

CAPTURING EMOTIONAL EVENTS

York H. Gunther

Assistant Professor, Mahidol University International College, york.gun@mahidol.ac.th THAILAND

Abstract

In the last half century, the study of emotions has been largely in the grip of a static paradigm. Moved initially by the work of Darwin and further entrenched by the efforts of Paul Ekman and his collaborators, theses and theories have tended to be founded on fixed facial expressions, which infer that emotions are static states rather than dynamic events. It is this claim that I investigate and question. I begin by briefly reviewing the context and assumptions that guided Duchenne and Darwin in their use of photography. While innovative scientifically, the photographs of the period were far from instantaneous as the exposure time of photosensitive film was still 10s of seconds in length. As such, the emotional expressions depicted were either self-conscious poses or utter feats of theatricality. While Darwin, it seems, did the best he could with the technology of his day, it remains puzzling to see Ekman and others accepting Darwin's methodology and in turn his static paradigm so faithfully (e.g. in spite of the fact that moving picture technology has been available since the 1890s). After briefly reviewing possible reasons for this, I conclude the paper by offering an alternative methodology and possible model of the emotions. While facial expressions as "expressive events" remain a component to this model, they are but one of several dynamic modalities that need to be identified and recorded. Others may include body postures, behavioral patterns, vocal expressions, and various internal processes in addition to the setting (including other subjects) in which the experience is undergone. Ultimately, I claim that the capturing of an emotional event should look more like a full-fledged Hollywood blockbuster movie involving teams of contributors rather than a single mute photograph taken by an individual.

Keywords: emotion, mental events, mind, psychology, photography, film, Darwin, Ekman

MAIN TEXT

In the last half century, the study of emotions has been largely in the grip of a static paradigm. Moved initially by the work of Darwin and further entrenched by the efforts of Paul Ekman and his collaborators, theses and theories have tended to be founded on fixed facial expressions, which infer that emotions are static states rather than dynamic events. It is this claim that I investigate and question. I begin by briefly reviewing the context and assumptions that guided Duchenne and Darwin in their use of photography. While innovative scientifically, the photographs of the period were far from instantaneous as the exposure time of photosensitive film was still 10s of seconds in length. As such, the emotional expressions depicted were either self-conscious poses or utter feats of theatricality. While Darwin, it seems, did the best he could with the technology of his day, it remains puzzling to see Ekman and others accepting Darwin's methodology and in turn his static paradigm so faithfully (e.g. in spite of the fact that moving picture technology has been available since the 1890s). After briefly reviewing possible reasons for this, I conclude the paper by offering an alternative methodology and possible model of the emotions. While facial expressions as "expressive events" remain a component to this model, they are but one of several dynamic modalities that need to be identified and recorded. Others may include body postures, behavioral patterns, vocal expressions, and various internal processes in addition to the setting (including other subjects) in which the experience is undergone. Ultimately, I claim that the capturing of an emotional event should look more like a full-fledged Hollywood blockbuster movie involving teams of contributors rather than a single mute photograph taken by an individual.

Before considering the work of Duchenne and Darwin, let me say a word about what I take emotions paradigmatically to be. To begin with, emotions have an evaluative character or 'valence'. For example, unlike a belief or desire which unto itself is neither positive nor negative, an emotion has valence, e.g. love

and happiness are unto themselves positive, while fear and anger are negative. Another way we might put this is to say that emotions serve to evaluate the world in some sense. Thus, emotions can also be said to be *about* something (that which they evaluate), i.e. they have 'intentionality'. When I experience fear, e.g., my fear is *about* my falling off of a tall building or my happiness is *about* my having landed a good job. There may be other experiences such as moods or bodily sensations that resemble emotions in having an evaluative character, but without having intentionality they are not instances of what I consider to be emotions.

