

# **Between universal and local: Towards an evolutionary anthropology of emotions**

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## **Abstract**

Since the days of Darwin, emotion has widely been regarded as a fundamental contribution to natural selection for its benefit toward survival. The evolutionary approach drove Paul Ekman's ground-breaking yet controversial research on the Fore tribe of New Guinea. Ekman concluded that there are six emotions that are expressed by all human beings. His universalist view contrasts with those of many anthropologists, such as Margaret Mead and Gregory Bateson, who regard emotion as foremost socially-learned and ascribable almost exclusively to the realm of culture. A marriage between universalism and culturalism has been proposed, giving rise to the new field of study known as neuroanthropology, suggesting the importance of the emotions in the embodiment of socio-cultural factors.

**KEYWORDS:** emotions, evolution, cultural transmission, inner state, embodiment

## **Introduction**

Humans have an emotional sphere continuously interacting with the environment and the events that daily follow one another and that depend, in part, on emotionally-directed actions. Studies on the origin of emotions have come about through collaborations of such disciplines as psychology, neuroscience, and anthropology. Whatever the approaches and the methods of investigation, research on emotions has been marked by mishaps, progress, and pitfalls. This is due in large part to the crucial yet formidable leap from the experience of daily emotional experience to an analytical understanding of the emotional processes at work. It is easier to describe our state of mind than to understand how we feel specific emotions and to derive their origin. Such a scientific comprehension would illuminate

ANTHROPOLOGICAL NOTEBOOKS 22 (2): 31–42.

ISSN 1408-032X

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our understanding of the most intimate and elusive mechanisms of the mind, yet even the most dedicated scientists fail to agree on the very definition of emotion (LeDoux 1998).

In his *Descent of Man*, Charles Darwin (1871) explains the importance of understanding the nature of man's higher faculties, highlighting the value of scientific knowledge in this area. Not until the 1960s, however, did neurologists and psychologists, together with biologists and anthropologists involved in the cognitive sciences, recognise the higher functions of human consciousness, language, and emotion as essential mechanisms for the species and its survival. In this way, emotion is regarded as a valuable feature of natural selection, regarded not as merely a secondary addition to an already successful species, but almost as an organ within, essential for survival (Sobrero 2008). Robert Levenson (1999) defines emotions as short-duration psychological and physiological phenomena that represent efficient ways to adapt to environmental changes. The psychological component is constituted by the externalisation of emotions and in the adjustment of the response. The physiological component, in contrast, is the involvement of the central and autonomic nervous systems (Matsumoto and Sung-Hwang 2012).

Prior to the publication of Darwin's *Origin of Species*, the concept of adaptation had been introduced in the course of evolutionary thought and had provided the opportunity for a new and evolutionary interpretation of the relationship between behaviour and physiology (Pievani & Serrelli 2011). Natural selection's involvement in shaping both the phenotype and the physiology of organisms provides the basis of the concept that emotions are adaptive responses. Jean Baptiste Lamarck predicted an adaptive role for emotions and considered them to be physiological and behavioural processes linked to the survival of the species. Based on these predictions, he looked for a link between adaptation and emotions, believing that emotions were means through which the animals could be made aware of specific needs or could decide to escape danger. Herbert Spencer, inspired by Lamarckian thought, associated biological evolution with the origin of certain psychological aspects involved in behavioural adaptations to the environment.

This epistemological path led emotions to find a more conspicuous place in the debate on biological evolution. Their interpretation, functionality, and evolutionary history was convincingly presented by Charles Darwin and was the topic of his book *The Expression of the Emotions in Man and Animals* (Darwin 1872). Darwin was interested in the universality of emotions and their taxonomic classification, assuming that the expressions of emotions are not directly inherited adaptations but indirect uses of structures previously adapted to other functions in different niches. Darwin asserted that evolution plays a crucial role in mental processes appointed to mediate between motivation and emotions in the construction of the inner experience.

## **The evolutionary approach**

Klaus Scherer (2013: 185) stated that 'many of the discrete emotion models which have dominated the field in the last 50 years are derived from' Darwin's work. Scherer (1984) argued that the evolution of emotions, characteristic of social species, reaches its maximum complexity in humans. Emotions are operators, shaped by natural selection, that coordinate physiological, cognitive, motivational and behavioural responses, creating

a complex and organised response that increases fitness in certain situations (Nesse & Ellsworth 2009).

