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BIOLOGICAL AND CULTURAL CONTRIBUTIONS TO BODY AND FACIAL MOVEMENT[1]

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INTRODUCTION

There is no agreed upon single name for the range of facial or bodily activities I will describe. Part of my purpose will be to suggest that there should *not* be, for this is not one phenomenon but many. Terms such as nonverbal behaviour, nonverbal communication, kinesics, kinetics, expressive behaviour, body language, etc. have been used by one or another author to refer to some activity of the face and/or body. It has not always been clear whether actions which seem to have some instrumental purpose, such as pencil sharpening or push-ups, were included. If not then why did they include head scratching? Is the phenomenon restricted to movement or does it include static position of body or face (postures)? If limited to movements, it has not always been clear whether those too fast or too small for visibility under normal circumstances have been included. No matter. While a single suitable term[2] would be a boon when writing about the face and/or body, it could further confuse study of the phenomena, adding to the tendency to ignore or gloss over fundamental differences in what a person does with his face and body.

Some of those who study nonverbal behaviours (kinesics, expressive behaviours, etc.) have argued for an evolutionary perspective. They sought and found universals. Others, arguing for the utility of a linguistic model or the perspective of cultural relativism, sought and found extraordinary differences among cultural groups. Both studied the nonverbal, but it is likely that each examined entirely different activities: activities which differ in origin (how the behaviour became part of the repertoire), in coding (the relationship between movement and what it signifies), and in the circumstances of usage. Perhaps because the phenomena are all the result of muscular action, or because vision is the means for perceiving

these activities, or the camera the method of recording, investigators may have expected to find but one type of activity, just one principle of organization, just one type of function, just one major determinant. There are many.

I will describe the four activities we have studied most extensively: emblems, body manipulators, illustrators and emotional expressions.[3] Evidence about each of these activities is summarized, including some findings previously not reported. My emphasis is upon the conceptual framework for interpreting these findings. A central issue will be the extent of variation across cultures. This issue is central not just because this report is given at an anthropological meeting. Such a focus requires discussion of a problem which is the key to understanding and distinguishing among facial and body movements - to explain how biological and social factors have quite different influences upon emblems, body manipulators, illustrators and emotional expressions.

EMBLEMS

We have employed Efron's (1941) term *emblem* to refer to symbolic actions where the movement has a very specific verbal meaning, known to most subscribers to a sub-culture or culture, and typically is employed with the intention of sending a message. The head nods 'yes' or 'no' are examples of emblems. The person performing the emblem takes responsibility for having communicated, for having said something with his face or body. He can be held accountable for his message. The person who sees an emblem considers it was performed for his benefit, to tell him something. Not so with many other actions which nevertheless can be informative. The viewer may infer nervousness when observing a high incidence of body manipulator actions (e.g. scratching, rubbing, picking, etc.), but he will not consider these movements were performed to tell that to him. The knowledge gained from such body manipulator actions is stolen, the message provided by the emblem is given. The meaning of an emblem is not context free. Like words, emblems signify something rather precise, but the exact meaning and interpretation depends upon who is performing the emblem, to whom, in what conversational context, showing which other concomitant behaviours.

Emblems are often used when we could speak but choose not to. For example an emblem may be employed when recognizing a friend seated across the aisle during a theatrical performance, or an emblem may be used to avoid the likelihood of being caught in an extended dialogue when hoping to pass quickly a colleague in a corridor. Of course emblems are also used when

verbal discourse is just not possible; for example, because of noise (see Meisner & Philpotts (1975) study of emblems among sawmill workers).

Emblems occur also during conversation, by either speaker or listener. When speaking an emblem may replace a word entirely or repeat the message spoken in a word, or comment or qualify what is being said in words. When emblems repeat what is said in words, they may precede, accompany or follow the verbal statement of the message. Depending upon what is being said, how it is said, the speaker's stance towards what he is saying, there may or may not be latitude about where an emblem must be placed in relation to the word whose message it repeats.

We have been studying the location of a particular emblem, the shrug (Fig. 1) within the flow of speech among Americans. This emblem most often occurs at the start of a speaker's turn as an initial response to the question of the other conversant. The 'I don't know' (or some such verbalization) which the shrug symbolizes may not be spoken at all, or it may be said in words as well as in action. The second most frequent location of the shrug emblem is within the speaker's turn, at the end of a phonemic clause. The least frequent location for this emblem was in a filled pause (*aaahhh*) within a phonmic clause.

Emblems are used in conversation by the person listening and serve as what Dittmann (1972) has called listener responses. He has shown that head nods 'yes' or 'no', and vocal equivalents (*mhmm*) are employed by the listener in a non-random fashion. Their placement by the listener is related to pauses and to whether the juncture at the end of a phonemic clause in the speaker's conversation is rising or falling.

I have been discussing the usage of emblems, about which all too little is known. Let us turn briefly to the issue of the coding of this form of activity. The coding of emblems can be either iconic (the movement in some way looks like what it signifies) or arbitrary, and often it is difficult to determine which. Is the wink (an emblem signifying collusive agreement or flirtation) arbitrary in coding, or does the closing of the eyes refer to not looking or to future bedtime activities? With some emblems, the iconic base is quite obvious (See examples in Fig. 2).

Most of our research on emblems has attempted to survey the emblem repertoire, the vocabulary if you like, for particular cultures. We have developed a standardized procedure for this purpose, (see Johnson, Ekman & Friesen 1975, for description)[4]. A list of messages is presented to informants who are asked if they know of a commonly used body or facial movement to communicate each message. Their performances are analyzed to sift out those in which a message is performed in a similar way by

Fig. 1. *Shrug Emblem.*

most informants. These are then presented to a new group of informants who 'back translate' from the performance to the message. The informants also evaluate whether each performance is an action they have seen in actual conversations. This procedure is workable with persons in preliterate as well as literate cultures. So far, it has been applied to a study of middle-class white Americans (Johnson, Ekman & Friesen 1975), Iranians (Trupin 1976), Israelis (Broidie 1977), urban Japanese and a preliterate culture and comparisons among the five cultures are reported in Ekman, 1976[5].

The number of emblems found by these procedures has varied, from less than 100 in the U.S. to a few hundred for the Israelis. We have found no universal emblems; that is, instances in which the same movement is employed to signify the same message in each of the five cultures studied. We had not expected universals in this type of nonverbal behaviour. We had hypothesized that emblems are learned much like language, and the

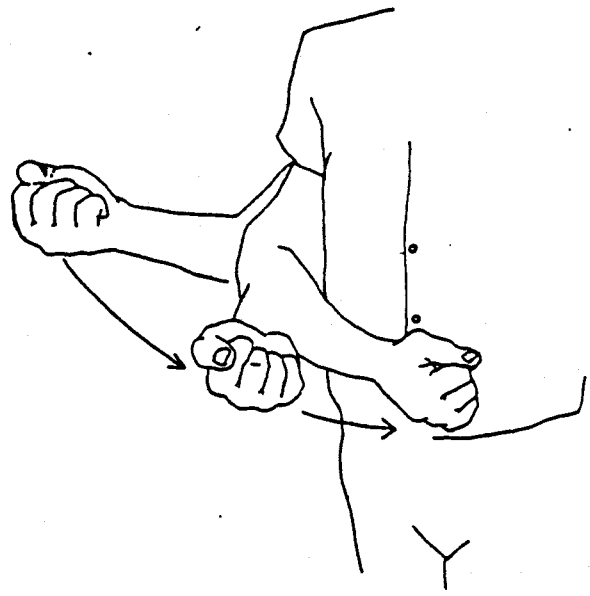

Fig. 2. (A) *Suicide emblems in Japan depicting use of sword.*

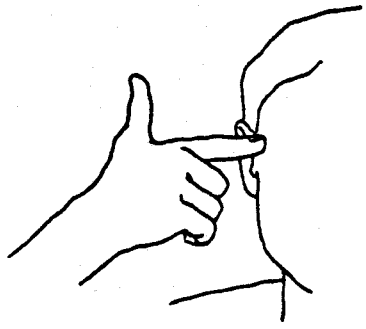

Fig. 2. (B) *Suicide emblems in United States depicting use of a gun.*

emblem vocabulary would vary with culture. We did expect to find some near universal emblems, when the message performed in an emblem refers to bodily functions or use of the body in a way which is anatomically constrained. In such instances, if there is an emblem for the message in more than one culture, it is likely that the performance utilized to symbolize the message will have to be the same in at least some respects. Examples would be the head in a prone position or eyes closed

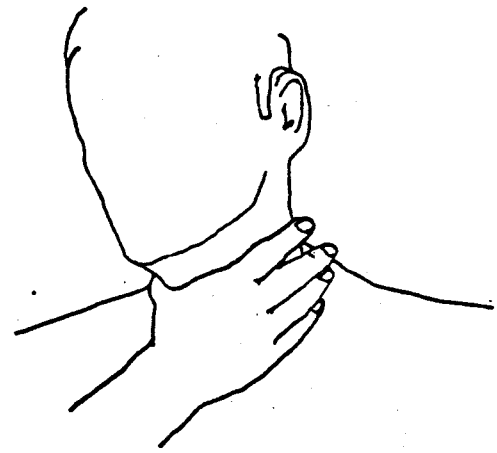

Fig. 2. (C) *Suicide emblems in the South Fore of New Guinea depicting strangling.*

for an emblem referring to sleep; or, reaching to mouth or stomach to refer to eating, hunger or satisfied hunger.