But there is another characteristic of emotions that I'd like to emphasize. Some researchers have identified mental phenomena that occur in a fraction of a second as emotions. Such researchers, working squarely in the Jamesian tradition, attempt to identify brief, preconscious and precognitive "disturbances" with emotions (Solomon 2003, p. 2). For example, in his discussion of mere exposure effects, Robert Zajonc identifies the "affective reactions" that result from brief, repetitive exposure to visual or auditory stimuli with emotions: "liking, disliking, preference, evaluation, or the experience of pleasure or displeasure (Zajonc 1980, p. 151; see also 1984). Even though these affective reactions do have both an evaluative and intentional character, they lack the robustness of mental phenomena we generally regard as emotions, e.g. love, happiness, fear and anger. More recently in the work of Joseph LeDoux and Antonio Damasio, we find similar processes lasting for roughly 100s of milliseconds that are identified with emotions (e.g. Le Doux 1996, Damasio, 2003). For example, there may be instances of 'fear', whose source can be traced to the amygdala, which occur so quickly that a person neither thinks nor is conscious of having the fear (or, where the thoughts or feelings are merely affect-effects that are inessential to the emotion).

While such phenomena are certainly interesting and possibly relevant to the study of emotion, I follow Robert Solomon in claiming that, paradigmatically, emotions are the kinds of phenomena that occur over minutes and perhaps hours and days rather than mere milliseconds (Solomon 2003, p. 2). This observation is consistent with the emotions philosophers and psychologists have identified as "basic", e.g. happiness, fear, anger, sadness, disgust, contempt, and surprise (to recite one such list). (It's worth mentioning that surprise when understood as a sudden startle-response is more akin to the phenomena described by Zajonc, LeDoux and Damasio and thus not one that concern me here.) Of course, my interest in these emotions is as paradigmatic examples of the kind of phenomena that concerns me here *not* necessarily with the question of whether they are universal, cross-cultural mental phenomena that have evolved through natural selection.

If, then, we can agree that emotions are evaluative and intentional events that occur over minutes and hours rather than milliseconds, it is curious to observe how researchers have relied on photography in studying emotions and their expression. Among the first to do this were Guillaume Duchenne (de Boulogne) in *The Mechanism of Human Physiognomy* (1862) and Charles Darwin in *The Expression of Emotions in Man and Animals* (1872). Duchenne attempted to understand how the muscles in the face create the facial expressions of typical emotions such as terror, love, fear, joy and devotion. Using electrical probes, he triggered various muscles in the face of his subject and recorded these sometimes freakish expressions with a camera, a relatively new invention at the time. Darwin, for reasons relating to his theory of evolution, attempted to show genetically determined behaviour and facial expressions relating to specific emotions both in animals and humans. Both sketches and photographs were included in *Expression* and sometimes even arranged like a Victorian photo album. (In fact, Darwin corresponded with Duchenne for a time and included some of Duchenne's own photographs in his book.) What is evident from many early photographers, who were often themselves inventors and scientists, is that photographs (and later movies) were considered to be accurate and neutral ways of capturing reality *as it is*. Thus, photographs were regarded as novel ways of collecting scientific data, which was surely the reason Duchenne and Darwin included them in their work.

While this use of photography was ground-breaking, it's noteworthy that there was something quite contrived about it. During the 1800s the exposure time required to capture an image on photochemical plates had been rapidly decreasing, from Niepce's "View from the Window at Le Gras (c1826) which had an exposure time of 8 hours, to Daguerre's "Boulevard du Temple" which required roughly ten minutes of exposure, to the photographs of Talbot in the 1840-50s which required but 1-2 minutes. By the 1860-70s exposure time had been further decreased but still required "tens of seconds" (Prodger 1998, p. 156). As such, the subjects of these photographs had to remain motionless for tens of seconds if the image was to be sharp (and thereby useful for the purposes of Duchenne and Darwin). As such, the subjects were quite self-consciously posing for the photographs resulting in expressions that seem artificial, conventional, exaggerated and theatrical (Leys 2010, p. 71). Ironically, then, the use of photographs to capture more realistic and natural images was undermined by the limitations of medium itself. It would not be until the late 1870s, with the invention of dry plates with gelatin emulsion (faster photosensitive plates), that exposure times would be reduced to millisecond, making not only "instantaneous" photographs possible but eventually

"movies".

