be literally undone, there is a need for the other to present herself as being ready to amend the fracture in relations. An emotional stance loosely corresponding to our everyday notion of "guilt" is how this is often achieved.

To simplify matters somewhat, the second person's guilty reaction too may be activated in one of the two ways distinguished above. Either she registers the externally directed blame implied by the anger, and responds with guilt to acknowledge and accept this blame, or the moment-by-moment movements and adjustments involved in anger presentation induce corresponding moment-by-moment adjustments from the other. In the latter case, the other person may find herself backing away and shielding herself from hostile approach movements until she is pushed into the metaphorical corner that conveys "guilt." Arriving at such a relational position does not necessarily imply that the emotion is explicitly registered by either party as an instance of this particular emotion: It is the mutual positioning that counts.

In this example, interactants approach the emotion's object from different angles and end up in discrepant emotional stances. However, there are also many circumstances in which interpersonal emotions converge to arrive at a shared mode of engagement. A good example of this phenomenon is social referencing, wherein a caregiver's emotional stance (e.g., fear) towards an object (e.g., a visual cliff) brings the child's emotional stance into line (e.g., Sorce, Emde, Campos, & Klinnert, 1985). By explicitly showing a conventionally articulated emotion towards an object, we demonstrate to others that a similar emotional attitude may also be required from them (see also Manstead & Fischer, 2001). Even emotions that are usually antagonistic can sometimes also operate in this way. For example, although

anger is often directed at someone who can help to alleviate resistance, it may also be used to induce anger about a common object in others who are present. In particular, I may express my anger about someone else's mistreatment of me in order to bring them onside.

This section has argued that interactants often enter into a kind of emotional dialogue or reciprocal negotiation. In some cases, one person's emotion tends to induce a different emotion in the other (which in turn has corresponding effects on the first person, and so on). In other cases, there is convergence of the two interactants' emotions over time, with one person's emotion inducing a similar emotion in the other, which in turn feeds into the first person's matching emotion.

One of the advantages of prereflective nonverbal communication is that it is not always susceptible to the turn-taking conventions of verbal dialogue. Two or more people's emotions may influence each other continually over time, rather than there being a back-and-forth exchange of emotional information. The resulting emotions may therefore emerge from a co-regulated process (Fogel, 1993) rather than originating in the separate mental systems of each individual. Such processes, however, are only available in certain modes of interpersonal contact, and mediated communication may disallow their operation.

However, initiation of emotional dialogue even at a strategic articulated level does not rule out recruitment of pre-reflective processes over time. One person may present an explicit emotional message that is intended to communicate an appraisal of what is happening to the other (e.g., the mother's posed fear face in social referencing experiments) but the other's response to this signal may remain at the prereflective level and fail to register the articulated emotional meaning. Thus, an articulated emotion presentation may induce prereflective adjustment from the other, which in turn evokes further corresponding adjustments from the first person. Something that starts out as an entirely strategic emotional message may develop into a more directly engaged emotional stance as mutual interpersonal adjustment proceeds.

Summary

To sum up, emotions serve to influence others' attention, actions, and emotions, by inducing corresponding moment-by-moment adjustments in relational stances, or by virtue of their place in shared (but still negotiable) conventions of patterned emotional interaction. In the latter case, anger exerts its effects partly because both parties know how angry episodes are supposed to unfold in a given cultural and organisational context (although this knowledge too may be tacit). The effects of one person's emotions in either of these modes may be divergent (e.g., when anger induces guilt, contempt leads to shame, or fear elicits sympathy), or convergent (e.g., when love begets love, or when anger induces shared anger, or counteranger).

Channel Constraints

This section considers how particular modes of contact between people might impact on processes of relation alignment at the two levels distinguished above. The central argument is that emotions presentations are adjusted as a function of different communicative possibilities, but that their adjustment may sometimes be incomplete or mistargeted. Processes of adjustment take place at either or both of the two levels distinguished above: Prereflective emotion presentations respond on line to interpersonal responses (co-regulation, Fogel, 1993), whereas adjustment of articulated emotion presentations is oriented to interpretations of others' reactions and script-based anticipations of how they will react in future. Further, if prereflective emotions become obviously misattuned with other's responses, articulated representations are brought into play, causing a shift in the mode of adjustment from the implicit to the explicit level. Deployment of these articulated emotion scripts in turn affords distinctive possibilities for emotion presentation and negotiation.