Paul Ekman developed an evolutionary research approach based on the study of the link between a small number of basic emotions and their resulting facial expressions. From his studies on the Fore ethnic group of New Guinea, Ekman became convinced of the mutual ability between them and people of Western societies to interpret facial expressions (Ekman & Friesen 1971). Ekman (1980) concluded that emotions such as happiness, fear, surprise, anger, sadness or disgust, are expressed with the same configurations of facial movements in all human groups, and, thus, considered them to be species-specific, universal, and innate features. Observations like these, previously suggested by Darwin, have also been developed by other researchers, including Austrian ethologist Irenäus Eibl-Eibesfeldt (1983), who emphasised the innateness of certain facial expressions. This notion was most evident in a baby that Eibl-Eibesfeldt studied, who, despite being blind and therefore unable to learn visually, expressed happiness by smiling.

Ekman was the first to consider the possibility of an interaction between individual and culture in the determination of the “display rules” of emotions. Ekman was influenced by the Darwinian thinking extended by Silvan Tomkins (1962) in his theory of the existence of stable neuromotor programs involved in the expression of a number of basic emotions.

This point of view contrasts with the positions of such anthropologists as Margaret Mead and Gregory Bateson, who considered emotion to be socially-learned and ascribable almost exclusively to the sphere of culture. Mead and Bateson conducted ethnographic research in Bali in the late 1940s with the aim of making comparisons between Balinese and Iatmul culture. The interesting aspect of this comparison was that the Iatmul encouraged the expression of emotion, while the Balinese sought to internalise it. Margaret Mead (1975) published a review of facial expressions that criticised Ekman for capturing video footage of the natives when posing, rather than showing spontaneous expressions.

Like Mead and Bateson, other anthropologists became interested in Ekman’s method of investigation, with the same aim of criticising and, consequently, disproving the results. The approach the anthropological community took to study emotion seemed to be initially motivated by the need to counter Ekman’s study and findings. Karl Heider and Eleanor Rosch took issue with the supposed six fundamental emotions that Ekman proposed as universally shared. Using the same methods of investigation as Ekman’s Fore research, Mead and Bateson set out to prove him wrong, studying the isolated Dani people of West Irian. They posited that the language spoken by the Dani did not have words for all six fundamental emotions. Contrary to what they expected, however, Heider and Rosch obtained results analogous to those of Ekman and Friesen (see Ekman 1971 and related citations therein).

Syntheses of biological and cultural aspects also gained momentum during this period. Claude Lévi-Strauss (1971) speculated on the complementarity between cultural processes and biological evolution, convinced that the former could affect the latter and thus influence pre-cultural traits (upright position, handedness, social life, vocalisation, communication) previously selected for during the evolutionary history of the human species.

## The anthropology of emotions between nature and culture

The interface between nature and culture has become a “classic” field of study but has always generated a question (Which came first: nature or culture?) that many researchers across disciplines are still attempting to answer (e.g. see Laland et al. 2010; Haidle et al. 2015; Mesoudi 2015). The idea that genes and culture are interacting forms of inheritance began to be explored more than three decades ago when Marcus Feldman and Luigi Luca Cavalli Sforza (1976) published *Cultural and biological evolutionary processes, selection for a trait under complex transmission*. This work showed a simple dynamic model of genetic/cultural heredity. The main innovation was represented by the analysis of the mode of transmission of both genes and cultural traits, considered to be mutually dependent. Research on gene-culture co-evolution mechanisms is addressed to shaping models suitable to assess the allelic and genotypic frequency variations in response to evolutionary processes (selection, migration, drift) also taking into account the effects of cultural behaviours.

Culture is transmitted, adapted and modified as a continuous process producing cumulative behavioural changes potentially acting on the selective pressures (Laland et al. 2010). Cavalli Sforza and Feldman (1981) defined “cultural selection” as the increasing learning of specific cultural practices and their subsequent spread and adoption in a human population. Another way to understand the relationships existing between genetic and cultural traits is the concept of “niche construction”, the processes of modification that organisms put into practice in the environments in which they live (Laland et al. 2000; Kendal et al. 2011; Attwell et al. 2015). Niche construction could have evolutionary significance because these environmental changes may influence selective pressures to which future generations of organisms could be exposed. Humans, working on the basis of culture, can decisively alter their local environments. ‘Because cultural processes typically operate faster than natural selection, cultural niche construction probably has more profound consequences than gene-based niche construction, and is likely to have played an important role in human evolution’ (Laland 2008: 3585).