Inspired by the work of Duchenne and Darwin, as well as the theoretical psychologist Silvan Thomkins, Ekman returned to the study of emotion through facial expression. Since Darwin, the emotions had been studied by James and others as the *experience* of autonomic arousal, by the psychoanalysts as *internal drives* and by behaviorists as features of motivation that instill (or that simply are) patterns of behavior. But the photographed face during the first half of the twentieth century had not, in spite of numerous brief histories to the contrary, been entirely neglected (Ekman 1972; Russell 1994, pp. 103-105; Cornelius 1996, p. 31). For example, Antoinette Feleky (1914) published a study in which she presented 100 people with photographs of a subject posing 86 different emotional expressions. (Other studies include Langfield 1918, Fernberger 1928, Woodworth 1938, and Munn 1940) But, it was certainly Ekman and his now famous study of the Fore tribe of New Guinea that brought photography of facial expressions back front and center (Ekman 1969). In that and numerous later studies, Ekman had intended to show that "universals are to be found in the relationship between distinctive patterns of the facial muscles and particular emotions (happiness, sadness, anger, fear, surprise, disgust, interest)", in that not only a subject *encodes* a specific emotion through a specific facial expression (all things being equal), but that an interpreter *decodes* that a specific expression indicates the presence of a specific emotion (Ekman and Friesen 1971, p. 124). Members of the preliterate Fore tribe, who had minimal or no contact with outsiders, were told stories meant to evoke certain emotions. For example, "His (her) friends have come, and he (she) is happy" or "His (her) child (mother) has died, and he (she) feels very sad." They were then presented with 3 photographs, each of which depicted a subject with a different facial expression, and asked to chose the photograph most appropriate to the story. Ekman discovered a high degree of correlation between the story told and the facial expression chosen, from which he concluded that there is a universal one-to-one correlation between certain facial expressions and emotions.

While this and subsequent studies have been influential, they have been criticized on a number grounds, which have steadily been mounting. First, because the researchers relied on translators to convey their questions and stories, it has been suggested that the translator may have had an influence on the subjects responses. For example, Richard Sorenson who was with Ekman during these studies, explained that the Fore would have regarded an exchange of information between the translator and subject as an instance of "cooperative interaction among close associates" rather than "cheating" (Sorenson 1976, p. 140). This seems especially plausible, given that the experiment would have most likely been interpreted by the translator and subject as a *test*, one with a single correct answer. In fact, forcing the subjects to choose *one and only one* of three photographs would surely have suggested this to the translator and subject. And moreover, to embed the emotion word "happy" or "sad" is question-begging. It has therefore been suggested that such "priming" and "forced choice formats" skewed results (Russell 1994, Barrett 2006a). In fact, in studies where such priming was diminished and force choices eliminated, the results fall precipitously. In a recent study of the Himba, a remote tribe in Namibia, Maria Gendron attempted to reproduce Ekman's original study but without the special words or context-rich stories that Ekman had used. Subjects were asked to sort photos of six people making six facial expressions. If emotional expressions are universally correlated with discrete basic emotions, it was expected that the photos would be arranged into six piles -- they were not. Subjects created many more than six piles and very few of the subjects used emotional words to describe them. The same photo would in some cases be labeled as "happy", "laughing" or "wonder" (Gendron et. al. 2014a). Note that one pile categorizes the expressions as an emotion, another as behavior, and another as possibly an emotion or cognitive state.

This raises a related problem. The Fore study is meant to show the correlation between an emotional expression (its encoding and decoding) and a corresponding emotion. The problem is that subjects may not be considering what *emotion* they'd experience in a certain scenario, but rather what they would *do* in a certain scenario. As James Russell explains

Imagine you are the subject in this experiment and that you know nothing about emotions. You are told the "anger" story concerning a protagonist about to fight. You might reasonably select the face with glaring eyes and set jaw.... You are told a "fear" story concerning someone who sees a dangerous wild pig. You might reasonably pick a face that is tense, or where the eyes are staring, or where the mouth appears about to yell. With the data available, it is impossible to disentangle face-emotion knowledge from face-situation knowledge. Conceivably, the results might have little or nothing to do with emotion per se. (Russell 1994, p. 127)

In other words, it is question-begging to assume that the Fore have chosen a photograph because it reveals an emotion rather than merely an expression or behavior. The emotion/expression link is what the study is

meant to establish. Instead, it seems to be what the researchers have assumed. "We Westerners find it plausible to suppose that the Fore think in terms of happiness, disgust, and other emotions, but the purpose of the study was to gather evidence on this question" (*ibid.*, p. 128).