The following subsections illustrate these processes by reference to two related forms of miscommunication. In the first, people fail to register explicitly the extent of imperfections

in a communication situation and thus overestimate the readability of their emotion presentations by others. In the second, miscalibration operates bidirectionally during remote interactions, with people adjusting their emotional presentations to each other's imperfectly registered reactions. In both cases, the emotional implications of signals and actions are misinterpreted because differences in perspective are not adequately factored in.

These effects of mode of contact on the process of relation alignment should be distinguished from more direct affective responses to communicative contexts. Above, it was argued that the earliest ontogenetic form of (what later becomes articulated as) "anger" is a direct response to continuing physical or psychological resistance. Prereflective anger of this kind manifests itself as an intensification of struggle when action is impeded and initial efforts are frustrated. Clearly, comparable escalations of activity are apparent in adults too, when confronted by physical objects that refuse to co-operate with their wishes or other people who are just not getting the message. Indeed, merely having to raise one's voice to convey a simple message to someone in another room can occasionally lead to "anger" of this kind. Similarly, the glitches and inconsistencies of a bad phone connection or unreliable video link might well provoke unwanted bad feelings between interactants. Thus, to the extent that remote interaction involves obstacles to direct communication, it might be seen to be associated with negative affective outcomes. The present section focuses not on purely object-directed pre-reflective emotions such as these, but rather on how the possibilities for communication impact on the alignment and calibration of interpersonal relations (towards common objects). In addition to presenting a direct source of frustration, communication technologies also impact on our mode of contact with others, thereby influencing our emotional presentations towards those others.

Table 2 summarizes possible emotional consequences of the various factors that may be associated with remote interaction with another person at the prereflective and articulated

level. The Table distinguishes between three classes of factor that can affect the process of emotion communication at the prereflective or articulated level, pertaining to the medium of communication, the nature and closeness of the relationship between the parties to the interaction (including correspondences and discrepancies between their respective situations), and the kind of communicative task that is being performed.

Communication media can vary in informational richness (e.g., Daft & Lengel, 1984) and in the specific modalities of information that they provide, each of which may individually afford different kinds of interpersonal contact. For example, face-to-face contact usually involves access to a wide range of verbal, vocal, visual, tactile, and olfactory cues whereas telegrams only provide textual information. Secondly, there are differences in the extent to which media require turn-taking or permit continuous simultaneous interpersonal contact between interactants (*sequentiality*). Again, these factors bring clear consequences for the way in which emotional information is presented and responded to. For example, there is less point in drawing attention to a transitory source of pleasure when corresponding by letter to someone in a remote location than there is when calling to them across a room. Third, media vary in the degree of their *temporal resolution* (*synchronicity* in Joinson's terms, 2003), with face-to-face interaction providing almost immediate reception of any message that is sent, and placing a message in a bottle maximising delay (and uncertainty of reception). To the extent that emotions are attuned to others' responses, the absence of immediate feedback is likely to affect the way they unfold over time.

The classification presented in Table 2 is not exhaustive and does not include the likely interactive effects of the influential variables. Further, classifying effects as either prereflective or articulated ignores the possibility (raised above) that some variables change the relative probability of (or necessity for) articulated scripts being applied in the first place. Despite these limitations, the Table should provide an orienting framework within which the

specific phenomena discussed in the following sections can be located. (For a more comprehensive treatment of differences between the characteristics of modes of communication and a historical analysis of evolving media and their perceived limitations, see Joinson, 2003)

Context-sensitive illusions of transparency

The emotional implications of some nonverbal presentations seem obvious. When physically struggling against someone, gaze direction, focused muscular tension, and the dynamics of pushing movements directly convey what we are trying to do and what we want to happen. Indeed (as outlined above), such co-ordinated struggling displays may underlie what later gets explicitly represented as "anger" and may come to be seen (and used) as unproblematic indicators of the presence of this emotion within conventional articulated scripts. However, even in such directly frustrating practical situations, our emotional stance is not directly perceived from the movements themselves but also depends on apprehending their relation to the unfolding context (cf. Carroll & Russell, 1996). Staring is only perceived as staring if the object at which it is directed is simultaneously detectable, and physical struggle is only apparent when it is clear that something is being struggled against.