There are interesting similarities and differences across cultures in the types of messages for which there are emblems. Every society we have studied has some emblem (although the specific movement varies), for greeting and departure, for insults, for replies (such as yes, no, uncertainty), for directing locomotion, for referring to the physical state of the person (tiredness, pain, etc.), and to the affective state of the person (angry, surprised, etc.) Often variations in the specific movement pattern employed to symbolize a message reflect the use of different tools. (See Fig. 2 for suicide emblems.) Cultures differ in the number of emblems they have for a class of messages. For example, the Israelis have fewer emblems for affect than the other groups we have studied even though the Israelis have more emblems *in toto*. Before we can make sense of such differences more cultures will have to be studied, picked with some sampling principle in mind, rather than the accident of opportunity which has guided our past selection.

Emblems most often involve the hands and/or arms, but also can utilize head movement, facial movement, postural shifts, and even leg movements (or voice as well). Typically they are not elaborated from smaller to larger units. There are few compound emblems, where each element in the compound has an emblematic meaning, either the same or different from the compound. The shrug is an exception, since there is a shoulders element, and a hand/arm element, each of which means 'I don't

know', and together they have that meaning.

Trupin, in her analysis of Iranian emblems, has shown the utility of applying Stokoe's (1974) formulation to understanding the differences among Iranian emblems. She has shown how performances having the same configuration signify different matters when performed at different locations and how performances at the same location signify different matters when there is a different action. For example, if the forefinger is extended with the rest of the fingers and thumb in a fist, and that position is held without movement in the shoulder area a foot or two in front of the person, it signifies 'just a minute.' If the location is shifted to finger perpendicular to and touching the lips, it signifies 'be quiet.' If the location is held constant about shoulder height in front of a person, but an action is added in which the finger beats down in space repeatedly, the message now becomes 'making a point emphatically' or 'bawling out'. While this approach has not been applied to the emblem repertoires of other groups, it seems that it will be fruitful in understanding the nature of emblems.

Emblems are the most language-like of the facial and body movement activities. They are symbolic. What a movement symbolizes is learned in a culturally variable fashion. The movements are employed specifically for the purpose of communicating. In all these respects emblems are like language and different from the other nonverbal activities we will describe next. Emblems also differ quite considerably from language.

Words are typically employed during conversation in strings or sequences, governed by a syntax. American Sign Language and Indian Sign Language also usually involve the emission of a string of signs. Emblems are usually not employed during conversation in strings, but singly. We have only seen emblems employed in strings of three or four in a sequence when verbal conversation is in some way constrained. For example, if while talking on the phone you notice a person come to the door of your office due for his appointment, you may emblematically signal that he will have to wait just a minute, and may follow this with an emblem that requests he come in, and another emblem that directs him to be seated. When two people are not constrained about the use of words, however, we have rarely observed such a sequence of emblems. Eco (1975) said that Italians differ, typically employing emblems in strings during speech. Certainly when speech is constrained as among the sawmill workers studied by Meisner and Philpott, strings are employed. When emblems occur in strings the syntax may be similar to a path expression (Fillmore 1971), with the order of performance paralleling the sequence of events referred to.

Many of the most important questions relevant to an under-

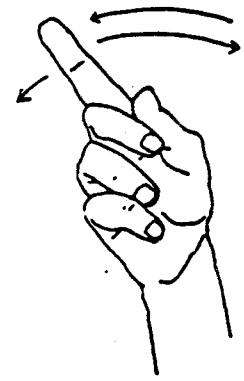

Fig. 3. *Finger-wag emblem.*

standing of emblems require developmental study. There has been only limited, usually incidental study of the ontogeny of emblems. Are the emblems first shown likely to be similar for all infants, due to common limitations in capacity, needs, and problems in communicating with a caretaker? What are the ages when various emblems become established in the repertoire? How are they acquired? Do they develop out of intention movements, or instrumental acts, or are they specifically taught? Are there emblems used by children but not by adults? Certainly, there are emblems used only by adult to child (See Fig. 3). Do children recognize emblems before they can utilize them to communicate to another?[6] When bilinguals switch language, do they switch into a different emblem vocabulary? What about male/female differences in usage of emblems? In New Guinea we found that there were emblems referring to sexual activity, menstruation and pregnancy utilized and known only by women.

This is only a partial list of the variety of questions that need to be investigated. Elsewhere, (Ekman 1976) I have discussed these issues in more detail, raised other questions, and reported findings on how emblems vary with psychopathology and with interpersonal deceit. Let us turn now to a second type of facial or body movement, a type of movement which in almost all respects is maximally different from emblems.

BODY MANIPULATORS

Our earlier descriptions of this behaviour (Ekman & Friesen 1969a, 1972, 1974) used the term 'self-adaptors', which we are abandoning because that phrase is too theoretically laden. (Although we do not abandon our theory about the adaptive origin of these actions; see Ekman & Friesen 1974a:212-213). Body

manipulators are movements in which one part of the body does something to another body part. Scratching the head, picking the nose, wringing the hands, licking the lips are examples. Also included would be the use of a prop in other than an instrumental act; for example, playing with a pencil, twisting a book of matches, using a paper clip to scratch an ear.

Typically, it is the hands which manipulate the other part of the body, or some part of the hand itself. The tongue can manipulate lips, teeth can bite lips, and feet can rub or scratch the legs or each other. When we measure body manipulators we distinguish body geography in terms of what part of the body is in contact with what other body part, and the nature of the action - rubbing, picking, scratching, or a miscellaneous action we call a 'play'.

It is important that actions are not classified as body manipulators just because there is contact among body parts. In some cultures putting the fore finger to the temple is an emblem for thought, and so it would be classified. If while speaking about how hard it was to look at something a person illustrated his speech by putting his hand in front of his eyes it would not be classified as a body manipulator, but as a kinetic illustrator (discussed later). The very same action, if not illustrating what is being said, would be called a body manipulator.

Another problem in defining the boundaries of body manipulators' activities is what to do with instrumental actions. Taking off a shoe is not a body manipulator, but playing with a shoelace is. Striking a match to light a cigarette is not, but fingering the match is a body manipulator. Our treatment of grooming activities as body manipulators may seem to contradict such a distinction. It might be argued that rearranging the hair which changes overall appearance should not be called a body manipulator, and only when the hand to hair movement results in no enhancement of appearance should it be classified as a body manipulator.

Our studies suggest that people are usually not aware of engaging in these body manipulator actions. If you ask the person to repeat what he has just done, he often won't remember. There is little reason to expect that these movements are ever used deliberately to transmit a message to another, other than by an actor or perhaps a psychopath. This does not mean that people do not gain information when observing these behaviours. We have found that observers characterize people who show many body manipulator actions as awkward, tense and untrustworthy, (correlations between .50 to .75; Ekman & Friesen 1974; Ekman, Friesen & Scherer 1976). As mentioned earlier the observer of the body manipulator action does not

believe the action was performed to provide a message. In contrast, just that presumption is made about the emblem.

Parents, of course, hold their child accountable for body manipulators, but it is for being uncouth, impolite, etc., not for having said something with this type of activity. Despite such attempts to suppress these activities, they are more common in adults than one might expect. What we seem to learn is not to look when the other person cleans his ear, picks his nose, scratches his crotch, etc. The disattending seems unwitting, but quite consistent. Rudeness seems to reside as much in watching someone engage in these bathroom behaviours, as in performing them.

Another difference between body manipulators and emblems is in regard to the specificity of what is signified. Emblems are movements which have quite precise meanings, well known to all members of a culture or sub-culture. What observers might infer from a body manipulator is more vague, imprecise, and not necessarily agreed upon. As mentioned earlier, the occurrence of body manipulators does influence how a person is perceived, but it is in global terms. Generally, they are interpreted as signs of discomfort, nervousness, etc. Indeed, our studies have found that while the absolute frequency varies from individual to individual body manipulators do increase with discomfort.[7] Paradoxically, body manipulators also increase when the person is quite relaxed and not engaging in any censorship over these actions. Certain types of body manipulators have specific meaning but not as precise as an emblem. We found that scratching occurred more often with patients judged by their psychiatrists to have problems with hostility. Eye covering occurred more often among patients judged to have guilt (Ekman & Friesen 1968, 1974a).

Still another way these movements differ from emblems, and from the next type of action we will describe (illustrators) is in their relationship to the flow of speech in conversation. Earlier we described some regularities in the location of emblems within the flow of speech. Few regularities are found for the location of body manipulators. They have little respect for so fundamental a conversational feature as speaker turn. A body manipulator begun when the person is speaking is just as likely to continue beyond as to end within his speaking turn. The occurrence of body manipulators also has little to do with the beginning and end of phonemic clauses, nor with whether the juncture is rising, falling or sustained. Brief body manipulators (and, they seem to divide naturally between ones that last less than two seconds and ones lasting much longer) often will occur in phonemic clauses where there are many speech disruptions. These findings suggest to us that

unlike emblems, or illustrators, body manipulators are not directed by the mechanisms which are responsible for the flow of speech or by listener rules. This is not to deny that what is said has an influence. If the content of conversation arouses discomfort, or the process of articulating becomes difficult, body manipulators are likely to increase.[8]

We know of no cross-cultural research on body manipulators. When working in New Guinea we noted some similarities in some of these activities occurring under situations of some discomfort, but our evidence was anecdotal. Which body manipulators are prohibited in which social contexts might well vary from culture to culture. We would expect that an increase of these actions with discomfort might, however, be universal.

Let us turn now to a third type of facial or body movement, movements which illustrate speech.

ILLUSTRATORS

These are movements which are intimately tied to the content and/or flow of speech. We distinguish a number of different types of illustrators in terms of how they relate to the simultaneous speech:

Batons:	Movements which accent a particular word;
Underliners:	Movements which emphasize a phrase, clause, sentence or groups of sentences;
Ideographs:	Movements which sketch the path or direction of thought;
Kinetographs:	Movements which depict a bodily action or a non-human action;
Pictographs:	Movements which draw the shape of the referent in the air;
Rhythmics:	Movements which depict the rhythm or pacing of an event;
Spatials:	Movements which depict a spatial relationship;
Deictics:	Movements which point to the referent.

