A CROSS-CULTURAL INVESTIGATION OF FACIAL
EXPRESSION

Thesis for the Degree of M. A.
MICHIGAN STATE UNIVERSITY
LINDA ANN STEVENSON
1972

ABSTRACT

A CROSS-CULTURAL INVESTIGATION OF FACIAL EXPRESSION

By

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Communication is an informational system based on both verbal and non-verbal cues. Recent evidence suggests that animals and humans use non-verbal adaptive mechanisms to recognize and convey various emotional states.

Because facial expression is one part of the human encoding-decoding communication system by which emotions are displayed, an attempt was made to investigate if certain components of facial expression universally serve as signals of impending threat. Using a facial characteristic scale, the following hypotheses were made:

1. That socially defined threatening facial displays (masks) contain more threatening cues* than do non-threatening facial displays (masks) across cultures.

2. Taken individually, each of the separate cues will discriminate between socially defined threatening and non-threatening facial displays.

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*Drawn from research of Aronoff and Barclay, 1971.

The study included samplings (plastic representa-
tions of the face) from the following culture areas:
America, Bambara, Bakwele, Bapende, Ceylon, Chinese, Dan-
Guere, Gouro, Hawaiian, Kwakiutl, Japanese, Javanese,
Middle European, Mortlock Island, Senoufo, Tibet and
Tlinget. Masks and puppets were not only chosen for
their representations of facial expression and artistic
process, but because of their ability to arouse, attract
or repel the subject. Often masks are used as a means
of social control; and in the traditional, dramatic,
and sometimes, religious experience, they are a kind of
emotional "agent provocateur."

Results indicated that in all cultures examined,
the threatening masks contained significantly greater
number of threatening cues than did the non-threatening
masks, and that some cues were used with greater frequence
than others. Furthermore, it was noted that cultures
vary in the use of the threatening cues. In conclusion,
this investigation supports the theory that all facial
expression is not learned, but that there are sub-cortical
mechanisms for the primary affects that minimize diffi-
culty in interpersonal relations and aid to coordinate
social processes.

APPROVED: _Joel Aronoff_____

DATE: _____

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Psychology

1972

ACKNOWLEDGMENTS

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INTRODUCTION

"The raised eyebrow, frown, smile, laugh and
even the ability to speak may have evolved from
ancestral reflex actions that were gradually
transformed into means of communication."

Richard Andrew

"Beneath the varying behavior which animals
learn lie unvarying motor patterns which they
inherit. These behavior traits are as much a
characteristic of a species as bodily structure
and form."

Konrad Lorenz

"In peace there's nothing so becomes a man,
As modest stillness and humility
But when the blast of war blows in our ears,
The imitate the action of the tiger:
Stiffen the sinews, summon up the blood,
Then lend the eye a terrible aspect;
Now set the teeth, and stretch the nostril wide,
Hold the breath, and bend up every spirit
To his full height! On, on, you noblest English."

Henry V   act iii

Shakespeare

Plato referred to the soul as "enshrined in that living tomb which we carry about, now that we are imprisoned in the body like an oyster in his shell." The early dualistic concept of the psyche and soma has given impetus to the psychosomatic movement and to the recent emphasis on kinesics: i.e., the emotional processes are manifested and recognized by body movements. This intimate relationship between the body and the psyche, thus, allows for communication outside the verbal or linguistic mode. Through out-of-awareness, but clearly discrete, paralinguistic signals, man knows the directives, prohibitions, encouragements, and warnings which govern his consistent association with other members of the society.

Body movements as expressive behavioral cues have been an area of investigation. Birdwhistell (1952, 1970) claims that the human organism uses its full sensory equipment in adjusting to the presence and activities of other human beings. Sheflen (1964) proposes that much of this behavior acts in accordance with behavioral programs. Ekman (1957, 1964, 1965, 1969) addresses himself to the repertoire and coding of non-verbal behavior as well as to the differential importance of head and body cues. Recognition accuracy has most recently attracted the attention of investigators because of the possible cue value of expressive behavior in clinical situations (Dittman, 1962; Exline and Winters, 1965; Sheflen, 1965; Mahl, 1966;

Ekman and Friesen, 1967). Cross-referenced with the verbal message, the non-verbal behavior may be congruent with, incongruent with, or in anticipation of a particular emotional problem. As affective experiences rely on the release of tension and are not always consciously displayed in the body or the face, they will act as "leakage channels" (functional clues) for the clinical or social interpretation.

Other cues that act as indicative gestures in interpersonal relationships are proxemic cues. Territoriality, or personal space, is adaptive as well as functional for regulating interpersonal interaction. Each human being has portable personal space (Little, 1965; Sommer, 1969) which he cares not to have invaded except by his consent. Depending on the intimacy of the interpersonal encounter, the "social distance" changes (Argyle, 1969). "Social distance" maximizes or minimizes social intercourse. For example, one stands back from (if not avoids) an enemy; whereas, the speaking position of two friends includes squaring of the shoulders at a distance of less than twelve inches between the noses (Hall, 1966).

However, many of the S-R theorists as well as anthropologists LaBarre (1947, 1964) and Birdwhistell (1970) believe that "there is not a 'natural' language of emotional gesture." Other researchers in the study of proxemics have evaluated the unconscious importance and cultural differences in spatial relationships. Hall (1959, 1966) shows that

cultural codes reveal that people of different cultures inhabit "different sensory worlds." Not only a potential source of misunderstanding in cross-cultural exchanges, it works to isolate and consolidate subcultural groups (Hall, 1966). Watson and Graves (1966) found differences in spatial orientation between the Arab and American cultures and among geographical regions within these cultures. Evidence of Willis (1966) and Aiello and Jones (1971) also supports the differences found in interaction distance for subcultures in the United States. Englebretson and Fullman (1970), too, have indicated the effectiveness of these silent codes among Native-Japanese, Hawaiian-Japanese and American-Caucasian.

LaBarre's (1964) lengthy essay does try to survey some paralinguistic aspects of non-verbal communication across cultures, finding mostly negative correlations between gestures of one culture and another. However, he does admit that some gestures are not learned but have an innate basis--that of smiling, laughing and crying (to moisten the nasal membranes during heavy inhaling and exhaling) and toe curling during sexual arousal. Birdwhistell, at the beginning of his career, assumed that communication was an elaboration of a panhuman core code emergent for the limited possibilities of physiological response. This assumption, he said, only complicated his work. Although Birdwhistell has coded behavior into units

called kines, while LaBarre only spoke of gross movements, both maintain that kinesic behavior is learned, is not innate, and thus has no panhuman basis.

Meaningful gestures for animals, however, are not learned (Keenyside, 1955; Tinbergen, 1959; Peiponen, 1960; Lorenz, 1965). After looking at the behavioral processes that occur in the animal world, we cannot help but notice the adaptations to and interactions with the environment that animals make. Charles Darwin (1872), making such observations, said that independent of the will, the nervous system determines our many expressions. As a forerunner in the field of kinesics, Darwin illustrates that among many animals and man there are non-verbal and involuntary movements that convey emotion of anger and aggression. For example, such cues are:

1. Dermal appendages erect under excitment of anger or terror. The enraged lion erects his mane. Hens ruffle their feathers. Lizards inflate. This inflating the body is not an acquired power, but is an incidental result of the sensorium being affected.

2. The ears are expressively positioned--drawn back and pressed to the head. Dogs, horses, hippos and some monkeys do this.

3. Characteristic of the Macacus rhesus angered is his redness. Orangs and chimps protrude their lips; but among others, more often, the lips are retracted to expose the teeth.

4. "Rage, anger and indignation are exhibited in nearly the same manner throughout the world," says Darwin, as he cites examples from Australia, North Dakota, Malay and China. These expressions include neck stretching, faster heart beat, color heightening

(even among Negroes), brightening of the eyes, and the wings of the nostrils becoming somewhat raised. The mouth is compressed, the chest expands and the head is erect. The eyes are dilated. And, although the person leans toward the antagonist, his feet are firmly planted on the ground.

(The Expression of the Emotions in Man and Animals pp. 237-46)

Lorenz (1963) proposes that there are mechanisms which he calls innate releasing mechanisms (IRMs), that operate in animals and help them to adapt to each other (intra-specific) and their environment. They are highly specific cues that trigger or elicit a given behavior in a like species. IRMs evolved in the service of coordinating social behavior. For example, animals, in order to communicate and interact with others of the species, posture, gesture, sing, preen, etc. The concern at hand may be food-getting, food-begging, fighting, submitting, courting, greeting, following, attracting or appeasing. Some examples are as follows:

1. The blue breast feathers of the male bluethroat elicit fighting in another male of the same. (Peiponen, 1960)

2. Upright ears of the European red squirrel indicate defense; its ears back indicate aggression. (Eibl-Elbesfeldt, 1957)

3. Lipsmacking of the baboon elicits friendly responses by other baboons; it is a greeting sign. (Andrew, 1965)

Lorenz (1963, 1965) goes on to support Darwin's beliefs on the evolutionary origins of homo sapiens (man, having common origins with the animals, is, in part, subject to the

laws of nature). However, he admits that the dynamics of instinctive drives, of phyletically and culturally ritualized behavior patterns, together with the controlling force of responsbiel morality, form a very complicated systematic whole which is not easy to analyze.

Whereas Lorenz, in supporting Darwin, only alludes to the possibilities of the IRMs operant in man, Richard Andrew (1965) directly supports Darwin in investigating facial expression: "The raised eyebrow, frown, smile, laugh, and even the ability to speak may all have evolved from ancestral reflex action that were gradually transformed into means of communication." As a remarkable instrument of communication, "the human face, by movements of its mouth, eyes and brows conveys, in a most sensitive way, specific emotions, thoughts or intentions that are universally understood." He confirms the ear-flattening response, not as a sign of aggression, but of protection. However, Lorenz (1963) argues that the ears are erect in most aggressive displays. In higher primates, ear-flattening is less pronounced and less significant because these animals no longer depend so much on their ears to scan the environment; hence, the diminished ability to move their ears implies that ear movement would no longer be considered as a significant signal.

As Andrew states:

"Ear-flattening and associated facial movements such as scalp retraction gives us a clear indication of the way in which most facial expression originated.

They are not innate expression of pleasure, pain, anger, or fear, but arose in the first instance as accompaniments of functional activities or as reflex responses to stimuli, e.g., ear-flattening was a protective response to a startling change in the environment. The expressions were perpetuated by natural selection and evolved into exaggerated displays because they had communicative value. In the course of evolution the expression, particularly in man, came to represent not only intentions, but also emotional states." (Andrew, 1965, p. 89)

Andrew explains other facial displays in terms of their evolutionary origins. The human smile probably evolved from the monkey grin, a protective response, and gradually generalized to "interesting" or "amusing" (Andrew, 1963). The baring of the teeth is an expressional element almost always linked with intense vocalization in primitive primates--i.e., stronger excitations states of positive or negative emotions. And, as this vocalization implies another party, such displays are not made alone. The mobility of the lips in the higher primates and man, stemming from this vocalization has developed into an important visual signal. Involving vigorous expulsions of air, the rounding of the lips, covering the teeth has become an important signal of impending attack (Andrew, 1965).

The evolvement of these survival cues has been explained in three operations by which a habit becomes a species preserving instinct:

1. ritualization of motor patterns;

2. development of the reinforcement mechanism supporting the ritualized motor pattern;

3. the storing of this information in the genes and
   chromosomes. (Frank, 1968)

Thus, through phylogenetic modification, the successful
response becomes permanently blueprinted in the cells of
an organism and transmitted hereditarily through time in
the genes and chromosomes of the members of that species.
The original motivation for response becomes lost (on a
conscious level) and the very performance of the behavior
is an end in itself.