More generally, understanding the meaning of any movement or expression depends on appreciation of its role in an ongoing process of engagement with an object, person, or activity. Like the words "here" and "this," emotion signals are indexical[2] expressions that only have specific references when co-ordinated with the context of their use. In many co-present interactions, the calibration of perspectives required to achieve this co-ordination is easily attained. Indeed, face-to-face other-oriented emotion presentations adjust on-line to real-time feedback from others to correct any residual ambiguity. For this reason, the context dependence (or indexicality, e.g., Pierce, 1955) of their meaning often goes unnoticed.

Because our articulated emotion representations were originally based on prereflective

experiences of such direct emotional influence (and because we know how to communicate emotion using stylised versions of the prereflective movements, see Parkinson, 2005), they lead us to assume that emotion communication will be relatively unproblematic in other situations too. However, differences in context and perspective, together with limited access to the others' presentation can seriously undermine the intrinsic readability of emotion presentations. For example, faces thought to be direct expressions of one emotion may be interpreted as indications of another when presented in other contexts (Carroll & Russell, 1996). Thus, application of specific emotion scripts beyond their proper realm of relevance within face-to-face shared situations leads to false expectations about emotion's visibility and obviousness.

From a different angle, Gilovich and colleagues (e.g., Gilovich, Savitsky, & Medvec, 1998) have argued that people generally suffer from an "illusion of transparency" leading them to believe that their emotions are more detectable by others than they really are. For example, Savitsky and Gilovich (2003) found that students believed that they appeared more nervous while performing a public-speaking task than their partners rated them as being. The investigators' explanation is that participants' emotions are so salient to them that they tend to overestimate their salience for others too. However, research recently conducted by Muttiallu and Parkinson (in preparation) suggests that this effect may depend on the extent of shared context between senders and receivers of emotional communication rather than any general tendency towards inaccurate perceptions. In short, the illusion operates most strongly when there is increasing remoteness between interactants.

In this study, pairs of participants simultaneously took part in a multiple-choice quiz while situated in separate cubicles. At the end of each series of questions, co-participants were provided with good or bad performance feedback and their facial responses to this feedback were video-recorded. The videotape was then immediately presented to the other

participant who was asked to rate the expressed emotion. Subsequently, the same videotape was presented to another group of participants who again rated the expressed emotion.

The prediction was that co-participants' ratings of expressed emotion would be closer to participants' own ratings than would those of the separate group of raters, because co-participants were able to appreciate more fully the temporal and situational context within which the emotion presentation was made. This prediction was confirmed. Further, presentations to friends under conditions of potential conflicts of motives were rated as more readable, presumably because acquaintances are seen as more likely to appreciate the specific contextual factors shaping emotion presentations. Taken together, these results suggest that the usual assumption that facial expressions are readable by others works best when people have a similar relation to the emotion's object and can therefore better appreciate the contextual reference of the communication. When interaction is direct and face-to-face, any problems of readability can be quickly corrected by on-line adjustment of emotion presentation to the ongoing response of the other person.

In the present context, the most important implication is that people may overestimate the clarity of their emotional communication, especially during mediated interactions, and especially when there are discrepant contexts between senders and receivers. Senders' interpretations of receivers' responses are likely to be distorted in turn, because these are oriented to a more ambiguous emotion presentation than senders believe they have transmitted. A general sense may develop that others are not appropriately acknowledging and responding to one's own emotional stance. Miscommunications of this second kind are addressed in the following subsection.

Miscalibration of perspectives

Since our prereflective emotion presentations are already attuned to directly sensed movements from the other, they often adjust on-line before any discrepancy of interpretation

arises. However, even here, there may be different perspectives on the shared situation, leading to mismatches between presentation and reciprocated presentation. At these flashpoints, articulated representations of interpersonal relations and emotions are often brought into play. These too may be in conflict, but their explicitness permits negotiation and renegotiation between parties using more mutually penetrable means.