Four of these categories were proposed by Efron. He found Sicilian immigrants to the U.S. used quite different types of illustrators than Lithuanian Jewish immigrants, although their assimilated offspring did not. Efron's study of literature suggested that over the past few hundred years the use of what we term illustrators was sometimes fashionable and sometimes déclassé. To my knowledge no one has pursued the study of cultural, ethnic, or social class differences in illustrators. Efron's work supports the interpretation that illustrators are learned, that the type shown is determined by environment, and not just family environment. It would be interesting to study the ontogeny of illustrators, but no one has in any systematic

fashion.

Typically illustrators are performed with the hands and arms. Any part of the body could be employed, although not as readily for each of the eight illustrator sub-types in the list. For example, facial movement can easily perform a baton or underliner illustrator. With a limited set of referents facial movement can perform kinetographs or rhythmics. Ideographs and deictics are performable with the face but it is not common in most cultures. Pictographs are next to impossible to execute with the facial muscles.

We distinguish five functions served by illustrators. A particular type of illustrator is used when a person cannot find a word. The movement looks as if the person is going to pluck the word out of the air; sometimes a finger-snapping movement is used instead. Such movements inform the other person that the speaker has not abandoned his turn, that he is intending to continue. This is a specific instance of the illustrator function of maintaining or increasing attention from the listener and holding the floor. Illustrators can help prevent or squelch interruptions, or capture lagging attention.

Word search illustrators draw our attention to a second function, self-priming. Waving an arm in the air or snapping the fingers might conceivably help the person find the word, although the mechanism which would explain such help is obscure. Cohen and Harrison (1973) suggested self-priming to explain why people sometimes illustrate when the listener isn't present (e.g. over the telephone). Habit is an alternative explanation; but, let us grant self-priming of the speech-making process as a second possible function of illustrators.

A third function of illustrators is to explain through movement matters difficult to put in words. Pictographs or kinetographs can be helpful in giving directions about how to find a place, how to take something apart, in defining concepts such as zig-zag, helicopter, etc.

A fourth function of illustrators is the punctuating of speech, adding emphasis, underlining, tracing the flow of thought, to mark off clauses, etc. Presumably this helps the listener understand what is said.

Although not a function in the same sense as the other four, it is worth noting that illustrators increase with enthusiasm and involvement in what is being said. They decrease when there is either disinterest in what is being said or with communicating at all, or when there is conflict about what to say and words are chosen with unusual care. Consistent with this interpretation we found neurotic depressives illustrated more than psychotic depressives, and both types of depressives illustrated less in the acute phase of their disorder than when

in a state of remission (Ekman & Friesen 1974a). Among non-patients we have found that when persons were required to engage in deception about their feelings, when they were in conflict about what to say, illustrators decreased (Ekman, Friesen & Scherer 1976).

Both of these findings would not have emerged from our data if we had failed to distinguish between illustrators and emblems. Most other investigators who have done quantitative studies of body movement have failed to so distinguish emblems from illustrators. Instead they simply counted hand in space movements in contrast to hand to body movements.[9] Perhaps they overlooked the differences between illustrators and emblems because both show the attribute of occurring when with another person, not alone. One could use an emblem or illustrate when alone, but apart from rehearsals or hallucinations, these behaviours occur in the presence of others with whom some attempt is being made to communicate.[10] In this way emblems and illustrators differ from body manipulators and emotional expressions, which occur often when alone as well as when with others.

Emblems differ from illustrators, however, in that they are often used in place of conversation or when conversation is not possible or not chosen. Illustrators by definition are movements which must be placed within speech. A second difference between illustrators and emblems is in regard to the specificity of what is signified by the movement. Emblems have a precise meaning or a limited set of alternative meanings, each of which is precise. Certain types of illustrators (batons, underliners, ideographs) have no semantic content. Even those illustrators which have semantic content (such is the kinetograph or pictograph) are more imprecise than the emblem, and their meaning is usually vague when seen without hearing the words they accompany.

A third difference is in the precision of the movement itself. There are variations in the performance of any emblem, but there are also limits for each. In using an emblem the person is not inventing on the spot, but drawing upon a known action to convey a message. Just the opposite happens with illustrators. If, for example, an American was to use a kinetograph to illustrate falling down stairs, a large variety of actions could be used. An American would have to invent his performance, having no standard movement pattern for that message to draw upon. In ideographic illustrators, almost any movement can be used to trace the flow of thought.

A fourth difference between emblems and illustrators is in regard to the performer's awareness of what he is doing. Illustrators are intermediate, somewhere between emblems and body manipulators. The emblem is deliberate, as deliberate as

choice of words. The use of batons, underliners, and ideographs is more habitual, while the other types of illustrators are a little closer to the emblem.

Despite these differences, certain emblems may be difficult to distinguish from certain illustrators. When an emblem is used with speech it may not illustrate what is being said but instead comment on what is being said, or conduct separate discourse about matters unrelated to what is being said. In such instances there should be little confusion with illustrator activity. It is when an emblem replaces, repeats, or expands upon what is being said that the distinction between emblem and illustrator becomes more tenuous. I believe it is useful on such occasions to distinguish between emblems-used-to-illustrate and an illustrator which is not an emblem. An example will show the difference between the two. Suppose you observe a man speaking about an attractive woman while he traces an hourglass figure in the air. It could be either a pictographic illustrator or an emblem-used-to-illustrate. To be certain it was the latter and not the former you would need to know that this hourglass movement stands for 'shapely or attractive woman' independent of any particular speech context, and is so known by most members of a society (e.g. Americans).

Earlier I described the placement of a particular emblem, the shrug, within the speaker's words. Recall it usually occurs at the beginning of his turn, before he speaks, or with a verbal statement of the message, although other locations were mentioned. Also when an emblem repeats a verbalized message there was no fixed rule for where the emblem would be placed, before, simultaneous with, or after the word. By contrast the body manipulators occur with little regard for the flow of conversation, unrelated to speaking turn, phonemic clauses, junctures etc. It is not possible to generalize about the location of illustrators within the speaker's conversation, for the location depends upon the type of illustrator.

The baton coincides with primary voice stress within a phonemic clause. It seems extraordinarily difficult to place intentionally the primary voice stress on one word and a baton on another word. The neural mechanisms responsible for emphasis apparently send impulses to both voice and skeletal muscles simultaneously when both modalities are employed. We would expect this relationship between baton and primary voice stress to be maintained across languages and cultures, but have not yet looked.

The illustrators used during a word search often occur within a pause, often a filled pause (*Aaahh*). Ideographs tend to begin and end with a phonemic clause, or a group of phonemic clauses. Kinetographs and pictographs tend to coincide with

what they are representing unless they replace the words. These observations about the location of illustrators within speech are preliminary, based on study of only a half-dozen conversations among Americans. They certainly suggest the usefulness of distinguishing among various types of illustrators.

EMOTIONAL EXPRESSIONS

These have received the most attention of all the nonverbal behaviours, and are the subject of continuing controversy. Most of the discussion has been of facial movements (facial expressions), with less attention to body movement.[11] At issue is whether there are universals in facial expression or whether that which is signified by each facial movement varies from culture to culture. There have been persuasive but contradictory reports from the two sides: those claiming universals (e.g. Darwin 1872; Eibl-Eibesfeldt 1972; Izard 1971; Tomkins 1962) and those claiming cultural differences (Birdwhistell 1970; Klineberg 1940; LaBarre 1947; Leach 1972; Mead 1975).

The difference in what has been found may have been due in part to differences in what has been examined. Facial movements can be recruited into a variety of quite different activities. Earlier I described how facial movements can function as emblems (e.g. a wink), and as illustrators (e.g. movements serving as batons or underliners). Although not described here, we have distinguished (Ekman & Friesen 1969a) still another type of facial or bodily activity, called regulators, which serve to manage the back and forth flow of conversation between speaker and listener. Confusion might not occur if different facial movements were recruited into these quite different facial activities - emblems, illustrators, regulators and emotional expressions. Instead, some of the same facial movements appear in each. For example, the raising of the brows (*frontalis* muscle) can be employed in an emblem for greeting or an emblem for 'no'; a baton illustrator; a questionmark or exclamation-point regulator by the listener; a surprise emotional expression, (see Ekman & Friesen in prep. (a) for a detailed description of this example).

The contradictory observations of the relativists and universalists can be resolved, in part, if we presume that the relativists were describing the cultural variations in emblems, illustrators and regulators, and not distinguishing these from the universals in emotional expression. Conversely, the universalists may have focused on the emotional expressions to the exclusion of recognizing cultural variations in the facial actions which function as emblems, illustrators or regulators.

Avoiding such confusions not only requires a conceptualiza-

tion that allows for a number of differently organized facial activities, but also much more careful description of facial movement itself. The facial musculature allows for an extraordinary number of visibly and anatomically different movements which may on first impression seem similar to the untutored eye. Terms like frown, smile, play-face and even brow-raise are much too gross. Each could cover dozens of different behaviours which may or may not have the same function. Such imprecise descriptions increase the likelihood that two observers would needlessly argue because their descriptive language does not reveal that they are each talking about a different facial action.

Friesen and I (Ekman & Friesen 1976; in press) have been working for the past four years on an anatomically based system for describing facial movement. Our Facial Action Coding System purposefully offers more precision and distinctions than may actually be needed, so that empirical results can determine which visible distinctions should be disregarded. The Facial Action Coding System allows description of both the configuration (the 'expression') and the timing of facial movement. Even if exactly the same muscles were to be involved in an emblem, illustrator, regulator and emotional expression, it is likely that the onset of movement, its duration at apex and its offset - the time it takes to disappear - would not be the same.