Phylogenetic information is retained in coded chain
molecules within the cells of an organism, but how this
storing process is achieved is not completely known. It
is recognized as being stored in the genes in that specie
specific behaviors are transmitted to and displayed in the
progeny of a species (even after extended time intervals
in which the behavior was not exhibited). The process has
developed a comprehensive repertoire that functions for
such social behaviors as sex and aggression. The process
of phylogenetic ritualization of aggressive signals, for
example, can be understood as the result of the combined
actions of the sympathetic/parasympathetic and muscular
systems acting together to produce signals of fight (threat/
combat) or flight (submission/appeasement).

The face as well as the body can signal in a similar
manner, if not in a more sensitive and mobile way. Efforts
have been made to investigate the importance of the face as
the expressor of emotion. Spitz and Wolf (1946), Fantz

(1961), Kagan and Lewis (1964) and Wilcox (1969) have argued whether preference for the facial stimulus might not be a "wired-in" response. Certainly the interest in face-form appears early. Bornstein (1969) points out that the human face is the earliest visual stimulus that we learn to attend to. The faces of persons hovering above us may give a primal importance to facial recognition unmatched by any other class of objects. Lending support to this is the fact that a newborn can focus at 18 cms.--the distance from the breast to the mother's face (Hayes, White and Held, 1965).

Fantz (1961) has tested babies on form perception. His experiments indicate that man's ability to perceive form, i.e., recognize the facial configuration, is indeed innate. Measurements by fixation or attention (Fantz, 1961) or heart deceleration (Kagan and Lewis, 1964) have shown that infants prefer the abstraction of the normal face. When the abstracted characteristics of the face were distorted, the infant was disturbed. It seems that this interest of young infants in form will later aid in object recognition, social responsiveness, and spatial orientation. This primitive ability provides a foundation for the vast accumulation of knowledge through experience. At a later stage, he will have a more precise perception of facial pattern.

The significant role of the facial expression even remains a more important mode of communication than the verbal message. Mehrabian and Ferris (1967) found that the facial components received one and a half times the weight received by the vocal components of communication. Another study by Mehrabian and Weiner (1967) resulted in emphasizing the importance of facial expression. Attitude was communicated 55% facially, 38% vocally, and 7% verbally.

With interest in facial patterns and body movements, Dittman, Parloff and Boomer (1965) studied the differential receptivity of emotional cues of the body and the face. They concluded that facial and bodily expression may differ among themselves in terms of dominance, at least for positive emotions. But, regardless of the emotion, it seems that eye movement cameras consistently indicate that the human head tends to be looked at first and most (Brandt, 1945).

The importance of facial cues has led Ekman (1965) to compare their impact as expressors of emotion with body movements. He found that they provide differential information about apparent emotion to the observer; "because the rate of facial expressions usually far exceeds that rate of body acts, perceptions of specific emotions can be more frequently made from head than body cues." (Ekman, 1967, p. 723). The head is more informative about the nature of the emotion (whether the stimulus person feels

angry, afraid, sad, etc.), while the body is more informative about the intensity of the emotion. The data were examined further in order to determine whether the difference in agreement between judges of head and judges of body cues might have been limited to only one or two of the five stimulus persons shown in the photographs. Detailed inspection of the results for each stimulus showed that judge agreement was higher for head cues than for body cues for stimuli judged as showing happiness, surprise, fear, contempt, while with anger and disgust, the cue version which elicited higher judge agreement varied with the individual stimulus person in the photographs. Results also tended to indicate that action was more indicative of the emotion than position. Obviously, facial recognition studies from stable and static photos do lack some of the realities of mobility and change (Turhan, 1960). The act of distorting, e.g. going from a neutral face to one of anger, was omitted. Although this change would be more difficult to assess experimentally, the study did point out that:

1. Movements might be neurophysically linked to emotional arousal.

2. Movements might be adaptive responses to arousal that modulate, enhance, reduce or discharge the emotional arousal. (Ekman, 1967, p. 718)

Final conclusions of this study indicate that Ekman's hypothesis of 1965 has been reformulated. Intensity, as well as the nature of emotion, is indeed inferred from

facial displays and head tilt, and the importance of this
intensity is weighted according to body display or inhibi-
tion. Although head cues seem more informative than facial
cues, some argue that through socialization, we learn which
situation allows or disallows certain facial expressions.
Allport (1924) believed that the facial reactions of in-
fants to given situations are initially random; but with
approval and reward, the baby subsequently connects a
given state of affairs with expressions that arouse strik-
ing effects in other persons. Such a theory would counter
the evidence of Dumas (1932, 1948) who maintained that the
expressions of all the discrete emotions could be explained
by the general principle of variations in muscle tone. He
recognized that joy, sadness, anger and fear are "cerebral
states" which affect "mental functions" as well as the motor
system. Although he does not address himself to the evolu-
tionary origins of facial expression, his study on the
congentially blind has been a source of valuable evidence
to suggest that facial expression is not learned. Thompson
(1941) and Fulcher (1942) also observed and compared the
facial expression of blind and seeing children. Thompson
concludes that as expressions of joy, sadness, and anger
were reliably identifiable in the blind that it must,
therefore, be due to some form of maturational processes.
Sighted children revealed greater stylization of laughing
and smiling, but the differences between the two groups

were negligible. The findings of Fulcher also supported
the idea that expressions are generally innate, and that
both the seeing and the blind show no noticeable changes
with age in the patterns of their expressions.

But despite whether they are innate or learned,
Goffman (1959) would argue that we have learned not "to
show" certain socially undesirable emotions; that is, in
situations of boredom or anger, our true feelings are not
manifest, but masked. It could be argued, however, that
split-second manifestation of the true feeling precedes
this masking. Haggard and Isaacs (1966) have shown that
micro-momentary facial expressions, often not perceived
consciously by the naked eye, occur in social interaction
in relation to intrapsychic dynamics, frequently signaling
conflict or denial mechanisms. Other supporting evidence
is an experiment in which the startle response was still
exhibited by gunmen who claimed to be habituated to the
shot of a gun. Film analysis, however, revealed that the
reaction was displayed, but quickly disguised (Karon, 1971).
Then, recognition of aggressive cues would indeed be pre-
sented and processed in a like manner. "Putting on a
front" is more closely connected with a time element,
rather than a complete concealment of the true emotion.

Facial Recognition Studies

To survey facial expressions of all emotions, Frois-
Wittman (1930) developed and used a photogram set of 72

pictures. Anger was correctly identified 39% of the time but was often interpreted as hate, contempt, rage, etc.-- all highly potent negative emotions.

Woodworth (1940), using the Frois-Wittman photos, tried to specify emotional expression and categorized them into one of six categories: (1) love, happiness, mirth, (2) surprise, (3) fear, suffering, (4) anger, determination, (5) disgust, and (6) contempt. Judgments by different observers of a particular pose showed substantial similarity. The pose for anger was identified by only 31 judges; 28 saw it as fear, and 14 saw it as suffering (total of 73 judges). In any case, it was never seen as a positive emotion. A reason for low agreement between the judges could be that the photos froze the emotion: that is, in everyday life, individuals are accustomed to free and flexible facial expressions, not those of a stagnant quality. Secondly, low agreement among the judges might be the result of not being accustomed to seeing the expression of anger. And, finally judgment might have been impaired due to the repression of identifying a high potency negative emotion.

Investigating the Frois-Wittman and other sets of stimuli using the Woodworth scale, Schlosberg (1941, 1952) found evidence that the scale was circular, rather than linear, and could be understood through the operation of two orthogonal dimensions, pleasantness-unpleasantness and

attention-rejection. Subsequently, on the basis of evidence other than that directly obtained from the investigation of facial expression, an activation dimension, sleep-tension, was added, and supporting evidence was reported (1954). Thus, a neat circular model, using emotional dimensions, seemed to serve as a descriptive device.

Ableson and Sermat (1962) found that the two dimensional model, pleasantness-unpleasantness and sleep-tension, was most adequate; the attention-rejection dimension seemed to add only a little more in the prediction. Mordkoff (1967), using the data of Schlosberg, factor analyzed the judgment of emotion from facial expression and supported Schlosberg on the two dimensions, sleep-tension and pleasantness-unpleasantness. However, he was unsuccessful in his attempt to add another dimension, that of forceful-submissive.

Osgood (1966) produced a three dimensional analysis of facial display (pleasantness, control, intensity); but as it was mediated by verbal labels attached to the poses, the results are not of concern to this investigation. In fact, it has previously been noted that verbalizations are often not as significant an indicator as facial display in conveying an emotional message (Mehrabian and Ferris, 1967; Mehrabian and Weiner, 1967).

Tomkins and McCarter (1964), interested in the production of the experience of affect, assumed that facial

affective responses are controlled by innate affect pro-
grams which are inherited as a subcortical sturcture which
can instruct and control a variety of muscles and glands
to respond with unique patterns of rate and duration of
activity characteristic of a given affect. These innate
responses are later transformed in various ways through
learning; but, there is always a continuing openness to
activation of the innate pattern of responses. They dis-
tinguished the following primary affects and facial re-
sponse, and feedback which in conscious form, produce the
experience of affect:

1. Interest-Excitement--eyebrows down, eyes track,
   look and listen;

2. Enjoyment-Joy--smile, lips widen up and out,
   smiling eyes (circular wrinkles):

3. Surprise-Startle--eyebrows up, eyes blink;

4. Distress-Anguish--cry, arched brown, mouth down,
   tears, rhythmic sobbing;

5. Fear-Terror--eyes frozen open, pale, cold, sweaty,
   facial trembling, with hair erect;

6. Shame-Humiliation--eyes down, head down;

7. Anger-Rage--frown, clenched jaw, eyes narrowed,
   red face.

(Tomkins and McCarter, 1964, p. 120)

Experimental procedure required the identification of the
emotions of sixty-nine photos. There was a .86 correlation
between the photo and the correct judgment. However, the
judgment was highly facilitated by the fact that the judges
were given the categories of emotion beforehand.

Thompson and Meltzer (1964) essentially studied the communication of emotional intent by facial expression, too, and found that happiness, love, fear, and determination are significantly easier to enact than suffering, disgust, contempt and anger. Again, social propriety may circumscribe enactment of the negative emotions, but not necessarily the immediate interpretation of those emotions.

Drag and Shaw (1967) confirmed the findings of Thompson and Meltzer. Happiness was easiest and contempt was most difficult to communicate (expressor and judge agreements were 70% and 30% for happiness and contempt respectively). Although this finding seems contrary to the self-preservation instincts, Goffman (1959) reminds us that culture often disallows recognition or expression of "undesirable" emotions. Social situations are often restrictive. Also, it was found that females were more effective than males in the communication of happiness, love, anger and fear. This seems consistent with the taboos of this society to lessen the degree of male emtotionality.

Others would explain the difficulties of consistent (across emotions) facial interpretation due to contextual circumstances. That situational context enhances the perception of faces and increases the recognition scores is supported by Landis (1929), Munn (1940), Goldberg (1951) and Cline (1956). Moreover, there is recent evidence that

situational cues drastically modify the interpretation of expression (Turhan, 1960; Kirckhoff, 1962; Warries, 1963; Birdwhistell, 1970).

More generally, Schachter (1964) explains, "Cognitions arising from the immediate situation as interpreted by past experience, provide the framework within which one understands and labels his feelings. It is the cognition which determines whether the state of physiological arousal will be labeled 'anger,' 'joy' or 'whatever'" (p. 51).