In many remote interactions, possibilities for pre-reflective mutual adjustment of on-line presentations may be seriously limited. Here, the other's failure to register and respond to prereflective affective responses as expected on the basis of illusions of transparency may quickly lead to the invocation of articulated emotion scripts. Thus, any resistance-induced frustration may quickly be transformed to articulated anger as long as the resistance remains implacably present.

Anger while driving. If articulated anger is partly intended to show someone else that they have misbehaved and to get them to back down or apologise (or to show onlookers where to direct their blame), then it should persist until that message gets across (or, more accurately, until interpersonal feedback indicating that it has got across arrives). In those face-to-face co-present interactions when all parties share a common agenda, this usually happens quickly. Indeed, initial indications of irritation may elicit anticipatory appeasement that circumvents anger activation. However, in driving situations, when interactants communicate over large distances and through the physical barrier of each car's body, the consequent differences in perspective and constraints on communication make such circumvention of aggression less likely.

Unlike in face-to-face interactions, I would have to shout very loud, or intensify my facial expression to a great extent before you could even register my displeasure. Further, any acknowledgement of my irritation from you would need to be exaggerated before I could detect it. The consequence is that receivers of anger communication only pick up

disproportionate displays (honked horns, flashed headlamps, tailgating) and therefore react with reciprocated anger rather than appeasement (see Parkinson, 2001).

Interactions while driving usually take place between strangers rather than acquaintances making it more difficult for each person to adjust his or her perspective to see things from the other's point of view. Further, interactants' mutual visual accessibility may lead them to underestimate differences in attentional allocation arising from physical distance and discrepant lines of action. For example, we may not realise how an intersection appeared to a driver who pulls out in front of us. Perhaps we do not fully appreciate the obstructions that impeded her view of the road because we have approached from a different angle and are focused on the particular direction that we are taking. Perhaps we fail to compensate for these perspectival discrepancies because most road situations are governed by fixed rules of conduct that make calibration of action seem unproblematic and communication transparent (just like in everyday face-to-face contexts). Not only may a presentation of anger on the road feel like it should be more visible and more quickly registered by other drivers who have offended us, but also the initial offense may seem more serious from our particular interpersonal position.

According to the above account, the apparent intensification of anger presentations that occurs when interactions take place between drivers arises partly because a remote medium of calibration and communication is treated as transparent and directly analogous to the kinds of face-to-face interaction that occur when people are in closer proximity to one another. Do similar considerations also apply to other forms of remote interpersonal communication?

Intepersonal attunement in video-mediated communication. When users first face a video-link, they might be forgiven for assuming that interaction will proceed just as it does when another person is really right in front of them. Indeed, some of the particular

limitations associated with the implementation of this communication technology may be relatively hard to detect. For example, given memory and processing constraints many current desk-top implementations of video-conferencing technology utilise compression-decompression routines (CODECs) that often result in micro-delays in transmission of signals to the other party to the interaction. These delays may be almost unnoticeable to novice users and yet still have an impact on the course of their interactions.

One of the documented effects of delay is on the management of turn-taking during conversation. In face-to-face interactions, people deploy and respond to a variety of non-verbal cues based on gaze, intonation, and gesture to regulate the close timing of conversational exchanges. For example, a glance coupled with a brief pause can signal readiness to be interrupted, while nods and various affirmative mumbles can help to encourage continuation of speech (e.g., Kendon, 1973). Even slight disturbances in the synchronisation of these interpersonal cues can apparently disrupt this usually automatic co-regulated process, leading to unwanted interruptions and increases in overlapping speech (see Rutter, 1987).