The interaction between *cultural* and *natural* selection is dependent on the degree of assimilation and implementation of a specific behaviour and its influence on fitness. In the context of the emotional experience lies the supposed dichotomy between what is innate and what is acquired. This is not a surprising approach. In fact, emotions are an ideal field for the study of interactions between *nature* and *nurture*. It is well exemplified by the case of the evolutionary implications of the compassion for sick people reported by Linda Stone and Paul Lurquin (2007). In fact, this universal feeling, boosting the advances in the medical field, increased the chance of survival of many individuals over the beginning of reproductive age.

Human biological and cultural diversity was beginning to be investigated separately in the second half of the 19<sup>th</sup> century, and thus opportunity to build on insight in relation to human behavioural differences proposed in *The Descent of Man* were lost. Peter Richerson and Robert Boyd (2005) are convinced that the “inherited habits” proposal defined by Darwin is a concept similar to the theory of cultural transmission, yet unrecognised by scholars of the newly born social sciences:

Darwin was pigeonholed as a biologist, and sociology, economics, and history all eventually wrote biology out of their disciplines. Anthropology relegated his theory to a subdiscipline, biological anthropology ... the gulf between the social and natural sciences continues to widen as some anthropologists, sociologists, and historians adopt methods and philosophical commitments that seem to natural scientists to abandon the basic norms of science entirely (Richerson & Boyd 2005: 17).

For decades, both cultural and social anthropologists neglected the study of the emotional states. The Darwinian view about the possibility of identifying specific animal behaviours as closely related to such human emotional attitudes led many to consider them to be adaptive “survivals” that humans inherited from their non-human ancestors. For a long time, this attitude led to excluding the study of the emotions from any research approach based on cultural analysis. Emile Durkheim probably represents one of the few exceptions, proposing in the late 19<sup>th</sup> century the incorporation of emotions into society, denying their natural origin:

A collective emotion ... results from there being together, a product of the actions and reactions which take place between individual consciousnesses; and if each individual consciousness echoes the collective sentiment, it is by virtue of the special energy resident in its collective origin (Durkheim 1895: 9).

Durkheim was convinced that all societies could be compared because of the existence of a “collective consciousness”, and considered these comparisons to be an exclusive responsibility of sociology. Anthropologists did not entertain this idea and instead sought to answer other questions that would build the epistemological foundations of the fieldwork-based disciplines.

In the first half of the 20<sup>th</sup> century, the demarcation of colonised countries’ geographical borders led to the inevitable separation of human groups and, as stated by Jean Loup Amselle (1990), to the birth of new ethnicities under the joint action of colonial administrators and ethnologists. We see the influence of these events in the classificatory thinking of structural-functionalist anthropologists (Fortes & Evans-Pritchard 1940; Radcliffe Brown & Forde 1950). Their comparative and inductive method produced ethnographic descriptions of social structures, economic activities, and religious practices dedicated to several different human groups settled within the African colonies. This “natural science of society” (Radcliffe Brown 1957) was devoted to the understanding of the “physiological structures” that keep social relations alive, relegating emotions far away from field diaries.

The development of a cultural approach to the study of emotions started only in the 1970s, in the middle of the “crisis of ethnographic representation” (Marcus & Fischer 1986), with interpretive anthropology. This line of thinking was born in 1973 with the publication of *Interpretation of Cultures* by Clifford Geertz (1973: 10):

The interminable, because unterminalable, debate within anthropology as to whether culture is “subjective” or “objective” ... is wholly misconceived. Once human behavior is seen as symbolic action – action which, like phonation in speech, pigment in painting, line in writing, or sonance in music, signifies – the question as to whether culture is patterned conduct or a frame of mind, or even the two somehow mixed together, loses sense.

Geertz considered social life to be an open system constantly involved in cultural exchanges that, for this reason, cannot be investigated as a discrete entity. This view contrasted with the traditional view of structuralism and structural-functionalism. Anthropologists who adhered to this research perspective defined emotions as interpretations of the rules of a community, depending on social-learning. Geertz labelled human emotions as cultural artefacts (1973). The consideration of this line of thinking brings a radical change in the approach to the study of emotions, shifting it from a natural to a cultural point of view. This step does not exclude the persistence of a common biological component in all humanity. It could be considered as the basis on which any culture acts, regulating and shaping the expression of the inner states. This is an idea that raises some doubts about the confidence in the exclusive competence of neuroscience to the study of emotional events, which are returned to the context of the symbolic sphere. In this way, emotions became social practices, organised according to our forms of knowledge and developed on the basis of interpersonal relationships (De Matteis 1997).