The contradictory reports on facial expression may not have been due solely to a failure to distinguish adequately facial emblems, illustrators and regulators from facial expression, abetted by reliance on imprecise descriptions of the face. It reflects also a fundamental difference in interests. One side has been primarily interested in evolutionary explanations, in the biological contributions to behaviour. While cultural influence is acknowledged, it is seen as an overlay, and only lip-service is paid. The other side has been interested in the power of culture in determining social behaviour. It borrows from a linguistic model and emphasizes what is different in each culture. While biological contributions were acknowledged, biology was seen as only providing the equipment which was shaped by culture.

The core of the confusion about facial expression is probably the failure by both sides to specify what they have meant by emotion.[12] Most shied away from describing internal processes or even distinguishing emotional from nonemotional behaviour or situations. Each side took for granted that others knew what they meant by emotion. Such vagueness concealed oversimplified models about the biological and social influences on emotional behaviour. It allowed each side to gather evidence which failed to change the other side's view or force revision or expansion

of their theoretical model. Instead, contradictory evidence has fueled the argument, which has spilled over into false disputes about what counts as evidence and what credentials are required to investigate.[13]

To resolve the dispute, or at least clarify its basis, I will go out on a limb, describing different aspects of the phenomenon we term emotion. What follows is not a theory of emotion, but only a discussion of those matters which need to be considered to deal with the contradictory evidence and to show where both relativists and universalists have been right, and wrong, in their claims. Many issues central to a theory of emotion are not discussed here but left for presentation elsewhere (Ekman & Friesen, in prep.). What I present here is what a theory of emotion needs to consider, given the evidence on the face, rather than a specific theory of emotion.

A NEUROCULTURAL ACCOUNT OF EMOTION[14]

The term 'neurocultural' emphasizes our interest in both biological and social determinants of emotion. I will start with a characterization of emotional responses, both observable and nonobservable responses. This characterization will require that I hypothesize internal mechanisms - an *affect programme* which directs emotional responses, and an *appraisal system* which determines when the affect programme becomes operative. *Elicitors* will be described as those events which are appraised quickly as the occasion for one or another emotion. *Display rules* for managing the appearance of the face in various social contexts, and efforts to *cope* with the source of emotion will also be described. This account will allow *one* answer to the question of what is emotion, and how we know when emotion is occurring. It will provide the basis for discussing pitfalls in cross-cultural research on emotion, for integrating seemingly contradictory findings, and for describing the many ways emotional expressions vary with culture.

This account of emotion, however, risks a good deal. It is too long, perhaps, for this paper, and certainly too short to be complete. It deals with nonobservables reaching beyond data to explanatory mechanisms which may help in understanding the data. It may seem wrong, misguided, mechanistic, full of jargon, etc. Nevertheless, it should provide the terms and raise the issues for exposing the *variety* of points for possible disagreement which have too long laid hidden.

Emotional Responses are brief, often quick, complex, organized and difficult to control. Let us consider each of these characteristics. Emotions can be very brief. It is not uncommon to be angry or afraid or happy for only a few seconds.

Surprise is always brief, while the other emotions vary in duration depending upon the circumstances. If an emotion lasts for many hours, or days, the language of everyday life would utilize mood terms father than those of an emotion. The person is said to be irritable or hostile, not just angry; blue, not just sad, etc. A full discussion of the difference between mood and emotion would take us far afield, yet there is probably some merit in the notion that typically emotions have fairly brief durations, shorter than moods, attitudes, traits, or many beliefs or values.[15]

Quickness refers just to the onset of an emotion. Emotions can become aroused in a fraction of a second. Not that they always must be aroused so quickly, but as will become apparent later, the potential for speed in onset time, for a very quick response, is important in explaining and distinguishing emotional from other kinds of behaviour.

Emotion is complex, entailing a number of different response systems. Only some of them can be directly observed. There are skeletal muscle responses such as flinching, thrusting forward, turning away, overall relaxation, etc. Facial responses include the expressions I will describe in detail later, as well as vascular and muscle tonus changes. Vocal responses include sounds such as screams or groans, as well as a tensing of the vocal apparatus, with consequent changes in voice quality. These are all likely to be very quick, initial responses. Somewhat longer and more elaborated are the coping behaviours directed at whatever has set off the emotion. Included would be fighting, fleeing, denying, apologizing, etc. Specific changes in the autonomic and central nervous system are also involved, in ways I will not detail here.

The subjective experience of the emotion, usually neglected by modern psychology, is another important emotion response system. The subjective experience includes - but may not be limited to - sensations which are the result of feedback from changes occurring in the already named response systems. Also included are memories, images and expectations associated with one or another emotion, and with the very specific circumstances of the occasion for an emotion. One important characteristic of the subjective experience of emotion is the awareness that the changes occurring are not easy to control consciously. I will return to this point later.

The various response systems mentioned are organized in two ways. The activity in each response system is interrelated rather than independent. *And* the changes occurring within each (or most) response system are distinctive for one as compared to another emotion. In a preliminary study we (Ekman, Malmstrom & Friesen 1971) found different patterns of heart rate

acceleration and deceleration to occur simultaneously with different patterns of facial movement. This study showed organization within each response system and in the interrelationship between response systems. Admittedly, there is little evidence one way or another for such interrelationships among all the response systems we propose. And the evidence for distinctive patterns for each emotion is presently limited to facial expression.

Affect Programme. For there to be such complexity and organization in various response systems, there must be some central direction. The term 'affect programme' refers to a mechanism which stores the patterns for these complex organized responses, and which when set off directs their occurrence. I am not concerned with where in the brain this programme is located. (Lower areas must be involved, but I do not presume either a single location or involvement of only one neural mechanism.) Instead, I will describe what is assumed about how such an affect programme must operate.

The organization of response systems dictated by the affect programme has a genetic basis but is influenced also by experience. The skeletal, facial, vocal, autonomic and central nervous system changes which occur initially and quickly for one or another emotion, we presume to be in largest part given, not acquired. For example, habits would be unlikely to determine just which pattern of impulses are transmitted to the facial nerve, although we will later describe how habits, what we term display rules, develop to interfere with the operation of these responses dictated by the affect programme. Experience, of course, plays an important role. The emotional response systems change with growth, disease, injury, etc. They are not constant through life.

Through experience, with sufficient time and learning, habits become established for how to cope with each emotion. I do not believe that such coping behaviours are part of the given affect programme. These habitual ways of coping may become so well learned that they operate automatically and quickly in conjunction with specific emotions. Given our lack of knowledge about the operation of the central nervous system, it matters little whether I say that those habitual ways of coping become governed by the affect programme, or that they operate automatically in conjunction with it. Memories, images, expectations associated with one or another emotion are, like coping, not given but acquired, and can similarly become habitual, automatically involved when the affect programme is set off.

Thus, I postulate that when the affect programme is set off, a number of other things happen in addition to the responses immediately governed by the programme. Memories, images,

and expectations associated with the emotion and the circumstance come into play. Coping behaviours associated with the emotion begin, and habits directed at managing emotional behaviour may become operative. All these related changes can occur automatically with great speed, rather than deliberately.

Management of the responses governed by the affect programme is usually not easy and not always entirely successful. Some of the responses under the command of the affect programme begin to change in fractions of a second. Deliberate or habitual interference is more successful with some of the emotional responses governed by the affect programme than with others. For example, it is far easier to inhibit or squelch a facial movement than to change respiration or heart rate. The difficulty experienced when trying to interfere with the operation of the affect programme, the speed of its operation, its capability to initiate responses that are hard to halt voluntarily, is what is meant by out-of-control quality to the subjective experiences of some emotions.

I have been working backwards in time. I started with a description of the brevity, complexity and organization of emotional responses. Then I described an affect programme which directs those responses. Now I must take a further step back, to consider what happens to call the affect programme into operation. There must be an appraiser mechanism which selectively attends to those stimuli (external or internal) which are the occasion for activating the affect programme. Otherwise the complex organized emotional responses directed by the affect programme would occur randomly. Since the interval between stimulus and emotional response is sometimes extraordinarily short, the appraisal mechanism must be capable of operating with great speed. Often the appraisal is not only quick but it happens without awareness, so I must postulate that the appraisal mechanism is able to operate automatically.

Automatic appraisal mechanism.[16] It must be constructed so that it quickly attends to some stimuli, determining not only that they pertain to emotion, but to which emotion, and then activating the appropriate part of the affect programme. The automatic appraisal may not only set off the affect programme and the responses it directs, but it may initiate also the processes which evoke the memories, images, expectations, coping behaviours and display rules relevant to the emotion.

Appraisal is not always automatic. Sometimes the evaluation of what is happening is slow, deliberate and conscious. With such a more extended appraisal there may be some autonomic arousal, but perhaps not of a kind which is differentiated. The person could be said to be aroused or alerted, but no specific emotion is operative. Cognition plays the important role

in determining what will transpire. During such extended appraisal the evaluation may match to the selective filters of the automatic appraiser, and the affect programme may be set off. It need not be, however; the experience may be diffuse rather than specific to one emotion. I suspect that if the emotion is not specific, if the affect programme is never involved, there are limits to how intense the more general emotion arousal state may become.

When the automatic appraiser responds to a stimulus, sets off the affect programme which directs a particular complex, organized set of emotional responses, appraisal does not necessarily stop. The event may continue to unfold, new stimuli may be emitted which again are subject to automatic appraisal → affect programme → emotional responses. The same emotion may be repeatedly triggered, or a number of different emotions may be triggered sequentially or simultaneously. If the event does not continue to unfold, as in a near miss car accident, the person will usually realize and consider what has happened. He may realize there was no 'need' to have become emotional and struggle to stop the operation of the affect programme. Or, the realization of having had an emotional response may itself become the occasion for another emotional response. For example, responding to a criticism immediately and automatically with anger once realized may be the elicitor for shame or disgust with oneself. Or, the situation may become ambiguous and the extended appraisal system may work in trying to figure out what is happening and going to happen next.