This concurs with Cannon's theory (1927) of emotion which the perceived situation produces an emotion which prepares the body to take action. However, the emotional process described by James (1884) and Lange (1922) seems more cogent here in the situation of extreme danger/impending attack; the perceived situation is followed by a physiological response which is later acknowledged as a specific emotion. A most comprehensive theory within this tradition is that of Arnold (1960). Although she acknowledges man as active, her theory is essentially one of reaction, treating emotion as a response to a stimulus. She speaks of primary emotional experience that results from evaluation of the situation, followed by a secondary emotional experience that follows from the appraisal of bodily changes brought about by the first appraisal. For example, if an individual appraises a situation as

dangerous, the emotion which follows will be fear. The

fear will result in bodily changes which may also be

evaluated as dangerous, and this appraisal will result in

a second fear. To explain more specifically, the sequence

is as follows:

> (1) appraisal of sensory impression, (2) experience of
> liking or disliking and appraisal of object as harmful
> or beneficial as performed by the limbic region nearest
> the sensory cortical area, (3) the emotion and action
> impulse, (4) appraisal for action via memories future
> consequences, (5) choice of action, (6) visceral-
> glandular activity of the hippocampal system, (7)
> emotional expression, and amplication and organiza-
> tion of impulses for the chosen action, (8) urge to
> action and appraisal of its suitability carried out
> by the ventral thalamus and the pre-motor area of the
> frontal lobe, and (9) directed action.
>
> (Arnold, 1960a, 1960b)

Schachter probably underestimated the specificity

of emotional reactivity; possibly, if observers manage to

discriminate between more than just the level of arousal,

the subject himself might be able to do as well. There is

skeletal as well as visceral reactivity, and in many cases,

this is demonstrably as primitive as visceral response

(e.g. the startle pattern [Landis and Hunt, 1939]; crying

in infants [Bridges, 1932; Goodenough, 1932]).

Investigations have begun to discover and code the

kinds of behavior, especially the neuromuscular activity

of the face. Whereas Birdwhistell (1970) and others (Ken-

don and Ex, 1969) have developed minute coding systems,

persons such as Hanawalt (1944) have focused on the roles

of the upper and lower parts of the face as a basis for judging facial expression. He concurs with Dunlap (1927) that to some extent the lower half of the face furnished better cues for identifying happy expressions; however, the upper half of the face seems superior in conveying surprise and fear. Anger, in his analysis, was identified 73% of the time by the upper half, and only 15% correctly by the lower half of the face. It seems that there is not reliable differences between the upper and lower half of the face in furnishing cues for the judgment of facial expression (in general) in paintings, sculpture, posed or candid photos.

Other contributions indicate that it is the eyes which play an important role in facial expression. Frijda (1956) emphasizes the importance of the eyes and the region around the eyes. The importance of eye-contact, whether a glance or a stare, signifies intimacy or lack of it, dominance or submission (Exline, 1963; Argyle and Dean, 1965). Open eyes (versus half-closed or lowered) convey dominance in a dyadic interaction because the personal ego zones of the second party are being penetrated. Even placement of the eyes seems to have some indicative value in social perception. Brunswik and Reiter (1938) used eye, nose and mouth placement as a determinant of a person's likeability, pleasantness and intelligence; for example, eyes close together, a medium nose and a high placed mouth

(big chin?) was judged as "ugly, unlikeable, unintelligent."
Brooks and Hochberg (1960), in investigating the physio-
logical components of judging "cuteness," found that it
was a function of eye height; that is physiognomic quali-
ties exert a powerful influence on our behavior (the judg-
ment of cuteness). Last, in terms of autonomic responses,
the discoveries of Hess (1964, 1965) have indicated the
eye (pupil) size varies with a certain arousal. The pupil
dilates during sexual arousal and problem-solving behavior.
As intensity is common to both situations, dilated pupils
might be evidenced in other highly emotional situations,
such as anger, rage, etc.

To study the specific facial components and their
importance in non-verbal communication, Harrison (1964)
focused on simplified facial pictomorphs. The schematic
faces used five types of eyebrows, four types of eyes,
three types of mouth, combined in all possible combinations.
Subjects indicated on a five point scale the degree to
which each adjective on a list was appropriate for each
face. One result showed that the "medially down-turned
eyebrow is a sufficient condition for the response of
"angry." This has proved to be of interest to the re-
search below.

In another study using schematic faces, Counts
(1967) showed the effects of pictorial context on semantic
differential judgments of motor kinetic lines and expressive

facial outlines. He did not particularly try to locate
the connotative elements of facial display, yet showed
that the influence of context (one of three different lines
drawing patterns presented adjacent to the schematic draw-
ings) did neutralize the incongruent situations. However,
it failed to intensify the interpretation of emotion in
the congruent, i.e. when the line pattern complemented the
schematic drawing. But Guthrie and Wiener (1966) inves-
tigated the role of angularity in person perception and
found that angularity in drawings controlled the perception
of aggression; the angular drawing without a gun was seen
as more aggressive than the same drawing with curved lines
and a gun.

Behavioral consequences to specific components of
facial display was measured by Fleming (1972) in terms of
proximity measures. In a simple "walk-up" experiment, sub-
jects were asked to approach the graphic representations
of isolated features of facial expression and to stop at
a self-determined comfort range. He predicted that they
would stand farther from the threatening abstract patterns
than control patterns of equal stimulus value. Recognition
and response to the stimuli was due to the function of in-
nate releasing mechanisms. Results indicated that angularity
and diagonality in the upper third of the face are signifi-
cant to the display of threat: angular eyes, angular brows,
angular cheek lines.

Cross-Cultural Studies

Thus, the growing body of research in ethology, facial recognition studies and development of more comprehensive theorizing of emotional processes (on the physiological level) provide a framework from which the relativist view can be challenged. Would the same facial expressions be recognized across cultures? And, would isolated components of the facial display system, triggering off an emotional reaction/interpretation be a universal phenomenon?

Secord and Bevan (1956) were interested in cross-cultural comparisons of impression of physiognomy and personality, rather than emotional expression, but found that there was a relative congruence of rating photographs of physiognomic variables by Norwegian and American judges. Although they do not identify the physiognomic traits responsible for the strong impressions yielded, similarities in judgment were pronounced than the differences.

In regards to this question of universality, Birdwhistell (1970) poses the following question as relevant for modern ethologists and comparative psychologists:

> Are there particular sound and expressions and gestures which can be studied in isolation and which are evidence of particular, predisposing psychological states regardless of the cultural context of their appearance?
>
> (Kinesics and Context, p. 38)

His immediate response is that "cross-cultural research suggests that the answer to all of these questions is negative."

However, Ekman, Sorenson and Friesen (1969), after observation in both literate and preliterate cultures, found that the pan-cultural elements in facial displays of emotion are the associations between facial muscular movements and discrete primary emotions, although cultures may still differ in what evokes an emotion, in rules for controlling the display of emotion and in behavioral consequences. They used the following six affect categories: happy, fear, contempt-disgust, anger, surprise, and sadness. Their investigations attempted to contradict the positions reviewed above that propose that:

1. Facial displays of emotion are socially learned, and thus, culturally variable.

2. Observers of the face alone do not achieve accuracy in recognizing different emotional states.

3. "The best evidence available, from thirty years of research, seem to indicate there is not invariable pattern, or at least, no innate invariable pattern of expression, accompanying specific emotions."

(Bruner and Tagiuri, 1954)

The Ekman, Sorenson and Friesen study (1969) was based on Darwin's suggestions and on Tomkin's theory of personality which emphasized the importance of affect and which postulated innate subcortical programs linking certain evokers to distinguishable, universal facial displays for each of the primary affects--interest, joy, surprise, anger, fear, distress, disgust-contempt and shame. Ekman and al. reasoned that past impressions of cultural differences

in facial displays of affect may represent a failure to distinguish what is pancultural (the association of facial muscular movements with each primary affect) from what is cultural variable (learned affect evokers, behavioral consequences of an affect display, the operation of display rules). Display rules were defined as procedures learned early in life for the management of affect displays and include deintensifying, intensifying, neutralizing or masking an affect display. These rules prescribe what to do about the display of each affect in different social setting; they vary with the social role and demographic characteristics, and should vary across cultures. The study supports the universality of pure display of single affects and their interpretations.

Although the New Guineans failed to discriminate between fear and surprise, it was not damaging to the pancultural hypothesis, since the latter did not require that cultures differentiate among all of the fundamental emotions. Difficulties in methodology such as (1) relating to Caucasian faces, (2) relating to photographs, and (3) translation difficulties in making fear and surprise clearly separate verbal concepts, may have detracted from the overall results.

Hypotheses

Man is responsive to environmental cues, learned (e.g., a stop light) and unlearned (e.g., pupil dilation

at the sight of a sexually arousing stimulus). We are
therefore encouraged to recognize the observation of Dar-
win, that man has evolutionary origins, and human social
behavior, far from being determined by reason and cultural
tradition alone, is still subject to the laws prevailing
in all phylogenetically adaptive, instinctive behavior.
To investigate the possibilities of neurologically organized
patterns, this study focuses on threatening cues found in
facial expression that elicit fear. Such cues essential to
self-preservation would not require readiness, nor a situa-
tional or timebound set in order to elicit a reaction.
However, given both the phylogenetic continuities in so
much of human behavior and the adaptive value of innate
sensitivity to threat, it is reasonable to examine whether
there may be innate releasing mechanisms that warn us of
impending threat and/or danger. To ask the question in a
different way, what does the human perceptual mechanism
perceive as effective warning stimuli in facial expression,
and to what degree may they be widely found, or universal
in differing human societies?

It would seem that this ability of sign behavior
(abstraction of sense data for cognitive/emotional analysis)
is likely to be innate--especially serving the functions of
self-preservation and preservation of the species. It would
follow that threatening cues would be least affected or
molded by situational, arousal or attentional factors

because the service performed in maintaining social stability. And, if this mechanism is innate, one would suppose that expressing and interpreting emotions such as anger, hate, or threat in facial expressions would be a universal phenomenon.

This study will attempt to investigate the possibility that components of threatening facial displays are universal by the survey of the representational plastic arts of several cultures. The methodology of this study avoids such difficulties using photos cross-culturally (Ekman, 1969) in that it uses facial stylizations found in the cultural productions of a particular culture. This was the suggestion of Margaret Mead in the preface of the 1955 edition of Darwin's The Expression of the Emotions in Man and Animals. In praising Darwin's preliminary observations, she suggests that one way to confirm that there are pancultural factors in the expression and interpretation of emotion as displayed by the face is to consider the representational art work of a given culture.

Thus, masks and puppets have been collected from Ceylon, China, Japan, British Columbia, West Africa, United States, Europe and Oceania. Not only are they products of the artistic process, but as "agents of social control," they are designed with the purpose of arousing, attracting or repelling the on-looker.

A facial characteristic scale, listing twenty signs of threat, developed by Aronoff and Barclay (1971) was used to score the components of facial expression in threatening and non-threatening facial displays. (See Appendix A). Although the scale was developed from several samples of American college students, its pan-cultural validity was empirically tested by this study.

This investigation suggests that much of facial expression is not learned; that one of the emotional displays that is particularly unmodified by social learning and shaping is that which uses the expressional cues of threat. Anger/rage is a highly potent and toxic emotion whose affectual display demands immediate recognition and reaction for the maintenance of self-preservation.

In light of the above, a scoring system based on material from one culture was used to score cues of aggression in the emotional display of the masks. The following hypotheses were made:

1. That socially defined threatening facial displays (masks) contain more threatening cues than do non-threatening facial displays across cultures.

2. Taken individually, each of the separate cues will discriminate between socially defined threatening and non-threatening facial displays.

METHOD

Data Collection: Hypotheses were tested by analyz-
ing the plastic representations of facial expressions--i.e.,
those found in masks and puppets of traditional use in
seven cultures: Ceylon, China, Dan-Guere, Japan, Java,
Kwakiutl and Senoufo. The American sample is composed of
a collection of drawings of war and courtship masks drawn
by college students at Michigan State University in inter-
mediate psychology classes.* Thus, eight cultures are
represented in the investigation. The ninth sample is
composed of masks collected from a variety of cultures
for which there were not enough masks of known function
to comprise a complete sample. The mixed group includes
masks from the following cultures: Bakwele, Bapende,
Bambara, Baule, Gouro, Hawaii, Middle Europe, Mortlock
Island, Tibet and Tlinget. The masks and puppets of
various cultures were obtained through museum and library
resources.