Anthropology, focusing only on the inner states, does not denote meaning on the universality of emotional responses. In this discourse emerges the risk to consider the field of investigation of anthropologists very different from that of evolutionists and neuroscientists and, at the same time, to consider emotions as characterisable by two separate explanations. If the biological point of view forces its analysis to the adaptive aspect and to inter-cultural continuity (Eibl-Eibesfeldt 1983; Ekman 1984), the anthropological one is often excessively culturalist, referring to the ethnographic description of the emotional states and to the interpretation of the emotional dynamics in relation to a specific human group (Lutz & Abu Lughod 1990; Hollan 1992), losing sight of scientific progress in cognitive neuroscience in relation to the understanding of the impact of different cultural context on neural activity.

## **Evolutionary origin or social construction?**

The debate among Ekman, Mead, and Bateson, between anthropologists and psychologists, continues. The hypothesis on the universality of emotions was criticised during the 1980s, particularly through ethnographic works that sought to demonstrate their cultural specificity. For example, Catherine Lutz (1988) argued that the Micronesian Ifaluk people do not know anger. A similar emotional state, but not exactly homologous, is their experience of *song*, a resentment against an individual guilty of violating a moral norm. Unlike anger, *song* is rarely followed by violent impulses but instead manifests itself in scorn toward and avoidance of the person who committed the offense.

Lila Abu-Lughod (1986), in her analysis of Bedouin culture, reported an example of an association of several different meanings for the same emotion in different cultural contexts: shame is regarded as a highly negative emotion in the United States while regarded as good and needed in Bedouin society. Even so, Abu-Lughod clarified that *hasham* (the Bedouin version of shame) is also comprised of other emotions, such as embarrassment, humility, and modesty.

The ethnographic approach used in these and other works was influenced by the thesis of social constructionism, which considers emotions to be social constructs.

Kenneth Gergen (1985), one of the primary leaders of this school of thought, supported the explanation of the process of learning and understanding of the surrounding reality as exclusively dependent upon social interactions. A less radical constructionist proposal, formulated by Claire Armon-Jones (1986), allows for the possibility of the existence of some innate emotional responses. Both psycho-anthropological and psycho-evolutionary research fields, following two parallel paths, have started to recognise the merits of each other: constructionists who make use of biological hypotheses and evolutionists who also consider cultural aspects in their investigations.

The experimental progress made in the field of psycho-evolutionary theories clarified the evolutionary origin of emotions and has shown that the correspondence between emotions and facial expressions appear to be cross-cultural. In contrast, differences were found among cultures regarding the intensity and the type of emotion externalised in response to a particular event (Tsai & Chentsova-Dutton 2003; Soto et al. 2005), especially for guilt, embarrassment, shame and pride (Tangney & Fischer 1995; Mesquita & Karasawa 2004). These differences reflect cultural norms regarding emotional expression in those individuals who strongly identify themselves with their culture (Levenson et al. 2005). Research on the role of culture in the expression of emotions and the consequent increasing availability of data in this area provide new incentives to continue an investigation of the relationships between nature and socio-cultural learning. Georg Northoff (2010), one of the founders of neurophilosophy, offered the opportunity of a marriage between neuroscience and anthropology, describing it as a transdisciplinary way to delve more deeply into the understanding of human nature.

## **The contribution of neuroscience to the comparative study of emotions**

In recent years, neuroscience has provided new opportunities for the study of the neural basis of emotional processes. This progress poses a challenge: to evaluate the universality of these mechanisms through the use of new technologies in order to discover differences in patterns of brain activation among individuals belonging to different human groups. The introduction of neuroimaging techniques (functional magnetic resonance imaging and positron emission tomography) provides opportunities for experimental research on the associations between certain parts of the brain and specific emotional states, the aim of which is to check possible cultural influences on neural activity (Rufo 2013). For example, fear is perceived and expressed according to certain differences that reflect culturally shaped social and emotional experience.

Using functional magnetic resonance imaging, Joan Chiao and colleagues highlighted that Japanese and Caucasian residents of the United States showed a greater activation in the amygdala when they observed pictures of the faces of frightened people of their respective cultural group (Chiao et al. 2008). These studies demonstrate the importance of a transcultural approach bridging the gap between the study of neural mechanisms, supposed to be culturally invariant, and psychological evidence of culturally influenced cognitive aspects (Han & Northoff 2008).