Elicitors. One further step backwards leads to the elicitors of emotion, what characterizes the events appraised as emotional. There is variation in the particulars of what elicits a given emotion, yet there are also common features in what are identified as elicitors for an emotion. We use the term *elicitor* to refer only to those stimuli which are identified by the automatic appraiser as specific for one or another emotion. Elicitors call forth emotion quickly, but what occurs is not a reflex arc. The connection between specific stimulus and response is not given, and it is not fixed. Probably there is no emotion for which there is a universal elicitor, uniform in its specific details, which always calls forth the same uninterruptable set of emotional responses.[17] Certainly there is no empirical evidence of such. One possibility would be that the sight of a missile travelling directly towards the eye at a given speed would be automatically appraised so as to set off the fear affect programme. Even here interference or interruption of the fear response is probably possible. At best there would be only few if any such innately wired elicitors.

Cultural anthropology is replete with accounts of great variety in the specifics of what elicits one or another emotion. Most of the specific elicitors for emotion are variable, learned through different experiences. You cannot know what made the man in Fig. 4 disgusted, it depends upon his particular experiences. What is disgusting varies within as well as between cultures. Yet you could know something about the other responses likely to occur since you can see from his face that he is disgusted. For example, he is more likely to say something sounding like '*uuchk*' than '*mmh*', more likely to move backwards or away than to approach, more likely to describe his experiences using gustatory images than explosive ones.

Fig. 4. *Person of the South Fore of New Guinea expressing disgust. Copyright Paul Ekman 1977.*

While the specific elicitors for emotion vary with individual experience, there is also some commonality apparent in the general outline of what elicits, through automatic appraisal → affect programme, the emotions. Disgust elicitors share the characteristic of being noxious rather than painful; and, in all cultures taste stimuli are among the elicitors of disgust. Surprise depends upon the details of what would be unexpected for a particular person in a particular situation, yet surprise elicitors share the characteristics of being unexpected, novel and usually sudden rather than gradual. People learn how to recognize impending harm, to avoid danger. While the specific stimuli so identified as potentially harmful will vary, fear elicitors share the characteristic of portending harm or pain. One of the common characteristics of some of the elicitors of happiness is release from accumulated pressure, tension, discomfort, etc. Loss of something to which one is intimately attached might be a common characteristic of sadness elicitors. Interference with ongoing activity might be characteristic of

some anger elicitors.

These are but tentative examples. My point is that the elicitors for each emotion share some characteristics. I propose that the automatic appraiser is sensitive to these general characteristics. With experience such sensitivity may become sharpened and more precise.

To point to similarities in what elicits surprise, fear, etc. does not mean that those characteristics will be found for every elicitor for every emotion, only that some will be similar. Through repeated experience specific elicitors become identified by the automatic appraiser as relevant to one or another emotion. We expect that many but not all of these specific elicitors will share common characteristics.

Recall that I have been describing as elicitors only those stimuli which are identified by the automatic appraiser. There are many other more complex and variable stimulus situations which are not so identified but instead become subject to the more extended appraisal process. Perhaps it is just because they do not obviously share one of the common elicitor characteristics (or because they combine elements of too many elicitors) that such stimulus configurations are subject to extended rather than automatic appraisal.

What is emotion? It certainly is not any one of the elements I have described: response systems, appraiser, programme, or elicitors. Nor is emotion just the combination. Instead emotion refers to the process whereby an elicitor is appraised automatically or in an extended fashion, an affect programme may or may not be set off, organized responses may occur, albeit more or less managed by attempts to control emotional behaviour. What gives an emotion its particular flavour, is the particulars of the elicitor, the appraisal, the part of the affect programme set off, and those parts of the response systems which go unmanaged or managed.

Is there a *sine qua non* for emotion? I disagree with past theorists who would say it is visceral reactions, or cognitive appraisal, or facial responses. My answer that there must be an appraiser, a programme and response systems more or less capable of action for emotion to occur, is only to say that the organism is alive. If the affect programme is not set off, if the appraisal is only of the extended not of the automatic kind, it is still emotion but not the same as when those things do happen. If the anger part of the affect programme is set off, for example, but there is interference with the activity of the facial muscles, it is still anger, but not the same anger as when facial activity is not so squelched.

Looking from the outside, without access to know what is occurring in the central nervous system, how can an observer

tell when emotion is present, The estimate that emotion is present is more likely to be correct when:

- The response system changes are complex, when it is not just a facial, or skeletal, or vocal, or autonomic, or coping response, but a combination;
- the changes are organized, in the sense of being interrelated and distinctive for one or a combination of emotions;
- the changes happen quickly;
- some of the response system changes are ones common to all people;
- some of the responses are not unique to *homo sapiens.*

This is *not* the only time emotion occurs, but when an observer's estimate is *most* likely to be safe.

I will now explain more about display rules and coping behaviours, to provide the background necessary for then discussing the pitfalls in cross-cultural observations of emotional expression.

Display Rules. When an elicitor is automatically appraised, the affect programme is set off, and organized complex emotional responses begin, interference is still possible. The emotional responses may be interrupted, diminished, amplified, or masked with the appearance of another emotion. Some emotional response systems may be more difficult to manage than other, (e.g. heart rate more than facial movement), but people often try to control their emotional behaviour.

We coined the phrase *display rule* to refer to the conventions, norms, and habits that develop regarding the management of emotional responses.[18] A display rule specifies who can show what emotion to whom, when. These rules are often learned so well that they typically operate automatically, noticeable only in the breach. For example, the prohibition against showing anger, or the rule to substitute sadness for anger, is learned so well by some middle-class American girls, that later if liberated it requires some struggle to 'get their anger out'. Other display rules are learned more by example, by observing what others do or following implicit instructions of those who manage events when emotion is made the occasion for public ceremony. The performance for such display rules may not be as good, but errors are usually overlooked. An example of this type of display rule is that at beauty contests a winner may cry but not the losers. At funerals, one can note almost a 'pecking order' of grief expressions based on the rights to mourn. A man's secretary cannot look sadder than his wife unless she intends to state something quite different about the true nature of their relationship.

There are also *personal display rules,* habits learned about managing emotional expression which do not reflect a cultural

norm, but more individualized experience. The extent to which one follows a cultural display rule may depend upon the extent to which it conflicts with a personal display rule. For example, a woman may have the personal display rule never to show her feelings of distress, which depending upon her culture, could put her in conflict in the mourning situation if just such expressions are required by the widow.

The management of emotional responses may occur also by deliberate choice of the moment, for a particular advantage, rather than as part of a long standing personal or cultural display rule. Then the person is more aware of what he does and is likely to be rather slow and inept.

Note that although the origin differs - cultural or personal display rules or deliberate choice of the moment - management of emotional expression may be either the product of well learned habit or a more deliberate process. This has implications for what we have termed 'leakage', (Ekman & Friesen 1969b), when the emotional responses escape attempts to conceal them. When the management is deliberate, either because of choice of the moment or when following cultural rules never practised so as to become habitual, it is likely that some of the emotional response systems governed by the affect programme may be noticeable at least briefly, unless the person was alerted ahead of time and prepared himself. When the management is habitual due to a culturally shared or personal display rule, the management efforts may be set into operation just about as quickly as the emotional responses dictated by the affect programme. Better concealment should occur.

Some emotional responses may be more subject to modification and disguise than others. Furthermore, display rules, personal or cultural, may focus more upon one response system than another. We (Ekman & Friesen 1969b, 1974b) have suggested that there is usually more management of words spoken than of voice, more of voice than facial movement, more of facial movement than body movement. We attribute such differences in what is managed to differences in the amount of attention which is typically paid by others to what a person does. While we have some evidence to support our hypothesis that there is more leakage in body movement that in either words or facial movement, it is limited to middle-class Americans. There are individual variations and there may be cultural differences in which emotional responses are most subject to management attempts. Even though facial expressions are managed, mistakes are made, and leakage may be detected (Ekman & Friesen 1975:Ch. 11).

Coping. This term refers to attempts to deal with the emotion felt and its source; to increase, diminish or sustain what is occurring. Coping includes various cognitive activities as

well as such organized behaviours as attacking or fleeing. As the system where learning contributes the most, coping is the most elaborated of the emotional response systems.

Compare with coping the initial skeletal muscle response directed by the affect programme when an anger elicitor has been identified by the automatic appraiser. The immediate skeletal muscle response might be a slight movement forward. Coping could vary - attack, flight, denial, appeasement, etc. We discover how to cope with our emotions, what is likely to be successful, proper or improper. When angry, our likelihood of fighting or scratching our face, depends upon what we have learned about how to deal with the particular kind of anger elicitor.

Once coping techniques have been acquired, they can become so well learned that they operate automatically and are called forth when the affect programme is set off. They are notoriously difficult to change. Coping also occurs when extended appraisal is the manager. Then, more alternatives and flexibility in coping may be possible.

Biology may provide some predispositions affecting the likelihood of one versus another type of coping behaviour being developed for an emotion. For example, the skeletal muscle response for anger suggests that attack may become more frequent for coping with anger than flight. Yet, this predisposition is relatively fragile. Experience can overcome such predispositions and institute diametrically opposite coping. Coping involves a wide range of elaborated activities, and biology at best gives only a tap in a direction. Culturally and individually variable learning is the overwhelming contributor to coping.