The following criteria were used in the selection
of the masks to be scored in a sample:

———————————

*This American sample is not the one on which the
scoring system was based.

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1. A given society was included if it traditionally used either masks or puppets.

2. A given society was included if ethnological reports of the social function of the masks were detailed enough to allow judgment to be made as to whether a particular mask was used in an aggressive, frightening manner or in a more neutral sense, e.g., comical, portrait, etc. Survey art books' nominal subtitles were not acceptable as adequate evidence. Adequate ethnologies were sought out in order to find out the social functions of the masks so that they could be classified as "threatening" or "non-threatening." For example, "powerful," "powerful deity," "initiation mask," or "death mask" were labels that were not immediate indicators of threat. Further information was needed to elucidate the role of the mask in that particular culture and to understand if it was perceived as malevolent or benevolent.

   In addition, masks characterizing the aged were eliminated as facial wrinkles confounded the scoring of threatening signs.

3. The masks must be of wood. The reduction of the sample to the use of one medium somewhat equalized craftmanship materials. Thus, masks of stone, brass, barkcloth, and rattan basketry were not included. These wooden masks were often painted and adorned in various ways, however.

4. Once these criteria were satisfied, the sample had to meet the criterion of ten separate masks in each category. See Table 1 for the number of threatening and non-threatening masks for each culture.

Instruments: A Nikon camera took the photos of the masks and puppets with KPA 135-36 film. A TDC projector presented the slides for scoring.

A system for the scoring of threatening facial characteristics was developed by Aronoff and Barclay (1971). It was drawn from samples of drawings of "war" and "courtship" masks of American college students at one university

TABLE 1

Number of Threatening (T) and Non-Threatening
(N-T) Masks for Each Culture

Culture	T	N-T	Total
America	47	47	94
Ceylon	15	16	31
China	10	16	26
Dan-Guere	13	12	25
Japan	11	27	38
Java	30	30	60
Kwakiutl	12	16	28
Senoufo	26	18	44
Mixed sample:			
Bakwele	1	1	2
Bambara	0	9	9
Bapende	4	2	6
Baule	4	2	6
Gouro	1	1	2
Hawaii	1	0	1
Middle Europe	13	1	14
Mortlock	0	1	1
Tibet	2	2	4
Tlinget	2	2	4
	190	205	395

See Appendix B for listing of the names of the masks, their source and classification.

and cross-validated by another sample at a second university. Modified by this author, it was used by two blind raters trained in its use. See Facial Characteristics Scale and general rules for its use in Appendix A. Scoring procedure: Once the data was collected through library, museum and professional sources, color slides were made of all the masks and puppet heads. Exceptions to this procedure were:

1. 8" × 10" black and white photos of Chinese masks;

2. American sample of masks, which were drawn in pencil;

3. Thirty-nine plates from the book, <u>Senoufo</u> by Goldwater.

The sample, consisting of 241 unlabeled slides, 60 photos, and 94 drawings, was coded and presented randomly, according to culture group. Using a minimum number of rules for each culture group,* two blind raters independently scored each mask, puppet head, or drawing, giving each mask a point for the appearance of one of its threatening signs. The total number of threatening signs on each mask was tabulated, an average of the two judges' scores was derived, and the mean total of characteristics was taken as indicative of the amount of threat present in each mask.

Analysis: The Pearson r was performed to determine the inter-rater reliability.

Following the directional hypothesis, a one-tailed t-test was made on each culture group to test the prediction that representations of threatening characters had significantly more threatening signs than those figures dealing with non-threatening themes.

Chi Square tests were performed on each item of the Facial Characteristic Sclae in the total sample masks

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*For culture notes, see Appendix B.

combined across all cultures) to distinguish which facial cues were significantly more frequent in an aggressive representation.

Finally an item analysis was made within each culture. Fisher Exact and Chi Square tests were performed on the frequency of appearance of the threatening signs in the threatening and non-threatening masks to determine which cues were significantly differentiating between the two facial displays for each culture.

RESULTS

Inter-rater reliability was quite satisfactory
and, as seen in Table 2, ranged from .74 to .97. The low-
est scores are reported for the Kwakiutl and the Mixed sam-
ples. Complexity of the Kwakiutl masks and inconsistent
standards in the Mixed sample likely made the rating a
more difficult task.

The mean of the separate inter-rater reliabilities
by culture was computed at .87. Thus, because this re-
liability score was high, the mean score of the raters
was used to determine the frequency of appearance of
threatening cues on threatening and non-threatening masks.

TABLE 2

Inter-Rater Reliability

Culture	Pearson r
America	.84
Ceylon	.90
China	.97
Dan-Guere	.88
Japan	.94
Java	.90
Kwakiutl	.74
Senoufo	.87
Mixed sample	.79
	.87 = $\overline{X}$

Hypothesis 1: According to hypothesis 1, it was expected that the modified Facial Characteristic Scale would be a useful tool in distinguishing between threatening and non-threatening facial displays across cultures. That threatening masks contained more aggressive cues than those masks of a non-threatening theme was confirmed. The t-test performed separately on each cultural group showed that this difference was highly significant for every culture. See Table 3. This result supports the theory that there are some mechanisms of the muscular structure of the face that are universally recognized as eliciting the same emotional response, i.e., presumably fear.

TABLE 3

Mean Scores of Threatening Characteristics
by Culture on Threatening and
Non-Threatening Masks

Culture	Threatening Masks	Non-Threatening Masks	df	t
America	6.26	2.94	92	8.11**
Ceylon	4.43	1.69	29	4.50**
China	6.80	2.31	24	5.39**
Dan-Guere	5.58	2.63	23	4.44**
Japan	4.64	1.48	36	5.03**
Java	5.97	2.30	58	9.42**
Kwakiutl	5.46	3.50	26	2.84*
Senoufo	4.71	2.00	42	6.26**
Mixed sample	5.17	2.63	47	5.55**

*p < .005
**p < .0005

Hypothesis 2: Hypothesis 2 predicted that some cues might be more salient or potent than others in the display of threat. Chi Square tests were performed on the frequency of appearance or non-appearance of single characteristics in threatening and non-threatening masks across all cultures. Results for each item across all cultures (combined) indicated that all but one item discriminated between threatening and non-threatening facial expressions. The significance of each characteristic by across all cultures is represented in Table 4.

The significance level for nineteen of the twenty characteristics varies from .05 to .0005. It was noted that of the twenty items, one was not functional in differentiating between threatening and non-threatening facial displays. "Triangular eyes" (10B) was not a significant threatening cue; it seems that the muscular structure of the face cannot produce effectively a "triangular eye." Also the "pointed chin" (17), thought to increase angularity in the face, proved to be poor as a salient cue in a threatening facial display. In fact, the prediction was significantly reversed. Pointed chin is not more frequently found in threatening facial displays.

Additional Analyses

Because the scale was based on an American population, and because the American sample accounts for nearly

TABLE 4

Proportion of Appearance of Single Characteristics
in Threatening (T) and Non-Threatening (N-T)
Masks Across all Cultures

Characteristic	T	N-T	x^2
1	31.84	8.54	33.80****
2	16.05	8.78	4.84**
3	61.05	32.68	31.92****
4	7.10	3.17	3.18*
5	16.84	9.51	4.67**
6	23.68	11.95	9.36***
7	56.32	26.34	36.69****
8	30.79	10.73	24.45****
9	13.95	4.88	9.68***
10A	54.74	13.90	73.76****
10B	2.63	1.22	0.02
11	22.89	13.90	5.25**
12	28.95	13.66	13.89****
13	29.47	20.49	4.27**
14	20.53	10.98	6.84***
15	48.94	9.76	74.16****
16	20.26	8.05	12.27****
17	15.26	22.68	3.51*
18	17.63	6.10	12.75****
19	36.58	3.17	70.83****

*p < .10
**p < .05
***p < .005
****p < .0005

one-quarter of the total masks scored, it was worthwhile
to look at the function of these threatening facial cues
in each culture group. A more fine-grained analysis was
performed in order to find out if each society, taken in-
dividually, will use all of the possible cues, or if that
society will select from among the array of possible cues,
certain ones which it will use to portray threat.

Therefore for each culture, threatening and non-threatening masks were singularly examined in order to see if there was a higher proportion of threatening cues used on threatening as compared to non-threatening masks. See Table 5 for the analyses by separate culture.

TABLE 5

Proportion of Appearance of Single Characteristics
in Threatening (T) and Non-Threatening (N-T)
Masks for Each Culture

Charac- teristic	America[1] T	 N-T	Ceylon[2] T	 N-T	China T	 N-T
1	39.36	18.08*	6.67	3.12	20.00	0.00
2	29.79	19.15†	0.00	0.00	30.00	0.00*
3	54.26	38.30	66.67	28.12*	65.00	37.50
4	15.96	0.00***	0.00	3.12	0.00	0.00
5	32.98	20.21	20.00	6.25	10.00	0.00
6	39.36	10.64***	0.00	3.12	60.00	34.38
7	15.96	9.57	50.00	21.88	75.00	34.38*
8	21.28	15.96	30.00	9.38	10.00	0.00
9	35.11	7.45***	0.00	0.00	40.00	12.50
10A	23.40	10.64†	70.00	21.88**	55.00	15.62*
10B	10.64	3.19†	0.00	0.00	0.00	0.00
11	52.13	27.66*	13.33	12.50	50.00	18.75
12	35.11	17.02*	23.33	6.25	40.00	21.88
13	11.70	15.96	30.00	12.50	40.00	25.00
14	35.11	4.26***	0.00	3.12	30.00	18.75
15	48.94	17.02***	73.33	12.50***	45.00	3.12*
16	44.68	27.66†	3.33	0.00	35.00	9.38
17	29.79	17.02	0.00	15.62	0.00	0.00
18	21.28	5.32*	0.00	0.00	5.00	0.00
19	28.72	6.38***	56.67	9.38**	70.00	0.00***

†p < .1
*p < .05
**p < .01
***p < .005

1. The American sample is analyzed by the x^2 test.

2. The remaining samples are analyzed with the Fisher Exact Test (1-tailed).

TABLE 5 (continued)

Proportion of Appearance of Single Characteristics
in Threatening (T) and Non-Threatening (N-T)
Masks for Each Culture

Charac-teristic	Dan-Guere		Japan		Java	
	T	N-T	T	N-T	T	N-T
1	23.08	0.00	31.82	3.70	1.67	0.00
2	30.77	4.17	45.45	7.41*	0.00	0.00
3	38.46	37.50	13.64	0.00	76.67	53.33
4	0.00	0.00	0.00	0.00	1.67	1.67
5	61.54	20.83*	0.00	1.85	0.00	1.67
6	3.85	4.17	50.00	25.92	21.67	3.33
7	42.31	41.67	50.00	20.37	85.00	16.67***
8	38.46	4.17*	18.18	0.00	41.67	11.67*
9	0.00	0.00	36.36	12.96	1.67	0.00
10A	73.08	8.33***	63.64	27.78*	83.33	0.00***
10B	0.00	0.00	0.00	0.00	0.00	3.33
11	7.69	12.50	0.00	5.56	11.67	18.33
12	19.23	16.67	9.09	7.41	25.00	8.33
13	53.85	25.00	18.18	1.85	76.67	51.67*
14	11.54	8.33	63.64	27.78*	6.67	0.00
15	42.31	29.17	31.82	3.70	60.00	6.67***
16	7.69	0.00	13.64	0.00	16.67	3.33
17	0.00	37.50*	0.00	1.85	3.33	40.00
18	34.62	12.50	0.00	0.00	50.00	6.67***
19	69.23	0.00***	18.18	0.00	35.00	1.67***

Fisher Exact and Chi Square test were performed on the frequency table of appearance or non-appearance of threatening cues for each culture. It should be noted that because of the range of sample size (often as low as 26), this analysis has limited value for cues that do not distinguish between threatening and non-threatening facial displays.