The present argument is that the process of interpersonal emotion communication is similarly sensitive to temporal disharmonies between interactants. If prereflective emotion presentation involves continuing adjustment to the other person's ongoing responsivity (as picked up from their changing response), then any delay in receiving this interpersonal feedback can alter the course of this process. In particular, I may adjust the intensity of my anger presentation in real time as a dynamic response to the extent to which you seem to be attending to my growing irritation. Immediate appeasing feedback would negate the need for anger escalation, but if the feedback from you arrives even a moment too late, my anger may already have reached a higher level. Although this may seem like a trivially small effect if the transmission delay is small, it is important to remember that the process works in both

directions. You will receive my slightly intensified anger expression after having made an initial attempt to soften my irritation. To you then, my anger may seem disproportionate and your response to it may thus be tinged with irritation (which again, I will pick up a fraction too late to mollify at its early stages). This interactive process thus may have escalating effects that correspond to a temporally scaled down version of the miscommunications that seem to apply between drivers in some road situations.

Preliminary support for these ideas comes from research conducted by Parkinson and Lea (in press). Pairs of participants engaged in conversations about liked and disliked celebrities via a desktop video-conferencing set-up. In one conversation, the discussed celebrity was liked by one participant but disliked by the other (disagreement condition). In the other condition, both participants disliked the celebrity being discussed (agreement condition). Further, one group of participants experienced minimal transmission delay while conversing, whereas the other group were subjected to a small transmission delay such as characterises the usual operation of many video-conferencing systems.

If part of the function of expressing negative emotions is to influence the other's attitude towards the object of discussion, and the effectiveness of this process depends partly on on-line adjustment of one's nonverbal presentation of the emotion, then the imposition of even a small transmission delay should interfere with the effectiveness of this emotional persuasion. As predicted, post-interaction ratings of discussed celebrities converged more under low than high delay when there had been initial disagreement. However, this effect was only obtained among pairs of interactants who were acquaintances rather than strangers meeting each other for the first time in the laboratory. It seems therefore that some degree of familiarity with the other's nonverbal style may be necessary before one's own nonverbal presentation of emotion can be effectively adjusted to their responses.

Another relevant finding was that the agreement and delay manipulations interacted

significantly. In the disagreement condition, low delay led to greater discrepancy between co-participants' happiness ratings than high delay, suggesting that they were better able to adjust their emotional position to meet the combative requirements of interpersonal persuasion when given closely timed nonverbal feedback from the other person. By contrast, in the agreement condition, low delay led to closer correspondence between the happiness ratings of co-participants than high delay. Thus, it is not only processes of emotional divergence, but also of convergence, that may be disrupted by transmission delays of this kind.

More generally, the way that interactants co-attune their presentations of sympathetic affect may be highly dependent on the mode and timing of interpersonal feedback. Chartrand and Bargh (1999) demonstrated that mirroring another person's movements results in smoother interaction and greater liking for the other person. Further, precisely matching the timing of the other can contribute to the development of shared affect. For example, Bernieri and Rosenthal (1991) have suggested that people engaged in face-to-face interaction may establish rapport by implicitly synchronizing their gestures and expressions with one another. Under these circumstances, the sensitivity of mutual attunement can operate within a very tight time-frame (Condon, 1982), which is below the frame-rate of many VMC set-ups. It seems likely therefore that the interpersonal processes for developing mutual rapport may operate differently when technology has lower temporal resolution.

In Parkinson and Lea's (in press) research, low delay was associated with higher ratings of involvement with the other interactant. In addition, co-participants' retrospective ratings of attunement to one another at successive points in a replayed videotape of their conversation corresponded more closely and covaried more tightly over time when delay was low. It therefore seems that participants feel a greater sense of connection with the other person at higher levels of temporal resolution. Such a finding helps to confirm that the real-time dynamics of interaction are central to their affective consequences.

Compensating for Channel Constraints

The above analysis may seem to imply that different modes of communication impose different emotional effects on their users. Similarly, many theorists have argued that reductions in social cues (e.g., Rutter, 1987) or perceptions of interpersonal contact ("social presence," Short et al., 1976, see Joinson, 2003, for an accessible review) produce predictable deleterious effects on interaction quality. Such an analysis has been applied, for example, to the phenomenon of "flaming" in email communication, wherein messages may contain intemperate language and seem unrestrained (Kiesler, Siegel, & McGuire, 1984; Sproull & Kiesler, 1986). It has been suggested that the omission of nonverbal cues that might otherwise disambiguate senders' intentions may lead to misinterpretations and extreme reactions. The basic idea is that immediate contact with another means that their ongoing responsiveness tends to moderate the intensity of negative communication.