Pitfalls in Cross Cultural Research on Facial Expressions. Before turning to describe facial expression let me describe some pitfalls which await the observer of facial expression who does not consider variations in elicitors, display rules and coping. Suppose different facial expressions are observed at funerals in two different cultures (e.g. LaBarre). In one culture let us say, the mouth corners are down and the inner corners of the brow are drawn up and together, while in the other culture the lip corners are pulled up obliquely, causing crows-feet to appear at the side of the eyes. To conclude that this proves facial expression is culture-specific, would be to ignore the elicitor pitfall. Funerals are not necessarily a universal elicitor of grief, sadness, distress or any such feeling. If it is not an elicitor for such an emotion in two cultures, then the observation of different facial actions does not prove cultural determination of the emotional expression. Paradoxically, it was those who were wedded to a culturally relativistic

viewpoint, who sought evidence that culture was the sole determinant of facial expression, who were the most 'biological' in assuming that the elicitor for an emotion was standard across the cultures compared. Many of the observations of differences in facial expression in the same situation across cultures are ambiguous because there was no independent evidence that the situation evoked the same emotion in each culture.

Suppose there was. Suppose it was known that the death of a child was the elicitor for sadness in each culture. Would the observation of different facial expressions by the mourners in two cultures prove that facial expressions are only arbitrarily associated with emotion? Only if we ignore the display rule pitfall, by failing to recognize that the cultures could differ in their norms about masking facial expressions of emotion. The different facial behaviours observed might not mean that the down-cornered mouth is associated with sadness in one culture while up-turned mouth is associated with sadness in another, but only that one culture has the display rule to cover sadness with a happy mask at a funeral. Again, it was those who viewed facial expression as an arbitrary set of movements whose relationship to emotion was solely determined by culture, who treated the facial expressions as if they were reflexes, not capable of management by habit or choice.

In a similar fashion cultural variations in coping can lead to another pitfall. The association of the same facial response with different coping activities does not mean *ipso facto* that the facial expression is arbitrary, solely determined by culture.

The elicitor, display rule, and coping pitfalls admittedly make it more difficult to obtain conclusive evidence to prove the arbitrary nature of facial expression of emotion. It would be necessary to verify by some means independent of the face that the situation compared in two cultures elicited the same emotion, that in neither culture was there a display rule to disguise the emotional expression, and that the emotion was associated with the same coping behaviour. Only then would evidence of quite different facial expressions unambiguously suggest that the emotion signified by a facial movement is totally arbitrary, different from culture to culture. No such evidence exists, but just the opposite. In an experiment I will report shortly the universal facial expressions first occurred and then disappeared when culturally different display rules came into operation, disguising facial expression more in Japan than in the United States.

Facial Expressions. In contrast to coping, there is a major biological contribution to facial expressions of emotion. Biology has shaped the affect programme, determining which facial movements are likely to occur with one or another of the

emotions, and perhaps also the timing of those movements. The particular combination of facial movements and the corresponding changes in visual appearance are not arbitrarily associated with each emotion but, for at least some emotions are the same for all people. Shortly I will review the evidence for that assertion. First, let us consider just why it might be that one set of muscle actions rather than another occur with a particular emotion. Why is it that the lip corners go up not down with happiness, that the brows lift not lower with surprise, etc.?

The biological contribution may be extensive, involving an innate association between muscle movements and emotion, or more modestly biology may only predispose the organism to acquire these associations through common learning experiences. Species constant learning as the explanation for universals in emotional expression was suggested by Allport (1924). Let us consider the example of the raised brow (inner and outer strands of the *frontalis* muscle) in surprise. All that biology may contribute is how the face is constructed. Raising the brows does increase perception of the top part of the visual field. Infants encounter unexpected events in which they would raise their brow to see what is happening above them. (One could even argue that the unexpected is more likely to be above than below the infant.) Over time, perhaps abetted by the signal value of the movement, brow raising and surprise would become associated. In the strictest version of this explanation the infant would have to learn, presumably by trial and error, that brow raising increases his visual field. Alternatively that might be given, and what he learns is to make this movement when trying to see what has unexpectedly happened. To grant even more to biology, the infant could be born equipped to raise his brows when visually scanning unexpected sudden *visual* events. What he needs to learn is to generalize this response to *any* unexpected event, regardless of whether it is visual. The more extreme innate explanation would be that as a consequence of evolutionary processes, humans are constructed so that brow raising is built into the affect programme for elicitors automatically appraised as pertaining to surprise.

These explanations differ in a number of ways: in how much emphasis they place on ontogeny as compared to phylogeny; on whether current adaptive function is relevant; and whether signal value is implicated in development. I have not described completely any one explanation, nor all of the explanations that are possible. My purpose is to show that there is more than one way in which biology could contribute to facial expression. In all likelihood, more than one such explanation is relevant to account for the different universal facial expressions. It is even possible to design studies which could help

choose among these explanations for particular emotions, e.g. studies of early development in blind and sighted infants.[19]

Quite apart from which way biology contributes, the evidence I will now describe of a universal association between emotion and particular facial expressions can only be explained by acknowledging a major substantial biological basis to facial expression of emotion.

Evidence of universals in facial expression. One type of evidence is based on studies in which people in different cultures were shown faces and were asked to interpret the emotion shown in each face. If what a facial expression signifies is totally arbitrary, variable from culture to culture, then the interpretations so obtained should also be variable. This type of study has been carried out by more than a half dozen investigators, the majority of whom were trying to prove that facial expression is culture specific. In thirteen different countries, where nine languages were used, the same emotional interpretation was obtained for the emotional expressions (see reviews of these studies in Ekman, Friesen & Ellsworth 1972:Ch. 19; Ekman 1973:Ch. 4).

One problem with this evidence is that all the people who interpreted the facial expressions were members of literate cultures subject to mass media influences. It was possible to argue that these people might have totally different facial expressions but had learned how to interpret each other's unique expressions. Or, they have different expressions but had all learned to recognize the stereotyped expressions shown in the theatre. Or, they have the same facial expression because they had all learned their facial expressions from cinema, television and magazines.

To meet this criticism we carried out studies with more visually isolated people in the South Fore of New Guinea (Ekman, Sorenson & Friesen 1969; Ekman & Friesen 1971). Studying only those who had not seen any mass media and few outsiders, we found that they interpreted faces as showing the same emotions as did the people from literate cultures. The one exception was that fear and surprise faces were not distinguished from each other, although they were each distinguished from anger, sadness, happiness or disgust. Another type of study was conducted with the South Fore in which members of this society were asked to show on their own face how they would look if they felt one or another emotion. The expressions they showed were once again the common universal expressions, with the exception of surprise and fear which showed elements of both emotions. (See Fig. 5.)

Doubtful about our results, not believing that there were any universal expressions of emotion, Eleanor Rosch and Karl

Fig. 5. *Video frames of attempts to pose emotion by persons of the South Fore of New Guinea. The instruction for* (A) *was 'your friend has come and you are happy'; for* (B) *'your child has died'; for* (C) *'you are angry and about to fight'; for* (D) *'you see a dead pig that has been lying there for a long time'. Copyright Paul Ekman 1975.*

Heider repeated these studies among the Dani of West Irian. They studied people more isolated than those we had seen. Again, the same results were obtained.

One of the more remarkable interpretations of this evidence was recently proposed by Margaret Mead.

> Ekman has demonstrated... [that] it is possible to persuade members of different cultures to produce simulations which are mutually intelligible between these cultures. If simulations are mutually recognizable there must be some universal element involved such as Ekman postulates,

> in a connection between the nervous system and specific facial muscles.... [There is a] possibility that human beings may share a core of innate behaviours which are usually highly modified, but which are available for simulation (Mead 1975:212).

By proposing that only simulations are universal while actual emotional experience is culturally variable, Mead attempted to reconcile the contradiction between our findings and Birdwhistell's assertion that he never found any evidence of universals in facial expression.

I disagree with Mead's interpretation of our work and of Birdwhistell's claims. It seems strange to suggest that what is innate would be apparent only in simulation and not in actual emotional experience. We *assume* that people readily interpreted the facial expressions and readily posed them because they have seen these expressions, and experienced them in social life. The answer of course should come from data, from studies of actual spontaneous expressions of emotion.[20] Such evidence was reported in the book reviewed by Mead but she ignored it.

We chose to study spontaneous facial expressions in Japan because of the popular notion of the inscrutability of the Oriental. We hoped to demonstrate that this was due to display rules about masking negative affect in the presence of authorities. Another reason for choosing Japan was that Lazarus, et. al. (1966) had previously determined through psychophysiological measurement that certain stress films had a similar impact on the Japanese as they did on Americans. Thus, we could avoid the elicitor pitfall by utilizing an elicitor known to produce some similar effects in two cultures. We avoided the display rule pitfall by videotaping when the subjects thought they were completely alone and unobserved.

The identical experiment was performed at Waseda University in Tokyo and the University of California in Berkeley[21]. Subjects came into a laboratory and watched both a travelogue and stress inducing films while measurements were taken of their skin resistance and heart rate. The videotapes taken with a hidden camera unknown to the subject were later measured by persons not knowing which film was seen when the facial expressions occurred. We found a better than .90 correlation in the particular facial movements shown by the Japanese and by the Americans. Virtually the same repertoire of facial movements occurred at the same points in time. (Reported in detail in Ekman 1972). We believe this is definitive evidence that facial expressions of emotion are not limited to simulations, but do occur spontaneously as well.

Later in this same experiment we brought a research

assistant into the room, garbed in white coat, to sit with the subject while he watched a stress film. Now we expected that display rules for managing facial expression in the presence of an authority figure should be operative, more so in Japan than in the U.S. Measurement showed that the facial movements were no longer the same. The Japanese looked more polite, showed more smiling than did the Americans. Examining these videotapes in slow motion it was possible to observe sometimes the actual sequencing in which one movement (a smile for example) would be superimposed over another muscle action (such as a nose wrinkle, or lower lip depressor).