TABLE 5 (continued)

Proportion of Appearance of Single Characteristics
in Threatening (T) and Non-Threatening (N-T)
Masks for Each Culture

Charac-teristic	Kwakiutl		Senoufo		Mixed	
	T	N-T	T	N-T	T	N-T
1	29.17	0.00*	53.85	2.78***	55.77	30.43
2	12.50	34.38	0.00	0.00	11.54	4.35
3	66.67	40.62	67.31	22.22***	73.08	32.61**
4	4.17	0.00	11.54	2.78	7.69	21.74
5	20.83	9.38	0.00	0.00	7.69	17.39
6	29.17	25.00	1.92	0.00	15.38	4.35
7	75.00	6.25***	82.69	63.89	67.31	54.35
8	58.33	37.50	26.92	0.00*	36.54	13.04
9	4.17	6.25	0.00	0.00	3.85	0.00
10A	54.17	34.38	53.85	8.33***	57.69	8.70***
10B	0.00	0.00	0.00	0.00	0.00	0.00
11	4.17	3.12	17.31	5.56	9.62	2.17
12	25.00	15.62	28.85	22.22	36.54	10.98*
13	25.00	50.00	0.00	0.00	26.92	6.52
14	41.67	31.25	0.00	8.33	13.46	8.70
15	16.67	0.00	51.92	13.89*	46.15	2.17***
16	20.83	6.25	3.85	0.00	9.62	0.00
17	12.50	15.62	34.62	47.22	13.46	34.78
18	12.50	34.38	0.00	0.00	7.69	4.35
19	33.33	0.00*	36.54	0.00**	21.15	6.52

The results of reviewing the appearance of threat-
ening cues in threatening facial displays across cultures
are as follows:

Characteristic 1. "Horns on the head or pointed
head" was significant as a sign of threat in three cul-
tures, American, Kwakiutl and Senoufo.

Characteristic 2. The use of "wild hair" as a
threatening sign was proven significant in two societies,
China and Japan.

Characteristic 3. Characteristics such as "fore-head lines" representing the intensity of a wrinkled brow, were found to be significantly potent in three samples, Ceylon, Senoufo, and Mixed.

Characteristic 4. "Pointed ears" was significant in the American sample only.

Characteristic 5. "A flattened head" cuts off the natural round contours, the nature of which is smooth and pleasing. It was a threatening cue for the Dan-Guere only.

Characteristic 6. As a threatening cue, "angled eyebrows" was found to be significant for the American sample only.

Characteristic 7. "Vertical lines between the brows," or otherwise known as "knit brows," designates intense focusing of threat. The Chinese, Javanese, and Kwakiutl samples used this cue signifcantly more in threat-ening facial displays than non-threatening ones.

Characteristic 8. Since Darwin (1873) noted the prevalence of "flared nostrils" during anger, this charac-teristic was tested. It consistently appeared more fre-quently in threatening facial expressions than non-threatening ones, but only in the Dan-Guere, Javanese, and Senoufo was it significant.

Characteristic 9. Only in the American sample was "diagonal eyes a functional cue of threat.

Characteristic 10A. "Big, protruding eyes" as a cue of threat was consistently used across cultures. In seven out of the nine samples, bulbous eyes were used to communicate threat.

Characteristic 10B. The characteristic of "triangular eyes," as was previously mentioned, was tested but did not appear to be a cue of threat. The human face cannot produce a triangular eye.

Characteristic 11. "Diagonal cheek lines, down and toward the mouth and nose," thought to be indicative of the power and tension of threat, proved significant for the American sample only.

Characteristic 12. "Diagonal cheek lines, down and away from the mouth" were also thought to be salient cues of threat, but were functionally significant for the American and Mixed samples only.

Characteristic 13. The "moustache," an additional angle on the face, was examined for its potential as a threatening cue, but it had significant potency for the Javanese culture only.

Characteristic 14. The "downward curve of the mouth" is indeed the opposite of a smile and intensely negative. It contributed significantly to the threatening facial display for the Japanese as well as the American sample.

Characteristic 15. "Mouth open broadly, showing teeth," indicative of power to verbally/physically attack, bite, chew, ingest (incorporate), was interpreted as a threatening cue in six out of the nine groups. The presence of this characteristic is significant for the following: America, Ceylon, China, Java, Senoufo, and Mixed.

Characteristic 16. "More than one line on the chin" was not an effective sign of threat in any culture.

Characteristic 17. The "pointed chin" was not potent as a cue of threat in any culture; in fact, for the Dan-Guere and Javanese alike, there was a reversal, leading one to believe that a pointed chin is not a fear-evoking sign, but perhaps a sign of valor or beauty for those cultures.

Characteristic 18. A "pointed beard" was tested for its potency as a threatening cue. Analyses revealed that a pointed beard was perceived as a threatening cue in the American and Javanese societies.

Characteristic 19. Generally, the category 19, threatening symbols, was found more frequently in threatening facial displays than in the non-threatening ones. Flames, arrows, death bones occurred less frequently than did facial horns, fangs, and tongue sticking out. By the instrusive quality of the latter three, the category rated statistically significant for the following: America, Ceylon, China, Dan-Guere, Java, Kwakiutl and Senoufo. See Table 6 for the summary.

TABLE 6

Significant Level of Appearance of Threatening Characteristics
in Threatening Facial Displays for Each Culture

Culture										Characteristic										
	1	2	3	4	5	6	7	8	9	10A	10B	11	12	13	14	15	16	17	18	19
American	X			X		X			X			X	X		X	X			X	X
Ceylon			X							X						X				X
China		X					X			X						X				X
Don-Guere						X		X		X										X
Japan		X								X						X				
Java							X	X		X				X		X			X	X
Kwakiutl	X						X											X		
Senoufo	X		X					X		X						X				X
Mixed			X							X			X			X				

DISCUSSION

If in the beginning, aggression was among the most
important factors controlling the survival of the individual,
it may be well assumed that man was provided with the ability
to use his strength appropriately. Unschooled and unable to
control much of his environment, he depended on group living;
the societal processes alleviated much of the environmental
pressures by providing work teams, security, recreation,
and a sense of belonging. To achieve these goals, he must
deal effectively with his fellow human beings. Non-verbal
communication, as well as later-developed articulated speech,
was the tool of cooperation, a necessity for community liv-
ing and group solidairty. Some of these various biological
signs are satisfying, soothing, pleasurable and are sought
by organisms (animals and humans). Others of these signals
are, if possible avoided or repelled through flight, bodily
coverings, shelter and the like.

Usually man is not thought of as having a highly
elaborate innate communication system as have the bees or
ants. He is believed to be relatively lacking in specialized
adaptations ("biological helplessness"). However, for sur-
vival purposes, it seems he would have to rely on some
rudimentary (innate) form of communication among the

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members of his society. Negative emotions often complicate interpersonal relations, and the cues of attack must be instantly recognized in order to avoid it or counter it.

Man is an informational processing mechanism, consisting of receptor, processor, memory and effector units. This investigation, though, does not imply that all program-controlled behavior depends on experience, pictographs, or lexical systems; it does investigate the operations of possible servo-mechanisms that mediate behavior. Since not all communication is verbal, this investigation sought to appraise the proprioceptive discharges of discrete emotions, namely that of threat-anger, and the perceptual process that evaluates the sign behavior therein. The judgments of the perceptual system to salient structural features produces a reaction; man, at certain levels, then does not intellectualize, but reacts, and his reaction is "released" as a result of specific cues.

In considering the operations of sign behavior, it has been hypothesized that there are social cues that play an important role in interpersonal encounters. For example, instinctual self-preservation calls for the recognition of high potency warnings. Because of (a) the superiority of the visual mechanism as a receptor/adaptor apparatus in interpersonal physiology, and (b) the immediacy and focus on the face, this study suggested that the high potency warnings would be displayed in the face. Thus, high

potency stimuli enter the perceptual process, and then the limbic system mediates by appraising the object as good and liked, or bad and disliked (Arnold, 1960). It is this system, according to McLean (1958,1959) that is most fundamental to self-preservation of the species.

Since the recognition of threatening cues seems fundamental and adaptive, it would follow that they would be least affected or molded by situational, arousal or attentional factors. If indeed this process is fundamental, it was judged that expressing and interpreting emotions such as anger, threat, hate, in facial expressions would be a universal phenomenon and worthy of investigation.

Using Aronoff's and Barclay's Facial Characteristic Scale (1971) of threatening facial cues, 395 masks socially defined as threatening or non-threatening were scored. Results clearly indicated that within each culture group, threatening masks scored significantly higher than the masks of non-threatening themes. The presence of these cues, then, discriminates between threatening and non-threatening facial displays.

Twenty characteristics or facial features were thought to be salient as high potency warnings--as cues of threat. It was thought that structural angularity creates tension, that an obliquely oriented object is charged with potential energy and is distinguished from the stillness of any parallel plane. For this reason,

the diagonality of eyebrows, eyes, cheeks, and the pointed-
ness of the head, beard, chin, horns and ears were tested
for their potential as threatening cues. Results indicate
that the intensity of threat bring on physiognomic changes
which increase angularity in the face. All cues tested
were interpreted as threatening cues, with the exception
of triangular eyes (10B) and pointed chin (17). The physi-
ological structure of the face makes it impossible to truly
produce triangular eyes. Pointed chin was clearly not used
as an indicator of threat either; perhaps it is because
opening the mouth broadly, exposing the teeth (15) is con-
trary to the vertical muscle pull needed to elongate (point)
the chin. In fact, contrary to what was predicted, the
pointed chin was significantly present in the non-threatening
facial displays. These results suggest that Aronoff and
Barclay (1971) should exclude these two characteristics
(10B,17) from their Facial Characteristic Scale.

Based on the Facial Characteristic Scale a more
fine-grained analysis was made. Although the limitations
of such an analysis were previously stated, a clearer exami-
nation of the use of these cues in each culture was made.

Because the eyebrows are facile in level change,
the power of diagonaltiy was tested in the eyebrows (6).
Results supported Harrison's (1964) findings that medially
down-turned eyebrows are a sufficient condition for the
response "angry." Diagonal eyebrows were seen as a

threatening sign by the American sample, a finding which
was supported by the directional trends of the Japanese
and Javanese.

Eyes oriented diagonally, down and toward the nose
(9) were tested for their threat potential. Although
facial mobility is limited, angled orientation of the eye
is a genetic characteristic for Orientals. For the Ameri-
can sample, diagonal eyes were used significantly more
frequently in threatening facial displays than non-
threatening ones; however, it must be mentioned that
American war history may have somewhat influenced this
result.

Angularity of the cheeks (11,12) was thought to
be effective as a cue of threat; in lowering the jaw (open-
ing the mouth), the skin draws tight over the cheek bones.
This diagonality, abstracted on the masks, was interpreted
by Americans a threatening. Perhaps the stereotypic images
of Indian face paint and early American history have in-
creased the likelihood that American interpreted facial
paint (diagonal on cheeks) as necessarily "war-like" or
threatening. It is known that in many culture (Kwakiutl,
Japanese, Kibuki Threater, Maori, Nigerians) facial paint-
ing or scarification is a sign of beauty, a totem or a
class. But in spite of these cultural differences, in-
creased angularity of/on the cheek is viewed as a threaten-
ing sign across cultures.

Pointed head (1), beard (18) and chin (17) deviate from the normal round contours as well as contribute to the angularity of facial display. It seems that round contours are related to "cuteness"; Hückstedt (1965) demonstrated experimentally that the round forehead and relatively large brain case are important characteristics of "cuteness," a descriptive term that in no way implies threat/anger/ aggression. In fact, as he sees it, this roundness is exaggerated by doll manufacturers and the movie industry alike. Results of this investigation show that increased angularity imposed by the above cues (with the exception of pointed chin (17)) signals threat.