From the present perspective, such negative effects partly depend on misapplication of articulated emotion scripts, and may be circumvented when the relevance of those scripts is called into question. For example, recognition that emotion expression is not transparent when presented in text rather than ongoing nonverbal movements may lead people to incorporate emoticons (e.g., "smileys" such as :-) or ;-)) in their messages as substitutes for the missing emotional information. An explicit emotion signal is thus substituted for prereflective emotion that was transmitted but not registered because of channel constraints and undetected context differences. This may avert potential miscalibration of emotional perspectives (e.g., Thompson & Foulgar, 1996, Tzeng, 2004, but see also Walther & D'Addario, 2001).

A similar example of how knowledge of the limitations of emotion communication can alleviate negative effects is provided by Savitsky and Gilovich's (2003) research into the

illusion of transparency mentioned earlier in this paper. In their second study, these investigators found that simply informing students about the illusion of transparency allowed them to appreciate the possibilities for concealing their anxieties from others, and hence alleviated their fear of public speaking. People are clearly able to adjust their interpretations of emotion presentations to take into account the limitations of the communicative process.

Both the above examples suggest that reworking articulated representations of how emotion is communicated in different communicative contexts helps to alleviate negative effects. With increasing experience of communication media, users should come to develop strategies to compensate for some of their perceived limitations. Why then do illusions and misjudgements continue to characterise many forms of remote interaction? Surely, the conventions that have built up historically around letter-writing, telegrams, telephone conversations and so on adequately circumvent any lack of social cues in those media (see Joinson, 2003). Isn't it inevitable that similar strategies will be developed to deal with the specific constraints associated with VMC, SMS, and email?

The answer may be that the effects of communication channels themselves are more easily avoidable (given appropriate feedback) than the effects of mismatched contexts of use when interaction is conducted remotely. It is not only necessary to appreciate the constraints of a channel, but also to give your communication partner the benefit of any doubt about their motives and intentions. For example, research from a social identity perspective suggests that a relative lack of social cues can also lead to more rather than less normative behaviour when the salience of personal identity is low (personally anonymous communication) but the salience of social identity (group membership) is high (Lea & Spears, 1991). More generally, it may be that if we are able to assume a shared perspective on events, then the application of negative emotion scripts becomes less likely. Trust as well as knowledge can correct for media limitations.

Exploiting Channel Constraints

A limitation of the reduced social cues perspective on mediated interaction is its tendency to assume that communication modes are imposed on their users, who are then subjected to their inevitable effects (Markus, 1994; see also Joinson, 2003). In the previous section, I considered ways in which people and institutions might compensate for the perceived disadvantages of any medium. But what might seem like a disadvantage from one angle, can also often be exploited as an advantage from another.

The fact that certain channels are absent from a communication medium, or that its temporal characteristics do not permit certain forms of interaction certainly implies that something has gone missing, but the fact that it goes missing for receivers as well as senders means that the absence may be exploited in the service of selective presentation. For certain communicative purposes, it may be advantageous to restrict access to certain aspects of your presentation, or to be able to delay response without the receiver registering the delay as an indication of failure to engage.

Email or SMS exchanges, for example, involve a protracted turn-taking sequence, whereas telephone conversations and face-to-face conversations permit real-time responses to the other while they are speaking. Again, although the former temporally extended interactions may seem lower in social cues and presence, they also carry the advantage that messages can be read at the receivers' convenience, and can be read and re-read to make sense of their meaning. Replies too can be carefully composed to assist in self-presentation. Finally, the lack of exposure to the other person's immediate reactions may enable senders to express concerns that might seem too delicate if the other were directly confronted with them (Kasesniemi, & Rautiainen, 2002).

Similarly, some commentators have suggested that email is inherently democratic

since it allows subordinates direct access to superiors without having to go through usual channels (e.g., Markus, 1994). However, again, this idealised picture may reflect a relative lack of historical experience with the medium. Many bosses already have secretaries or PAs who prescreen emails and send out standard replies when the sender's approach is judged illegitimate. Hierarchical structures may take time to respond to technological developments but often find new ways of re-establishing traditional status boundaries.