Among the most curious aspects about Ekman's studies is his continued reliance on photographs, a fact that remains true of many researchers who study emotion through facial expression. As I mentioned earlier, Duchenne and Darwin likely used photographs because they seemed to capture the world as it is (unlike paintings or sketches). But, given the slow exposure times, subjects were forced to hold posed expressions to a camera for tens of seconds. By the 1960s, when Ekman had begun his studies on emotion, this was no longer a problem as exposure times had become "instantaneous". But, as Russell and others have observed, the photographs used by Ekman and others were often of posed expressions (*ibid.*). Why? Believing that spontaneous or candid (un-posed) expressions were often contaminated culturally, with Tomkins "Ekman preselected photographs of posed expressions that he theorized were *already free* of cultural influence" (Leys 2010, p. 75). Now this obviously raises several important questions, the first of which is, How do Ekman and Tomkins know *a priori* which expressions are free of cultural contamination, especially if spontaneous expressions are generally *tainted*?

One response Ekman offers is to suggest that in solitude we somehow cleanse ourselves of all the display rules that generally taint the purity of our emotional expressions and that "*posed expressions in their very caricatural intensity are among the best examples we have of what we look like if we were entirely alone*" (*ibid.*, p. 77 [emphasis in original]). To this Leys expresses utter bafflement: "How this is supposed to work is a mystery; it's as if Ekman imagined that the poser ordinarily follows a set of explicit rules and conventions about how he or she is meant to act but is able to suspend these at will when asked to do so!" (*ibid.*). In an altogether different response, one that Leys suggests side-steps the issue, Ekman claims that, as long as certain safeguards are heeded, a posed expression is methodologically justifiable. For example, as long as "highly extroverted" individuals or professional actors aren't used, the problem of posing wasn't a real problem. Neither response is very convincing!

These and related issues have led critics to dismiss the Fore studies as well as others based on their lack of "ecological validity". "Preselected, posed facial expressions, forced-choice response format, within-subject design, and lack of contextual information are potential challenges to ecological validity" (Russell 1994, p. 130). In other words, the circumstances for an individual's experiencing an emotion (encoding) and her judging what emotion others experience (decoding) are wholly artificial. But, this problem of artificiality goes further. If emotions, paradigmatically, are events that occur over minutes and hours rather than in the blink of an eye (i.e. 100s of milliseconds), then shouldn't the Fore and anyone else involved in a cross-cultural study of emotion be asked to view movies of expressions as they emerge and develop over minutes and hours? I find it counterintuitive that the so-called seven basic emotions are represented through static photographs rather than dynamic movies. Unlike Duchenne and Darwin, Ekman has had the recording and display technology available to do just this. Granted, the publication of findings in conventional journals and books hasn't until recently allowed for the display of movies of such dynamic expressions -- but this limitation had also been removed with recent technological developments in digital media, e.g. online journals and digital books.

The use of movies in the study of emotion is not without its complexities. While early scientists may have regarded photography and movies as accurate and neutral ways of capturing reality *as it really is*, as the media has developed it's become obvious to photographers, film makers, critics and thoughtful viewers that there are many choices involved in taking a photograph or making a movie. In addition to an individual's facial expression, complexities such as camera distance, height and angle, lens type, setting, composition, lighting and film stock are among the factors that influence what viewers see and they interpret it. Moreover, the viewer's own background as well as her immediate context and even what film theorists call the movie's "symptomatic meaning" would have to be considered. This may no longer sound like science, but if media such as photographs or film are used in psychology, they cannot be ignored, as the burgeoning discipline of photo-psychology emphasizes.

This leads me to one of the great advantages of film. While focusing on facial expressions is well justified in the study of emotion, emotions are associated with numerous other characteristics including body postures, patterns of behavior or body language and vocalizations (non-verbal and verbal). Just as film is well-suited to capture the dynamic character of facial expressions, it is likely able to capture postures and patterns of behavior as well as vocalizations. In fact, relatively little work has been done on considering the interaction of these varied of 'emotional outputs' (Russell et al., 2003). Again, film seems well placed to help us to understand just when and perhaps how these features interact (or even whether it's at all appropriate to regard them as 'outputs' in the first place). In fact, the combination of mainstream film equipment with devices that allow us to see inside human beings can lead to a deeper understanding of just how these

processes interact with and effect one another during emotional experiences. And with the advance of technology, it may be possible to capture this symphony of an emotional event in increasingly subtle and ecologically valid ways. Far more needs to be said about implementing these techniques. I hope for now just to have started the conversation.