Pointed horns (1) and ears (4) were also seen not only as changing the round contour of the face and increasing angularity, but intrusive and foreboding. Tested for significance, horns or pointed head was used as a threatening sign in three cultures, and supported by trends in at least four others. Whereas pointed ears was significant on the overall, it was recognized most strongly by the Americans as a sign of threat. In that it is a characteristic of an aggressive stance for many animals, Americans may have learned this sign through being socialized by T.V. animal cartoons. For, in fact, man does not have pointed ears; the density of the American sample weights this significant finding for the overall analysis.

However, facial lines (3,7,16) tend to be evident in the human face in extreme states of emotion. Forehead lines and "knit brows" demonstrate intensity of focus and emotion. Both the levels of significance attained and the supportive trends attest to the importance of these cues in facial displays of threat.

Other characteristics of facial display thought to be salient to threat were flared nostrils (8), open mouth, broadly and exposing teeth (15) and bulbous eyes (10A). Dominance implies incorporation in which all three of the above are engaged. Before the attack, information is ingested by visual and olfactory senses. The mouth, a powerful tool of incorporation, opens in readiness and warning. Tests revealed that all three characteristics above are clearly interpreted as threatening signs by both reported significance levels and supportive trends.

Hair was also considered as possible adding to the threatening display. Wild, unkempt hair (2) and the presence of the moustache (13) on the overall indicated that both play a significant role in the facial displays of threat.

And lastly, both the mouth in a downward position (14) and symbols and signs of category 19 which are highly associated with negative emotions were scored. On the overall, their potency is reported as significant.

Theoretical Speculations and
Extensions to Further Research

   Further research suggests considering the differ-
ences between the cultures in their creation of masks.
For instance, the large, aggressive mouth is found in the
following societies--Bambara, Senoufo, Kwakiutl, Sepik
and Iatmul (the latter two, although not in the investi-
gation, are in New Guinea). The open and aggressive mouths
on the masks from Ceylon, Java, Dan-Gueré, China and Japan
are not intrusive, but of an incorporative nature. The
United States sample is exempt from such categorization
as the drawings were only two dimensional. Further in-
vestigation of the habits of these cultures might lend
substantial evidence to theorizing. Perhaps, in the
societies where the masks have large and intrusive mouths,
there has been more abrupt weaning practices, thus more
tension and discomfort associated with the loss of both
the breast and the mother's reassuring and lasting pres-
ence. Of course, the society, such as Bambara or Senoufo
does provide other women that can be depended upon to
sound and feel like mother; however, under most favorable
circumstances, this stage seems to introduce into the
psychic life a sense of division.

   One way to evaluate this hypothesis would be to
compare the statistics of the incidence of kwashiorkor as
well as documented descriptions of the weaning practices

of the various cultures. Evidence might substantiate that
the societies which had the larger and intrusive mouths on
the masks have very abrupt weaning patterns. To "make up"
for the trauma suffered during the oral stage, some socie-
ties have exaggerated the mouth, making it forcefully in-
trusive.

A second investigation that might be generated is
a study of the mask structures in relation to the housing
and marriage traditions of the societies. If young children,
particularly boys, established very close emotional ties with
the mother, augmented by housing and sleep arrangements, it
would be undoubtedly in these societies that male initiation
rites are most fearful. Boys, tested for their manhood,
very possible suffer castration anxiety. If intrusive-
mouthed masks belonged to these societies, it suggests that
the intrusive design of the mask might be at once remines-
cent of the phallus and revengeful.

Other cross-cultural research might investigate
overt aggression in societies that only have aggressive
masks and those that have only non-aggressive masks.
Representing the former category are the Sepik River cul-
tures, Hawaii, Maya and Austria. New Ireland and New
Caledonia seems to have only non-aggressive characters
portrayed in the masks. Further speculation on aggres-
sion and its displacement might show that the society with
aggressive folkloric or religious characters may be those

very societies in which aggression is not overt. That is, although this study suggests that there are genetic blueprints common to all men, there will be some cultural adaptations. Theorists, in raising the "innate versus learned" question, believed that they are mutually exclusive. They are not. Just as inborn qualities limit or enhance the learned aspects of behavior, the environmental influences limit or enhance inborn qualities. In terms of threat displays and response, activity is necessary to prevent the atrophy or disintegration of the physiological mechanisms involved. The lack of use of such primary mechanisms could possibly be explained in terms of a belief system that culturally sanctions the discharge of hostility. Spiro (1952) found that Ifaluk of Micronesia showed very little overt aggression. Circumstances necessitated the smooth operation of social processes. Aggression was not manifest between disagreeing neighbors; hostility was directed at the culpable "alus," spirits responsible for misfortune, anger, etc.

Alternative theorizing suggests that because the tonus level of the cues varies from culture to culture, men in different cultures have different arousal thresholds. For example, does a Senoufo need fewer/weaker cues than an American in order for a reaction to be elicited? Does experience and socialization modify the thresholds? How much arousal potential of a particular kind an individual will

tolerate depends not only on the level of arousal tonus, but also on how promptly and easily he has been able to assuage the aroused individual in similar past conditions. Genetic codes are modified by experience, forming engrams which regulate response patterns and appropriate timing, etc.

Conclusions

This study, in surveying the masks, puppets, and drawings, found that salient features of facial expressions underly the developmental blueprints of behavior. There are significantly more threatening signs in threatening facial displays than in non-threatening ones across cultures. Although statistical significance was not attained for all twenty items on the Facial Characteristic Scale, results seem to indicate that eighteen of those are functioning quite consistently across cultures.

These findings do not concur in all respects with Tomkins and McCarter's (1964) description of anger-rage, the most aggressive of the eight primary affects. They describe eyes as narrowed, the jaw as clenched, etc. This study suggests that although these two emotions, anger and rage, are highly negative, rage should be considered more extreme and diffuse. If the two are to be differentiated, it would explain why the affect display of anger has been described as narrowed eyes (Tomkins and McCarter, 1964),

constricted pupils (Dekert, after Plutchik, 1972), and
that rage seems to be the contrary. In any case, this
study is consistent with Tomkins and McCarter (1964) in
premise: that facial affective responses are controlled
by innate affect programs which are inherited as sub-
cortical structures which can instruct and control a
variety of muscles and glands to respond with unique pat-
terns of rate and duration of the given affect.

As these interpretations of cues for threat were
found cross-culturally, the belief of Ekman, Sorenson
and Friesen (1969) was supported; facial expression is
not entirely learned, but that, pan-culturally, there is
an association between facial muscular movements and dis-
crete primary emotions. In the case of threat (aggressive
displays), it seems that instinctive patterns are highly
appropriate and advantageous to the species. For example,
that the facial display system uses eyes to convey domi-
nance/threat/anger is consistent with animal studies of
mutual eye gaze as highly arousing (Chance, 1962), with
"culture specific" expressions in Chinese literature
(Klineberg, 1938), and with the findings of social inter-
action theorists, Argyle and Dean (1965). Perhaps, bul-
bous eyes, like the other designated facial characteris-
tics, are mechanisms, like territoriality, that seem to
be one of the primary means of stabilizing social be-
havior.

The results of this study are clear: rooted in the homeostatic cycles of societal behavior are some mechanisms which respond in the form fixed action patterns. It seems that all facial expression is not learned, and, certainly those of the most toxic nature, playing a significant role in self-preservation, are least likely to be modified by socialization. Threat/anger/rage is displayed by some unvarying cues, some of which are more potent than others. These innate releasers seem highly appropriate and pragmatic to man in terms of self-preservation. To be aware of and substantiated by research that these non-verbal patterns are panhuman and not culture-bound contributes to our knowledge of communication, especially that of disputing people/nations. Diplomacy might profit from basin itself on non-verbal cues as well as on the verbal or written word.

Thus, the hypotheses that expressive movements, especially those of the primary emotions, are learned and, therefore, culture-bound tends to lose ground. The input cues for threat seem to be fixed, unvarying patterns, which have evolved in the service of coordinating social behavior. These inborn skills are the essence of man's survival techniques. Motivation and action, in many cases, then, are evoked by a sensory motor arrangement based on a reflex mechanism.

"Every act of seeing is a visual judgment.
Human beings, with information-processing
mechanisms, perceive patterns, locations;
the tension of it has magnitude and direc-
tion. Man acts or reacts accordingly; it
is obligatory adaptive information. And,
its visual analysis does not always or
fully transfer into verbal analysis, by
reactive emotions, pleasant or unpleasant."

                    Rudolf Arnheim

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APPENDICES

APPENDIX A

SCORING RULES

FACIAL CHARACTERISTIC SCALE

APPENDIX A

SCORING RULES

Procedure: Masks will be presented by culture group and
randomized within that particular culture group. You will
quickly view the masks of each society before the scoring
begins. Also, there will be a few culture notes accompany-
ing each society. Please read them carefully and aquaint
yourself with the guidelines for that particular culture.
As a word of caution--be careful not to confuse the guide-
lines for the different cultures.

Scoring: When scoring, there will be an intermediate or
grey zone, so consider orientations. When in real doubt,
PASS and DON'T SCORE.
          To see the slides well, turn off the lights and
use the tensor lamp; often the tensor should be turned off
to make the judging accurate.
          When you can see only the side view, assume that
the same is present on the other side of the face and score
accordingly.
          There will be some marks that don't fit into a
category and are not scoreable.
          To account for "wear over time," make careful ob-
servations and score accordingly; for example, if there
are holes in the mouth because the teeth fell out, score
for teeth. If the paint is chipped on the cheek, don't
score for lines on the cheek.
          In reference to the "line on cheek" categories
(#11 and #12), remember that the word "line" does not
necessarily mean "straight." Again, consider orientation.
          To avoid underscoring (omission) and overscoring,
don't score when tired and don't score the micro-mini
lines.
          Score the facial characteristic only in one cate-
gory. For example, a line between the brows and extending
on the forehead should only be scored in one category,
either #3 or #7, but not both. Example:
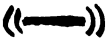
However, if the line between the brows breaks off into a
different design, then it gets scored for both categories,
#3 and #7.

In each first presentation, please try and pay close attention to the cultural norms for eyes, nose, hair and mouth. To understand or to acquaint yourself with the "norm," ask yourself, "What is big? What is small?"

FACIAL CHARACTERISTIC SCALE

Characteristic	present

1. Horns or pointed head; can include protrusions but not adornment. No strict rule that horns are on top of the head and ears on the side.

2. Wild hair. Does not conform to normal head contour or contribute to establishing the shape of the head. If hair is stringly, etc., unlike people of that culture group, score it.

3. Forehead lines that are not part of eyebrow configuration. If there is bump on forehead, score it in this category.

4. Both ears pointed. Usually ears on side of head, but often both ears and horns on top of head. If animal, ears on top; then note if they are pointed.

5. Top of the head flat. A horizontal line that cuts off normal round contour. Not a hat line. If horizontal incision cuts across head but top is still there, score.

6. Eyebrows at any other angle than horizontal straight or horizontal curved. Note if they are skewed or angled, then score:

7. Vertical line(s) between eyebrows. Can include ends of the eyebrows or top of nose up between eyebrows.

score   score   score   score   score

don't score   don't score

8. Triangular nose; flare nostrils. Judge on basis of nose proportions and width of mouth. Consider exaggeration from the norm for any particular race. Score if nostrils are expressly showing and nose is flared. A split nose is not a flared one. On animals, nostrils should be exaggerated in order to score.

9. Eyes oriented diagonally, not horizontal. If eyes are mostly horizontal or the norm is a gentle tilt, don't score.

10A. Protruding or penetrating eyes; wide and open. If eyes are bulbous, conical, raised or like a bull's eye, score. If protrudes, but is slit, score.

10B. Triangular eyes.