The strategic use of communication media need not be oppressive or Machiaevellian, however. One of the advantages of teleworking may be that one has better control over when and how one initiates interactions with colleagues in other parts of the distributed organisation. Availability for informal or formal interactions with others can be signalled at times that suit your own working patterns assuming that others are also similarly available.

The material reviewed in this section suggests that limitations, omitted information channels, and delays between turns in dialogue present opportunities for the strategic management of message delivery and response. It is also worth noting that some forms of virtual interaction specifically replace missing channels with manufactured information. In particular, the use of "avatars" in interactive gaming contexts allows users to tailor their visual presentation and identity to suit their purposes. Similar procedures have even been used to manipulate the image of on-line shopping companies (e.g., Qiu & Benbasat, 2005). It is even possible to morph images of your own face to project a different impression to others in cyberspace. Here the visual channel is not absent; it is altered or created afresh.

Strategic emotion

Where does the strategic presentation of emotion fit into this picture? According to the theoretical account sketched out earlier in this paper, learning explicit norms and rules about the causes and effects of emotion allows us to use emotion strategically to achieve certain interpersonal and institutional ends. For example, I may explicitly communicate anger

in order to redirect blame in accordance with the conventional script for this emotion.

Such scenarios raise obvious questions about whether it is real or simulated emotion that is being presented by the strategist. One answer is that its dynamic attunement to other people's responses may make it more real over time. Sometimes when I affect annoyance light-heartedly, for example, the fact that a friend responds by trying to undermine the grounds for my apparent anger leads me in turn to focus on their genuinely annoying aspects. Similarly, someone else's sympathy in response to our apparent sadness can often lead us to feel really sad after all. In the social referencing study described above, a mother's posed smile or fear expression leads to a real change in a toddler's emotional stance towards the visual cliff. If interaction had been allowed to proceed, it is likely that the mother would be affected by the infant's perceived emotion in turn. As a final example, a flight attendant interviewed by Hochschild (1983) in her famous study of emotional labour, described her experience of affecting bonhomie in the following terms: "If I pretend I'm feeling really up, sometimes I actually cheer up and feel friendly. The passenger responds to me as though I were friendly and then more of me responds back" (p. 56). In other words, the fact that our interpersonal emotions respond to others' ongoing reactions can change them from being put on to being sincere.

A second answer, more familiar in the literature, is that there are two possible modes of emotion regulation, one involving surface acting and self-consciously modifying emotional expressions, the other involving deep, Stanislavskian method-acting in which the situation is reappraised as one that warrants the emotion (Hochschild, 1983). For example, the training given to the flight attendants studied by Hochschild involved encouraging them to take the metaphor of an "air hostess" as literally as possible and to view the flight cabin as their living room when entertaining valued guests. Imagining themselves in such an environment allowed a different emotional perspective on the sometimes obnoxious behaviour of

passengers. In the terms of the present relation-alignment approach, this kind of emotion work means deliberately applying an articulated emotion-relevant script to a situation that would normally have other emotional implications. For example, one of Hochschild's interviewees explained how she had learnt to deal with rudeness from drunken passengers in the following terms: "I try to remember if he's drinking too much, he's probably scared of flying. I think to myself, 'he's like a little child.' Really, that's what he is. And when I see him that way, I don't get mad that he's yelling at me. He's like a child yelling at me then." (p. 55).

This form of imaginative projection may be facilitated rather than impeded by limitations on so-called social cues or temporal resolution. Without the details of all aspects of the messy facts presented directly to you, it may become more possible to rework your formulation of social relations with others. For example, a debt collector trying to intimidate clients by telephone (see Hochschild, 1983) may be better able to minimise any acknowledgement of the debtor's feelings (or to think of her as somehow subhuman) in much the same way as it has been said that US military personnel were able to reconceive the first Iraq war as a video-game because of their lack of direct contact with the victims of their attacks (cf. Milgram, 1974).