REFERENCE LIST

- Barrett, L. (2006a). Are Emotions Natural Kinds? *Perspectives on Psychological Science*, 1 (1).
- Barrett, L. (2006b). Solving the Emotion Paradox: Categorization and the Experience of Emotion. *Personality and Social*, 10 (1).
- Cornelius, R. (1996). *The Science of Emotion*. Upper Saddle River, New Jersey: Prentice Hall.
- Damasio, A. (2003). *Looking for Spinoza: Joy, Sorrow and the Feeling Brain*. New York: Harcourt, Inc.
- Darwin, C. (1872). *The Expression of Emotions in Man and Animals*. London: John Murray.
- Duchenne de Boulogne, G. (1862). *Mécanisme de la Physiologie Humaine*. Paris: J.B. Baillière.
- Ekman, P., Sorenson, E. R., & Friesen, W. V. (1969). Pan-Cultural Elements in Facial Displays of Emotions. *Science*, 164.
- Ekman, P., & Friesen, W. (1971). Constants Across Cultures in the Face and Emotion. *Journal of Personality and Social Psychology* 17 (2).
- Ekman, P. 1972. *Emotion in the Human Face: Guidelines for Research and an Integration of Finding*. Oxford: Pergmon Press.
- Feleky, A. (1914). The Expression of the Emotions. *Psychological Review*, 21.
- Fernberger, S. W. (1928). False Suggestion and the Piderit Model. *American Journal of Psychology*, 40.
- Gendron, M., Roberson, D., van der Vyver, J. M., & Barrett, L.F. (2014a). Perceptions of emotion from facial expressions are not culturally universal: Evidence from a remote culture. *Emotion*, 14 (2).
- Gendron, M., Roberson, D., van der Vyver, J. M., & Barrett, L.F. (2014b). Cultural Relativity in Perceiving Emotion From Vocalizations. *Psychological Science*, 25 (4).
- Langsfield, H. S. (1918). The Judgment of Emotions from Facial Expressions. *The Journal of Abnormal and Social Psychology*, 13.
- Le Doux, J. (1996). *The Emotional Brain*. New York: A Touchstone Book.
- Leys, R. (2010). How Did Fear Become a Scientific Object and What Kind of Object Is It? *Representations*, 110.
- Munn, N. L. (1940). The Effect of Knowledge of the Situation Upon Judgment of Emotion from Facial Expression. *Journal of Abnormal and Social Psychology*, 35
- Prodger, P. (1998). Illustration as Strategy in Charles Darwin's 'The Expression of the Emotions in Man and Animals', *Inscribing Science: Scientific Texts and the Materiality of Communication*
- Russell, J. (1994). Is There Universal Recognition of Emotion From Facial Expression? A Review of the Cross-Cultural Studies. *Psychological Bulletin*, 115 (1).
- Russell, J., Bachorowski, J., & Fernandez-Dols, J. (2003). Facial and Vocal Expressions of Emotion. *Annual Review of Psychology*, 54.
- Solomon, R. (2003). Emotions, Thoughts and Feelings: What is a 'Cognitive Theory' of the Emotions and Does it Neglect Affectivity? In A. Hatzimoyisis, (ed.), *Philosophy and the Emotions*. Cambridge: Cambridge University Press.
- Sorenson, E. R. (1976). *The Edge of the Forest: Land, Childhood and Change in a New Guinea Protoagricultural Society*. Washington, D.C.: Smithsonian Institution Press.
- Woodsworth, R. S. (1938). *Experimental Psychology*. New York: Holt.
- Zajonc, R. (1980). Feeling and Thinking: Preferences Need No Inferences. *American Psychologist*, 35.
- Zajonc, R. (1984). On the Primacy of Affect. *American Psychologist*, 39.