11. Diagonal cheek lines down and in toward mouth and nose. Score planes as well as pointed or carved lines. No smudges, circles, indistinct groups of lines or dimple lines should be scored. Don't score if line is horizontal ☺ Don't score smile lines ((—))

12. Diagonal lines between cheeks and mouth, down and away from mouth. Again, consider the general orientation and planes or painted or carved lines. Score exaggerated lines for there is a normal line from nose to mouth that does not get scored. Lines for animals get scored when they fit into the category clearly. Full cheeks don't get scored, but jowls do get scored.

13. Moustache between nose and mouth. If through time, it was lost and you can see paste marks, or holes, score.

14. Mouth in downward curve. Look at corner of mouth to determine....

15. Mouth open and showing teeth
   a) slight to normal
   b) broad, wide

16. More than one line on chin

17. Pointed chin or multiple pointed chin. Score if very wide at temple compared with a proportionally small chin. If head is long and curves in gentle roundness at chin, don't score.

18. Pointed beard.

19. Aggressive symbols on picture or mask; flames, arrows, death bones, tongue sticking straight out, horns, etc. Adornment on face, earrings, nosebones, not scored. Score fangs.

APPENDIX B

CULTURE NOTES, SOURCE AND CLASSIFICATION

CULTURE NOTES FOR SCORING THE AMERICAN DRAWINGS

1. Read all of the scoring categories carefully, especially the following: #8, #11, #14, #1, #9, #5.

2. As these are drawings, there is not a third dimension, making judgments somewhat more difficult. To know whether a line is scoreable (or not), judge it by noting contrasts within the picture. That is, different strengths were used in the drawings, and by noting deliberate heavy lines, you can judge what is just shaded or lightly drawn in order to help you understand the difference between deliberate lines and lines drawn for perspective.

AMERICAN MASKS: SOURCE AND CLASSIFICATION*

Number	Classification	Number	Classification
1	N-T	22	T
40	T	16	T
38	T	14	T
35	T	37	N-T
13	N-T	46	T
10	T	28	T
49	T	21	N-T
47	N-T	25	T
44	T	45	N-T
39	N-T	43	N-T
33	T	34	N-T
30	T	15	N-T
27	N-T	20	T
11	N-T	50	N-T
2	T	18	T
9	N-T	23	N-T
5	N-T	36	N-T
32	N-T	6	T
42	T	4	T
26	N-T	48	T
3	N-T	41	N-T
29	N-T	24	T
31	T	7	N-T
19	N-T	12	T
17	N-T	8	T

28A	T	59A	T
44A	T	54	T
53	N-T	52	T
67	N-T	22A	N-T
15A	T	13A	T
45A	N-T	38A	T
43A	N-T	14A	N-T
9A	N-T	42A	T
33A	N-T	32A	T
39A	N-T	2A	N-T
51	T	55	N-T
65	T	66	N-T
63	N-T	62	T
64	T	61	N-T
60	N-T	10A	T
16A	N-T	70	N-T
69	T	71	T
5A	N-T	72	N-T
25A	N-T	59	N-T
4A	T	24A	T
68	T	56	N-T
57	T	58	T

*Threatening (T) and non-threatening (N-T) masks are listed in the order of presentation. They are drawings of students of intermediate psychology courses at Michigan State University who were asked to draw "courship" and "war" masks.

CULTURE NOTES FOR SCORING MASKS OF CEYLON

1. The dark line under the eyes is characteristic for these masks.

2. Note general scoring rule: "In each first presentation, please try and pay close attention to the cultural norms for eyes, nose, hair and mouth. To understand or acquaint yourself with the 'norm,' ask yourself, 'What is big? What is small?'" In this case, pay attention to the eyes.

3. If it is an animal, do not score naturalistic representation of whiskers as diagonal cheek lines.

4. Review characteristic #1 on the scale: headdress is not included, and horns can be on side of head.

5. To score for characteristic #9, do note slight (diagonal)
    variation for the clear horizontal.

6. Slide #220--nose is split, not flared.
    Slide #237--bird's beak is cut off. The face is round,
    so beak does not get counted as diagonal cheek lines.

MASKS OF CEYLON: SOURCE AND CLASSIFICATION*

Number	Name	Source	Classification
215	Kumara	Lucas (a), p.43	T
238	Simha	Lucas (a), p.109	N-T
225	Demala	Lucas (a), p.67	T
222	Hetti(ya)	Lucas (a), p.61	N-T
241	Kora Sanniya	Lucas (a), p.181	T
244A	Naja	MacGowan,	T
211	King of Gr.Br.	Lucas (a), p.27	N-T
226	Vadda Raja	Lucas (a), p.71	N-T
223	Arracci	Lucas (a), p.63	N-T
240	Moon Demon	Lucas (a), p.124	T
227	Woman Peasant	Lucas (a), p.77	N-T
243	Amuku Sanniya	Lucas (a), p.184	T
218	Woman Demon	Lucas (a), p.48	T
236	Eagle	Lucas (a), p.101	N-T
239	Purnaka Yaka	Lucas (a), p.120	T
219	Rakdeviya	Lucas (a), p.51	T
237	Gurula	Lucas (a), p.103	N-T
244	Demon	Lucas (a), p.191	T
224	Marakkalaya	Lucas (a), p.65	N-T
233	Naga Dumara(ya)	Lucas (a), p.93	N-T
212	Death	Lucas (a), p.193	T
213	DevilaDancing	Riley, p.112	T
220	Hevaya	Lucas (a), p.53	N-T
232	Naga Kanya(va)	Lucas (a), p.91	N-T
214	King of Gr.Bt.	Lucas (a), p.35	N-T
242	Demon Archer	Lucas (a), p.183	T
235	Snake Demon	Lucas (a), p.97	T
217	Unhandsome Woman	Lucas (a), p.47	N-T
210	Raja, King	Lucas (a), p.25	N-T
234	Snake Demon	Lucas (a), p.96	T
216	Unhandsome Princess	Lucas (a), p.45	N-T

*Threatening (T) and non-threatening (N-T) masks are
listed in the order of presentation.

CULTURE NOTE FOR SCORING MASKS OF CHINA

1. Check mouth which is somewhat hidden by moustache. Also if there are other features that are somewhat obscured by facial structure, scoring should be done carefully.

2. As this is an oriental culture, gentle tilt of the eyes is normal.

3. Eyes will be considered on the diagonal if painting around them is on diagonal.

4. Slide #80: a monkey whose nose is realistic and whose hair is represented by many lines.
   Slide #91: there are arms which extend from the eye sockets. Do not score.

MASKS OF CHINA: SOURCE AND CLASSIFICATION*

Number	Name	Source	Classification
83	Dog	#120553	N-T
80	Monkey	120612	N-T
85	Assistent	120431	T
86	Judge, Hell 5	120406	T
88	Small Devil	120418	T
90	Small Devil	120419	T
78	Bailiff	120410	T
93	Blue Lion	12579	T
92	Nui Kin Nin	120542	N-T
91	Yang Jen		N-T
95	Ninth Arhat	120493	N-T
98	Judge, Hell 7	120430	N-T
79	Third Patriarch	120507	N-T
96	Girl	120427	N-T
89	Dragon King	120506	T
97	Judge, Hell 6	120420	N-T
87	Kang Kin Lung	120537	T
82	Dog	120549	N-T
81	Taoist Hermit	120614	N-T
94	20th Patriarch	120526	N-T
73	Little Girl	MacGowan, p.127	N-T
77	Nature Goddess	MacGowan, p.133	N-T
99	Devil Lictor	MacGowan, p.126	T
75	Dragon King	MacGowan, p.131	N-T
76	Magician	Laufer, p.14	N-T
74	Judge	MacGowan, p.129	T

*Threatening (T) and non-threatening (N-T) masks are listed in the order of presentation. With the exception of the last six, all masks are from the Blackstone collection at the Chicago Field Museum, Chicago, Illinois.

CULTURE NOTES FOR SCORING THE DAN-GUERE MASKS

1. Due to perspective of the photo, often features are obscured; for example, sometimes there are horns on the face that extend outwards.

2. The stylized cheek $\rangle$ is a triangular shape and should be scored as planes on the cheek.

3. Score characteristic #12 when slightly present.

4. Hair should get scored if it is not smooth or braided (characteristic #2).

5. A few masks have outlines faces; as these marks are not on the face, it will not be scored as cheek lines (characteristic #11 or #12).

6. Slide #296 was photographed on a textured cloth, which gives the appearance that the mask has teeth; it has none.
    Slide #301 is of two masks; both are to be scored.

MASKS OF THE DAN-GUERE: SOURCE AND CLASSIFICATION*

Number	Name	Source	Classification
310	Forest Spirit	Leuzinger, fig.39	T
297	Judge	Himmelheber, p.113	T
311	"homme mal."	Vahdenhoute, fig.17	T
302	"gentle.."	Himmelheber, p.191	N-T
308	Wart Hog	Trowell,Neverman,p.66	T
301a	Fire Mask	Detroit Art Inst.	N-T
301b	Fire Mask	Detroit Art Inst.	N-T
299	Mother Mask	Terrisse,	N-T
300	Fire Demon	Himmelheber,	N-T
315	Wart Hog	Trowell,Neverman,p.69	T
307	"Bienveillant"	Vandenhoute, fig.27	N-T
312	Forest Spirit	Terrisse,	T
313	Wart Hog	Himmelheber, p.193	T
298	Young Girl	Trowell,Neverman,p.33	N-T
309	Wart Hog	Detroit Art Inst.	T
303	Chimp Herald	Himmelheber, p.151	N-T
316	Mahogui	Bodrogi, plate 55	N-T
317A	Wart Hog	Detroit Art Inst.	T
295	Mother Mask	Leuzinger, plate 16	N-T
296	Fire Mask	Himmelheber, p.19067	N-T
304	Crocodile	Himmelheber, p.149	N-T

317	Kagle Mask	Bodrogi, plate 59	T
314	Wart Hog	Trowell,Neverman,p.67	T
305	Wart Hog	Stevenson	T
306	Wart Hog	Stevenson	T

*Threatening (T) and non-threatening (N-T) masks are listed in the order of presentation.

CULTURE NOTES FOR SCORING KWAKIUTL MASKS

1. In this culture, there is a snake motif, "sisiutl," which should be scored as a threatening symbol (#19) when it is present. It is on slides #291 and #271.

2. There is often double or triple masks; score the inside as it probably represents the "inner self" of the character. By the same principle, "wild hair" (#2) which is the rafia should not be scored because it is attached to the outer masks.

3. Please disregard the "masking effect" altogether; it is a special motif.

4. If it is an animal mask, turn it "upright" in order to score it as a face.

5. Please note variance in eyes of masks.

KWAKIUTL MASKS: SOURCE AND CLASSIFICATION*

Number	Name	Source	Classification
266A	Noohlmahl	Hawthorn, fig.118,left	T
277	Bullhedd...	Waite, p.271	N-T
250	Spruce Tree	Hawthorn, gif.134	N-T
268	Bookwus	Hawthorn, fig.413,left	T
280	Ia'kim	Waite, p.274	T
253	Door	Hawthorn, fig.141	N-T
269	Numal	Inverarity,plate 92	T
283	Thunderbird	Waite, p.277	N-T
252	Sneezer	Hawthorn, fig.142,top	N-T
256	Speaker	Hawthorn, fig.427	N-T
254	Sleeper	Hawthorn, fig.144,top	N-T
286	Eagle-Human	Waite, p.280	N-T
271	Sisiutl	Hawthorn, fig.128	T

260	Squirrel	Hawthorn, fig.368,right	N-T
292	Earthquake	Dockstader,plate 90	T
249	Tree Stump	Hawthorn, fig.133	N-T
259	Echo	Hawthorn, fig.409	N-T
262	NoNlemgila	Boas,	N-T
267	Earthquake	Hawthorn, fig.406	T
263	Komokwa	Hawthorn,plate XX	N-T
288	Bookwus	Hawthorn, fig.412	T
273	Tsonqukwa	Hawthorn, fig.145	T
257	Speaker	Hawthorn, fig.430,right	N-T
289	Deer	Waite, p.282	T
279	"Born to be.."	Waite, p.273	N-T
248	Buffoon	Hawthorn, fig.131	N-T
265	Sisiutl	Hawthorn, fig.126(b.l.)	T
291	Thunderbird	Waite, p.283	T

*Threatening (T) and non-threatening (N-T) masks are listed in the order of presentation.