If only the latter part of the experiment had been performed, if we had studied the Japanese only when they knew we were doing so (likely conditions in many anthropological studies) and we did not do micromeasurement to look for the possibility of masking, we would have been misled. Instead, guided by our theoretical foundation about emotion we were able to arrange an experiment to show the biological basis of facial expression and how cultural influences modify expression. When alone, Japanese and Americans showed virtually the same facial expressions. When in public, due presumably to display rules, Japanese more than Americans controlled and masked negative expressions.

In writing about evidence of universals in facial expression Leach has said:

> Now, since natural languages do not in general associate particular sounds or combinations of sounds with particular meanings, the linguistic analogy does not suggest there will be any consistent relationship between nonverbal signal and response when such signals are observed in differing cultural environments. And it leads to the further conclusion that any claims to have demonstrated such consistencies in experimental situations must be considered highly suspect. Man admittedly is a single species, and despite all the differences of culture the things that man is capable of doing with his limbs and his facial expressions are everywhere limited by the same set of muscles. The same units of expressive gesture will crop up again and again in all kinds of cultural situations (Leach 1972:239).

This quotation draws attention to how the evidence directly contradicts what would be expected from a linguistic analogy. Such an analogy is not relevant to understanding the facial expressions of emotion, although it has utility in understanding facial illustrators, emblems, and regulators. Taking the evidence I have summarized, together with the observations of

Eibl-Eibesfeldt (1972), studies of blind infants and children, expressions in young infants, and work tracing facial expressions phylogenetically, we can conclude there is *some* universal association between emotion and facial movements.

The evidence is consistent with our neurocultural account of emotion outlined earlier, although it does not establish all that was proposed. Some such explanation, positing both biological and social factors in emotional expression, is required to deal with the evidence. Now let me delimit the universality of facial expression by describing, on the basis of our theory, some of the ways in which culture moulds the biologically based facial expressions of emotion.

CULTURAL INFLUENCES ON FACIAL EXPRESSION

Most of the cross-cultural evidence supporting universality was about expressions which were manifest across the entire face. The faces were instances in which muscular action produced a distinctive appearance in the forehead, eyelid and mouth areas. This need not always happen. Often only part of a total expression may occur, muscle groups acting in only one part of the face with the rest of the face not active. Friesen and I (Ekman & Friesen 1975:Ch. 11) have hypothesized that such *partial* facial expressions may occur when a person attempts to control or manage facial appearance. Such attempts to control can be the product of choice of the moment, long established personal display rules or cultural display rules. As discussed earlier, display rules should vary across cultures.

Another reason for partial facial expressions of emotion would be learning that has emphasized one part of an expression more than another. Families may pay attention to and otherwise reinforce one part of a facial expression of emotion more than another. A child may learn that one part of the facial signal brings forth more response from others, and he may see that part of the expression more often on the faces of those around him. Based on such experiences, one or another part of the biologically based total facial expression could become more prominent in the person's repertoire. There is little reason to expect uniformity across cultures in these experiences.

Still a third reason for partial facial expressions is the possibility that when emotion is felt only slightly it may register in only some muscle groups rather than across the entire face. There is as yet no evidence whether this is so. If it is, we do not know whether slight versions of an emotion tend to recruit consistently the same muscles. For example, in slight fear would it be the *frontalis* and *corrugator* affecting the brow, or the *risorius* and *platysma* affecting the cheek and

mouth, or the upper eyelid levator, which would most likely act? Are there consistencies for a given person across such slight fear experiences, across persons within a social grouping, across groupings within a culture, etc.?[22]

Cultural differences in facial expressions of emotion may also be apparent in the most common *blends* of emotion. A blend is a compound facial expression in which the muscular actions for two or more emotions combine in a single facial expression. (See Figure 6). Blends sometimes occur because the elicitor calls forth more than one emotion. For example, a surprising event may be also frightening, or the surprising event may be pleasing. Blends also happen because of habits that associate one emotion with another. One such habit is affect-about-affect; for example, one person may always feel disgusted with himself when he feels anger, another may habitually feel afraid of his own anger. Another type of habit relating affects is mixture of two feelings towards a class of elicitors; for example, one person may habitually feel disgusted by what makes him angry, another may habitually feel afraid of whatever makes him angry. Due to either type of habit a single elicitor of anger may result in one person showing an anger/disgust blend, while another shows an anger/fear blend. These habits associating two emotions may become established through individually idiosyncratic learning, or through learning experiences common among some social group.

Cultural variations in facial expressions manifest in blends could be the result of differences in the likelihood of encountering elicitors which call for a particular blend; or, variations in experiences leading to habits associating one emotion with another. Even if the same blend is shown in two or more cultures, it may not always have its own linguistic label. For example, facial expressions showing blends of happiness/anger or happiness/disgust, might occur, but not every culture need have a single word label for them, such as 'smug.' We are planning to test some of these hypotheses about cultural differences in partial and blend expressions. For the present, they rest only upon casual observation and logic.

The evidence of universality in emotional expression is limited to the emotions of happiness, surprise, fear, anger, disgust and sadness. We expect that there are also universal facial expressions for interest and, perhaps, shame. There may be other emotions for which there is also a universal facial expression, but probably not many. Presumably, there are emotions for which there is no specific facial expression consistent within a culture; or for which there is a consistent expression in one culture but not in another. Take the example of contempt shown in Fig. 7. We suspect that the expression for

this emotion will be different in some cultures. In still other cultures there will be no consistent expression at all. There may not even be a verbal label in every culture with the denotation and connotations of contempt. It is reasonable to presume that contempt, and any other emotions for which there is no universal distinctive facial expression, is not the product of the automatic appraisal → affect programme outlined earlier. Contempt might still be related to certain types of stimuli, but appraised more slowly, with a less direct linkage with simultaneous changes in other emotion response systems. Alternatively, it is possible that an emotion without any distinctive facial emotional response may still be part of the automatic appraisal → affect programme system. There is no data to provide a basis for choosing between these possibilities.

Fig. 6. *A blend of sadness (eyebrows, forehead and eyes) and happiness (lips). Copyright Paul Ekman 1977.*

Let us return to those emotions for which there is evidence of a universal expression: happiness, surprise, fear, anger, disgust and sadness. Just because there is one (or more) universal facial expression for each of those emotions does not

prevent additional culture-specific facial expressions for each of these emotions. For example, in addition to a universal facial expression of fear (see Fig. 8) there might be additional facial expression for fear common in one culture but not apparent in another. Acquired culture-specific facial expressions for an emotion might receive sufficient attention in a particular culture to become more frequent than the universal expression for that emotion. Theoretically, the culture specific expression for an emotion should not be as quick to occur as the biologically based expressions.

Fig. 7. *Facial Expression of Contempt which we hypothesize is not universal. Copyright Paul Ekman 1975.*

All of the sources of cultural variations in facial expression so far mentioned have been about the *morphology* of facial expression, not the *timing*. So little is known about the timing of facial expression that it is difficult to speculate about whether there would be much variation across persons within a culture, or between cultures. Is there a fixed *onset* time for the actions involved in any of the universal facial expressions to reach the point of maximum muscular action

(*apex*)? Or, does onset vary with the particulars of the elicitor, cognitive appraisal, etc.? What about the duration of the apex? Is there any fixed minimal length of time the action must remain on the face before decaying (*Offset*)? Does apex duration vary from emotion to emotion, or is it solely a function of the particular elicitor, appraisal, etc.? Is offset time fixed, or does it too reflect differences in circumstance, display rules, etc.? The timing of facial expressions of emotion has not been investigated within a given culture, (with the exception of the startle,[17] let alone across cultures.

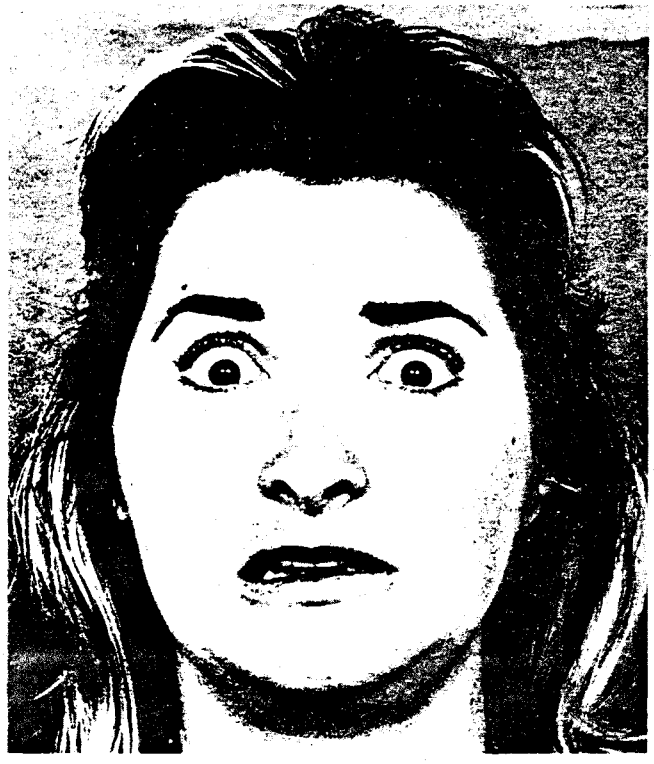

Fig. 8. *Facial Expression of Fear which evidence suggests is universal. Copyright Paul Ekman 1975.*

Another aspect of timing has to be with the sequence of muscular actions during onset or offset. Take the example of raising the brows (*frontalis*), drawing them together (*corrugator*), and raising of the upper eyelid (*levator palpebralis superioris*) in a partial fear expression. Does *frontalis* always

start before *corrugator* or vice versa? Or does it depend upon the person, the specifics of the elicitor etc.? We suspect that there is probably some biological contribution to timing, both to onset, minimal apex, offset, and to sequencing, but that as with morphology the biological contribution is modifiable by experience. It is only now that precise methods for measuring facial movement have been developed that these questions about timing can begin to be examined.