More generally, it seems possible that specific limitations of communication media may be exploited for the strategic presentation and manipulation of emotion. Appropriate selection of mode of contact permits selective emphasis on certain channels of emotional influence at the expense of others, and the lack of the latter channels may carry certain advantages. This applies too to temporal desynchronisation of conversational turns associated with some media (e.g., email, SMS), which permit carefully timed presentation of emotional information, while losing the immediate interpersonal feedback that might otherwise modulate such presentations (cf. Kasesniemi, & Rautiainen, 2002).

The above discussion may give the impression that certain communication media lacking in "social presence" (Short et al., 1976) specifically facilitate emotion manipulation by people with shady motives. However, it is also the case that selectivity of presentation is seen as permitting the stripping away of social masks between two people in an affiliative or romantic relationship (e.g., Ben Ze'ev, 2004). Many people feel that email interaction, for example, allows them to convey what they really want to say to someone else without the usual distractions of maintaining face in polite conversations conducted in public (e.g., Walther, 1996). Similarly, interactions with individual colleagues can be better regulated to avoid the usual multiple-audience problems (e.g., Fleming, 1994) associated with interactions in real offices or factories. It may be easier, for example, to engage in gossip when you can be sure that no-one can easily intrude or listen in to your conversation.

The various absences (temporal and informational) implied by some forms of virtual interaction, therefore, need not be a bad thing. The fact that we imaginatively project ourselves into an interaction with a remotely presented other can lead to false consciousness or openness to manipulation, but also to hyper-personal communication (Walther, 1996) in which we effortfully construct more satisfying relationships with one another across the cyberspace between us.

Conclusions and Implications

The other-attuned adjustments we make to our emotion presentations operate differently depending on what kind of contact we have with those others. When interaction proceeds in a temporally disjunctive medium such as email, we cannot align or disalign themselves on-line in real-time, but must resort to other, often more explicit, means of gauging our changing position with respect to the other, and of presenting our emotions in a mutually interpretable form. We often need to read between the lines to imagine each other's tone of voice or nonverbal delivery. This kind of imaginative, script-based projection may

make us more susceptible to strategic manipulation, but also allows co-operative editing of identities and idealisation of remote relationships. Some of the consequences may be bad and some good, but none are entirely dictated by the characteristics of the communication medium itself.

More generally, channel constraints coupled with unnoticed mismatches between interactants' communicative contexts can lead to failures in calibration of emotion presentation that often require explicit repair work. However, knowledge of the parameters of a medium and explicit information about the other's intention and affective stance often permits us to transcend these apparent limitations. Just as letter-writing once developed into a distinctive narrative mode, so too SMS users are currently developing creative registers for communication in a medium that is severely lacking in social cues or "presence."

The problem facing such developments lies with the timing, mode, and content of the feedback that arrives when engaged in remote interactions of this kind. Troubleshooting often requires other forms of interpersonal contact, and metacommunication about use of a medium in other contexts. Adjustment to a virtual organizational world may be a gradual process requiring development of specific perspective-taking skills, and at least occasional direct contact between interactants to supplement their experience of mediated communication.

Understanding of the limitations of remote interaction, their variability, and tractability, is facilitated by appreciating the extent to which emotions are oriented to others' perceived and anticipated responses, and how the mode, timing, and representation of these responses in turn modulates our interpersonal contact across cyberspace. Future research needs to focus on the dynamic interpersonal processes of interaction in real time in different communicative contexts, rather than simply assessing individual participant's momentary responses to delimited emotional stimuli. Studies of this kind should help us to appreciate that emotions are often jointly constructed over time, rather than being directly activated by

impersonal manipulations.

Footnotes

1. Some readers may find this too broad a formulation of emotion since it might appear to include attitudes. Although attitudes too are evaluative stances, they are relatively more enduring conditions than emotions. Emotions have a delimited time course and usually interrupt rather than sustain consistencies in action. The motivational content of emotions is also experienced as more urgent and pressing, as captured in the defining feature of "felt control precedence" (see Frijda, 1986).

2. The notion of indexicality derives from Pierce's (1955) distinction between icon, symbol, and index. Emotion expressions are usually treated as symbols of underlying states, or as icons that give a direct picture of what the person is feeling. The claim made here is that emotion expressions achieve their communicative meaning in the dynamic context of their use and have no one-to-one correspondence to underlying emotional states (see also Parkinson, 2005).

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