CULTURE NOTES FOR SCORING JAPANESE PUPPET HEADS

1. Slides #188 and 208 have moveable mouth pieces.

2. Slide #169 is very worn; score only the standard things that were there before.

3. Note the standard eye; a tilted eye (#9) is scored when a deliberate attempt has been made to put the eyes on the diagonal.

4. Slide #165: score puppet, not man in picture.

5. Note conventional hairdo; variation from this is stringly, wild. If "do" is not conventional and is such that it gives the "functional equivalent" of a horn, score in characteristic #1. Also, there are two children whose hair is not in the fashionable "do" (slides #205, 206); they should not be scored as having wild hair.

PUPPET HEADS OF THE JAPANESE BUNRAKU THEATER: SOURCE AND CLASSIFICATION*

Number	Name	Classification
208	Comic Male	N-T
183	Evil Young Male	N-T
186	Male Clown	N-T
174	Kintoki	N-T
200	Gabu	T
205	Male Child	N-T
163	Osono	N-T
178	Young Female	N-T
177	Bunshichi	N-T
165	Yashio, villainess	N-T
181	Young Male	N-T
201	Lady Stage of Gabu	N-T
196	Beautiful Courtesian	N-T
184	Komei head; middle age male	N-T
206	Female Child	N-T
182	Young Male	N-T
187	Evil Young Male	T
207	Comic Male Servant	N-T
185	Young Male	N-T
170	Ibaragi Doji	T
167	Abe Muneto	T
175	Wakaotoko	N-T
180	Waka-otoko Young Male	N-T
199	Ofuku Female Clown	N-T
209	Comic Nun	N-T
168	Mitsuhide	T
179	Evil Middle Aged Male	T
195	Middle Age Female	N-T
203	Female	N-T
173	Oadi	N-T
202	Kagekiyo	T
197	Evil Middle Aged Female	T
204	Male	N-T
162	Bunshichi	N-T
166	Abe Sadato	T
164	Yugiri	N-T
176	Kaminari	T
169	Ohana	N-T

*Threatening (T) and non-threatening (N-T) puppet heads are listed in order of presentation. All are from Bunraku, by T. Ando.

CULTURE NOTES FOR THE MASKS OF JAVA

1. Gentle tilt of the eyes is characteristic and does not get scored.

2. Do not score string by which mask #159 hangs as a horn.

3. Do not score characteristic squiggles on ends of eyebrows.

4. Take note that chipped paint is not scored for lines on forehead or cheek (Characteristic #3, 11 or 12).

5. Often it is evident that a mask has lost its moustache; there are marks or holes by which the moustache was attached. If there are such marks, score for moustache, for it was originally present.

6. Beards are often portrayed as small triangular designs on chin.

JAVANESE MASKS: SOURCE AND CLASSIFICATION*

Number	Name	Classification
137	Uchaningrat Prepuwan	N-T
140	Dewi Kili Suchi	N-T
142	Poroyogi	N-T
118	Boma	T
125	Buta	T
127	Demon	T
117	Mandura	T
146	Rondasembadel	N-T
139	Resopati	N-T
101	Arjuna	N-T
107	Basu Dewa	N-T
126	Botohakel	T
121	Jugi	T
150	Braja Nata	T
131	Panjii	N-T
108	Semar	N-T
103	Seta	N-T
109	Prabu	N-T
154	Botomachan	T
123	Rotoden Nawa	T
136	Samba	N-T
157	Botochawet	T
147	Derwati	N-T
148	Klonomodo	T
156	Botogede	T

129	Gunungsan	N-T
158	Demon	T
135	Batu Singusari	N-T
110	Aradara	T
134	Kochorantunan	N-T
160	Demon	T
138	Resobagu	N-T
155	Kechek	T
122	Togog	T
151	Tumemgguna Jaksanegasa	T
124	Rakshasa	T
111	Anta Raja	T
141	Ratu Kediri	N-T
152	Sembung Langu	T
115	Dorna	T
102	Abimanyu	N-T
149	Klonochowa	T
119	Javajatra	T
120	Juwaliti	T
161	Lojuna	N-T
105	Derma Kusuma	N-T
145	Sekarachachi	N-T
113	Prabu Ngastina Duryudana	T
143	Legagang	N-T
132	Serak	N-T
100	Ketek Anoman	T
130	Ragil Kuning	N-T
116	Sengkuni	T
159	noble character	N-T
106	Awangga	N-T
128	Gunung San	N-T
112	Gatutkacha	T
104	Gambiraninom Raja	N-T
153	Ajar	T
133	Ragil Kuning	N-T

*Threatening (T) and non-threatening (N-T) masks are listed in order of presentation. With four exceptions, all masks are from a collection of the Chicago Field Museum, Chicago, Illinois. The exceptions are as follows:

#158	-Riley,
159	-Wagner, p. 169-73
160	-Wagner, p. 169-73
161	-Utzinger,

CULTURE NOTES FOR SCORING SENOUFO MASKS

1. This characteristic design on the sides of many masks shall be ignored for scoring purposes.

2. There is a top-knot that can be mistaken for a horn; it is not a horn, but a female hairdo and commonly used in female representations.

3. Reminder: According to the scoring rules, diagonal lines on the cheeks should have a diagonal orientation.

         don't score   do score

4. In female representations there is a labaret in the bottom lip; it is not a beard, nor could it be considered as chin lines.

5. To score for horns (#1), the horns must come out of head, not be a part of the cap or headgear.

6. Angle of many of the photo is often misleading. Score carefully.

7. Of the sample, only the first five are slides; the rest are from R. Goldwater's Senoufo. The scoring is, then, in large part from the book.

SENOUFO MASKS: SOURCE AND CLASSIFICATION*

Number	Name	Classification
374	Kagba	T
373	Fertility mask	N-T
Plate 80	Deguele	T
371	Kagba	T
361	Kpelie	T
Plate 26	Kpelie	T
Plate 27	Kpelie	T
Plate 23	Kpelie	T
Plate 25	Kpelie	T
Plate 29	Kpelie	T
Plate 31	Kpelie	T
Plate 39	Kpelie	T
Plate 42	Kpelie	T
Plate 48	Kpelie	T

Plate 50	Kpelie	T
Plate 51	Firespitter	T
Plate 52	Firespitter	T
Plate 53	Firespitter	T
Plate 54	Firespitter	T
Plate 55	Korbula	T
Plate 56a	Korbula	T
Plate 58	Firespitter	T
Plate 59	Firespitter	T
Plate 61	Korbula	T
Plate 62	Korbula	T
Plate 68a	Firespitter	T
Plate 81	Deguele	T
Plate 85	Female Rhythm Pounder	N-T
Plate 86a	Female Rhythm Pounder	N-T
Plate 88a	Female Rhythm Pounder	N-T
Plate 92	Female Rhythm Pounder	N-T
Plate 134a	Seated Female	N-T
Plate 185	Seated Female	N-T
Plate 182a	Standing Female	N-T
Plate 182b	Standing Female	N-T
Plate 182c	Standing Female	N-T
Plate 49	Kpelie	T
Plate 93	Standing Female	N-T
Plate 93a	Female Rhythm Pounder	N-T
Plate 97	Seated Female	N-T
Plate 111	Standing Female	N-T
Plate 122	Standing Female	N-T
Plate 166	Female Head	N-T

*Threatening (T) and non-threatening (N-T) masks are listed in order of presentation. Total sample is taken from Senoufo by R. Goldwater.

CULTURE NOTES FOR SCORING MASKS OF THE MIXED SAMPLE

Bakwelé

Bambara

1. Slide #359 is old and worn.
   Slide #351 has no teeth.

Bapendé

1. Do not score rafia as "wild hair" (#2). Many of the masks you score use rafia as part of the sotume; however, it was not uniformly presented.

2. Slides #403 and 402 are wearing hats.
Slides #402 and 404 have a long dotted part under the chin that ethnographic reports describe as a beard. White lines outline this design and are not cheek lines.

Gouro

1. Slide #400 has a top-knot of hair.

Hawaii

Middle Europe

1. Slide #417 contains two masks; score the left one then the right one.
Slide #418 has a raised plane for a cheek; score it by the right side, as the left is obscured.
Slide #432: consider the forehead lines behind the horns.
Slide #433 is an old mask, so bristles should be scored as wild hair.

Tibet

1. In reivew, note differences between large and small eyes.

2. Slide #435 has a hair motif around the mouth which is the same as the raised texture of the eyebrows. Consider it a moustache. Same for slide #437.

Tlinget

MIXED SAMPLE OF MASKS: SOURCE AND CLASSIFICATION*

Number	Name	Source	Classification
Bakwelé			
413	"fierce"	Mus.Prim.Art,plate 71a	T
416	"play"	Trowell,Neverman,p.46	N-T

Bambara

352	Koteba	Musée à Bamako	N-T
349	Koré	Musée Nationale des Africains et Oceaniens	N-T
355	Koré Monkey	Musée à Bamako	N-T
354	Koré	Musée à Bamako	N-T
359	N'Tomo	Musée à Bamako	N-T
353	Koteba	Musée à Bamako	N-T
357	N'Tomo	Musée à Bamako	N-T
351	Koré	Leuzinger, plate 4b	N-T
356	Koteba	Musee a Bamako	N-T

Bapendé

402	pumbu	Bodrogi, p.158	N-T
403	vieille coquette	Delange, fig. 143	N-T
404	mbuyu	Delange, fig. 145	N-T
405	epileptique	Delange, fig. 144	N-T
406	antelope	Himmelheber, p.254	T
407	antelope	Himmelheber, p.253	T

Baulé

380	goli	Trowell,Neverman, p.43	T
383	woman	Sadler, plate XV	N-T
381	goli	Trowell, Neverman, p.43	T
384	woman	Delange, plate 60	N-T
378	spirit of dead	Det. Art Instit.	T
377	spirit of dead	Leuzinger, plate 18	T

Gouro

400	ancestor	Himmelheber, p.225	N-T
401A	zlan (war)	Himmelheber, p.200	T

Hawaii

409	Ku	Malraux,Salles,plate 392	T

Middle Europe

417a	devil	Schmidt, plate I	T
417b	devil	Schmidt, plate I	T
418	devil	Schmidt, fig. 3	T
419	tax collect.	Schmidt, fig. 21	T
420	tax collect.	Schmidt, fig. 22	T
421	tax collect.	Schmidt, fig. 23	T
422	tax collect.	Schmidt, fig. 27	T
423	tax collect.	Schmidt, fig. 28	T
425	tax collect.	Schmidt, fig. 30	T
426	fertility	Schmidt, fig. 32	N-T
430	demon	MacGowan, p.71	T
431	demon	World of Man, p.28	T
432	demon	World of Man, p.30	T
433	demon	MacGowan, p.73	T

Mortlock
  412   "benevolent"   Trowell,Neverman, p.244   N-T

Tibet
  434   God of Wealth   Lucas (b), plate 41   N-T
  435   God of War   Lucas (b), plate 50   T
  436   Teacher   Lucas (b), plate 5   N-T
  437   Tschamaske   Lucas (b), plate 25   N-T

Tlinget
  388   portrait   Inverarity   N-T
  386   shaman's   Inverarity   T
  390   war   MacGowan   T
  389   dead man   Inverarity   N-T

*Threatening (T) and non-threatening (N-T) masks are listed in the order of presentation.