Having taken some time to explain a number of different ways in which culture and various experiential factors could shape facial expressions, let me say that I do not think there is complete plasticity. For example, it would be unlikely for the *zygomatic* muscle (involved in the smile) to become a culture-specific expression for sadness. It seems unlikely that experience will be organized and maintained directly in opposition to biological predisposition. However, there is ample room for enormous cultural difference in emotional expression due to:

- variations in the specifics of the elicitors, display rules and coping;
- variations in partial or blend expressions;
- additional non-universal expressions for emotions for which there is also a universal expression;
- some emotions having no universal expression, but only culture-specific, if any, consistent facial expressions;
- variations in timing, (onset, apex, and offset, as well as sequencing), of facial actions.

There is also ample need for research to explore and document how these cultural differences might develop.

CONCLUSION

In discussing the conflicting viewpoints of Leach and Eibl-Eibesfeldt, Hinde (1972) suggested that we should expect similarities among cultures in signals that concern the personal or the emotional and we should expect differences in movements which take the place of words, which symbolize aspects of culture or which depend on languages. His interpretation agrees with our view that nonverbal communication is not a unitary phenomenon, but a term used to cover a number of different phenomena, activities which differ in origin, usage, coding, and in the relative contribution of biological and social factors.

While we can easily say that culture has more influence on emblems and illustrators, and biology on facial expression, we must be careful not to be misled by such a simple generalization. Even with illustrators and emblems there are some

commonalities across cultures, albeit often hidden by the enormous differences. While the biological contribution to facial expression is dramatic, the number of ways in which experience produces differences within and across cultures is also astounding.

Discussion of the interplay of biological and social factors in facial expression, makes apparent that these are not single forces operative by but one mechanism. A variety of non-exclusive processes may be at work.

It is to all these complexities that we should attend.

FOOTNOTES

[1]The preparation of this report was supported in part by a grant from NIMH, MH 11976 and from the Harry F. Guggenheim Foundation. The research described was supported by those grants and by grants from ARPA, AF-AFOSR-1229 and by a Career Development Award and Research Scientist Award MH 6092. Wallace V. Friesen has collaborated on all of the research and in the development of the theoretical framework.

[2]There are problems with all the terms used to refer to the study of facial and body movement:

Nonverbal behaviour: that implies that what distinguishes the phenomenon is that it isn't words, and that is not necessarily what motivates much of the interest or theory; further, it is strange to use a term that defines a phenomenon by what it is not.

Motor behaviour: that implies an interest in skills.

Kinesics: that is identified with but one theoretical and methodological viewpoint (Birdwhistell 1970).

Expressive behaviour: that term implies the action is a manifestation of some internal affective state or personality characteristic, which is probably appropriate for only some facial or body movements.

Visually observed behaviour: awkward and odd to define a range of phenomena by how they are sensed by the observer.

See discussion of terminology by Sebeok (in press) and Ekman 1977.

[3]A fifth type of activity not discussed in this paper is what we (Ekman & Friesen, 1969) have termed 'regulators', movements which manage the back and forth flow of conversation. See Dittmann (1972), Duncan (1970) and Scheflen (1964) for examples of this work.

[4]None of the others who have been interested in symbolic gestures have explicitly described their methods for discovery of the emblem repertoire. Reading their listings it would appear that they include not only emblems but what I later describe

as illustrators. See accounts by foreign language teachers of French (Brault 1962), Spanish (Green 1968; Saitz & Cervenka 1971); also what is said to be a dictionary of emblem of all cultures over all of history by Bauml & Bauml (1975). This is a compilation from many sources. While suggestive as leads for establishing the emblem repertoire the use of these materials is limited without verification. If the same method for surveying the emblem repertoire is not used, contrasts between cultures in their emblem repertoire are hazardous.

[5]Once the repertoire is established then observations can be made of the natural occurrence of emblems during social interaction. Unless the repertoire has been first identified, naturalistic observation may be like hunting for a needle in a haystack, since emblems may often have a low rate of occurrence. Note that Desmond Morris (1975) is currently studying the distribution of a number of emblems across various European countries using quite different methods for identifying emblems.

[6]Kumin & Lazar (1974) began work on the decoding of emblems, but they only attempted to show that more emblems are decoded at later than earlier ages.

[7]Although using different terms to describe the activity a number of other investigators have also found that body manipulators are related to negative affect (Freedman & Hoffman 1967; Knapp, Hart & Dennis 1974; Mahl 1968; Mehrabian 1971; Rosenfeld 1966). In his most recent, but unpublished work, Freedman claims body manipulators are not a discomfort sign, but instead are self-stimulation required by difficulty in articulation and information processing.

[8]Consistent with this formulation, Schegeloff (1976) has suggested that body manipulators may occur during what he and Sachs term conversational 'repairs'. These are points in conversation where some attempt is being made to prevent disagreements from crystallizing, and discomfort would be expected.

[9]See references cited in the previous footnote. Weiner Devoe et al. (1972) are an exception also distinguishing what we term emblems from illustrators.

[10]Some people illustrate or show an emblem when talking on the phone. Under those circumstances the illustrator cannot serve any function relevant to the listener. Such illustrators may be due to habit or serve a self-priming function.

[11]We agree with Hinde's (1974) criticism of our earlier formulation which restricted emotional expressions to the face. In our current formulation we have also included vocal changes and body movement among emotional expressions.

[12]Tomkins's theory of *Affect, Imagery and Consciousness* (1962,

1963), is a notable exception. Paradoxically, the very complexity and length of his theory may have discouraged others from any such attempt.

[13]Margaret Mead (1975), in reviewing a book I edited, entitled *Darwin and Facial Expression* (Ekman 1973), raised a number of such pseudo issues. The argument about universality of facial expression of emotion is not between:

- anthropologists and psychologists: an interest in the biological basis of behaviour is found in both disciplines, and advocates of each side hold credentials in each field;
- quantitative and qualitative methods: both types of evidence have been gathered by advocates on each side;
- naturalistic and experimental methods; again, both types of studies have been cited by each side;
- those spending a few months and those spending a few years in another culture; both are found on each side.
- those... 'who are more interested in validity and reliability than in what they are actually studying' (Mead, 1975 p. 211); everyone is interested in his observations being correct and repeatable.

[14]Our account owes a great debt to Silvan Tomkins who first considered many of these issues. In general our views are the same, although we differ on some specifics, (e.g. role of facial feedback, elicitors). The description of emotional responses is based on Tomkins, and the term and treatment of the 'Affect Programme' is taken from him. Our account has similarity also to Izard (1971), as his description repeats Tomkins. Our account also borrows a few ideas from Lazarus and Arnold; quite different theorists.

[15]To distinguish emotions from moods is not to imply that moods are bereft of emotion. Quite the contrary; moods are highly saturated with one or another emotion. Someone is said to be in a hostile mood if he shows anger very frequently, or very easily, or seems ready to become angry. In a similar fashion, while I do not consider jealousy as an emotion, jealousy is characterized by strong emotions (anger, fear) within a particular interpersonal context.

[16]Mandler (1975), Lazarus (1968) and Tomkins (1962) have all talked about appraisal in different ways. I attempt here not to choose among nor integrate their views, but instead indicate what might be assumed about appraisal mechanisms to account for evidence on facial expression. Like the emotion theorists, I am quite vague about the 'mechanisms' limited by lack of knowledge.

[17]The startle response seems to be an exception, and for that reason, I question whether it should be considered an emotion. The early work of Landis and Hunt (1939) showed that a sudden loud noise (e.g. gun-shot) anticipated or not, resulted in

highly regular changes in facial and body movement despite attempts to prevent those responses. While their work was not cross-cultural, their studies strongly suggested that uniformity would be found.

[18]When we originally proposed this phrase it was meant to apply just to the management of facial expression. Now we broaden its reference to include habits about managing *any* aspect of emotional behaviour, posture, body movement, what is said, etc.

[19]If blind infants do not show the brow raise to sudden expected sounds or touches, then at least we could assume that the brow raise is not wired in for surprise, nor for scanning if the eyes are not operative. Unfortunately the data is equivocal (C.F. Charlesworth 1970; Eibl-Eibesfeldt 1972; Goodenough 1932).

[20]Let me note that in addition to the evidence reported we also gathered qualitative data as well, photographs, film and videorecords of naturally occurring facial expressions during social interaction among the South Fore of New Guinea. We studied those in detail, using methods much like those of Birdwhistell. Qualitative methods are useful, we believe, for discovery, not for proof, for they are subject to problems of sampling and observer bias. When wise observers using qualitative methods disagree, (e.g. Birdwhistell versus Eibl-Eibesfeldt) it is difficult to resolve the dispute without *ad hominem* or *ex cathedra* argument. Quantitative methods offer some hope of improving if not resolving such argument.

[21]We are grateful to Richard Lazarus, University of California, Berkeley; Masatoshi Tomita, Waseda University; Ned Opton, Wright Institute; and Jim Averill, University of Massachusetts, for their help and cooperation in making this study possible.

[22]My discussion of partial facial expressions assumes that the affect programme sets off a total expression, involving a number of different muscles, and that experience can limit how many of those muscles act. An alternative possibility is that the affect programme sets off a number of different muscles, and that experience determines whether they come to be recruited together or not. Cross-cultural developmental studies of facial expression would be relevant to determining whether one or both of these possibilities actually happens.

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