Emotions are a valuable mechanism of natural selection, a thermostatic signal that allows us to distinguish whether we feel good or bad. They often operate unconsciously, but their repetition enables us to recognise them more easily (Sobrero 2008). We can feel the echoes of the same emotions even when we tell stories about events for which we experienced emotions in the past. Regarding the evolution of mind, *Homo sapiens* was necessary to become able to formulate thoughts of something that is outside, regardless of its existence. It is the problem of intentionality, the mind's ability to distinguish between the real and virtual worlds (Edelman 2006; Sobrero 2008). This is the premise that makes us able to feel emotions when listening to stories of others, dreaming, reading novels, watching movies and, more importantly, observing the facial expression of an individual and recognising his state of mind (Hassin et al. 2013; Tramacere & Ferrari 2016). In fact, for Antonio Damasio (2003), the sight of a disgusted face would result the activation of the same areas (somatosensory cortex and insula) in the observer's brain involved when he felt this emotion. Giacomo Rizzolatti and Corrado Sinigaglia (2006) stated that the observation of the faces of others who express an emotion results in the activation of mirror neurons in the premotor cortex. Then, they send a "copy" of their patterns of activation to the somatosensory cortex and insula, similarly when the observer feels the same emotion. While research findings on mirror neurons demonstrate that human intentionality is naturally responsive, several studies suggest that neural activity cannot be classified as exclusively innate (Gutchess et al. 2006; Lin et al. 2008).

The nature-culture linkage in the study of emotion brings many possibilities of interaction between anthropologists and neuroscientists. However, the contrast between those who firmly uphold the universality of emotions and those who affirm their cultural specificity is still lively. David Matsumoto and Hyi Sung-Hwang (2012) recently proposed an interesting distinction between "biologically innate emotions" and "cultural emotions". They classified as *biological* the six fundamental emotions (anger, disgust, fear, happiness, sadness, surprise) and suggested that other emotions (e.g. shame, embarrassment, pride), although identifiable even in other species, are not shown to be universally experienced in humans. Matsumoto and Sung-Hwang do not consider their classification to be the best possible, but think that a distinction should be made in order to produce a taxonomy of emotions that aids in clarifying the debate between universalists and culturalists.

The six basic emotions have again been taken into consideration with the aim to test the recognition between individuals of different ethnic groups using non-verbal vocalisations, such as screams or laughter (Sauter et al. 2010). Emotional vocal expression is an ability that seems to be evolved in the primate lineage between rhesus monkeys and humans. However, differently from other primates, *Homo sapiens* is capable of voluntarily controlling and planning the structure of vocalisation and to learn and conceive complex vocal patterns (Morley 2014). Disa Sauter and colleagues have compared emotional vocal expressions of English-speaking Europeans with those of members of the Himba population, a semi-nomadic isolated people, settled in northern Namibia (Sauter et al. 2010). The comparisons highlighted that these six emotions expressed through vocalisations are mutually recognised. The same was not observed for other emotions, such as gratification, sexual appreciation, and relief; these were distinguished only by Europeans. This result has been interpreted as an example of socially learned emotions.



## Concluding remarks

In recent years, the growing reciprocal interest between neuroscientists and anthropologists has been demonstrated by the emergence of new hybrid disciplines defined as the “cultural neurosciences”. These new branches approach the study of variations in neural development and on the structure and functions of the nervous system, taking into account cultural differences and suggesting the hypothesis that cultural factors could affect neural activity (Dominguez Duque et al. 2010). Anthropologists and neuroscientists have recently started to consider the possibility of joining forces to develop an integrated study of brain evolution and human culture (Lende & Downey 2012; Maestriperi 2015). This collaborative effort is giving rise to a new field of study termed “neuroanthropology”. Neuroanthropologists investigate the relationships between cultural phenomena and brain activity, joining ethnographical, technical and scientific skills (Dias 2010). In fact, ethnographic research ‘can contribute rich data on the embodiment of both normal and pathological emotional experience ... These data can form the basis for robust hypothesis building, and the development of ecologically valid experimental design’ (Seligman & Brown 2010: 136). Moreover, other informative data could be obtained in the fieldwork via the use of portable devices for the measurement of ‘in situ neurophysiological responses to the flow of social experience’ (ibid.). The development of shared approaches reconciles scientists and humanists, *Naturwissenschaft* and *Geisteswissenschaft*. Charles Percy Snow (1959) considered the gap between the “two cultures”, hard sciences and social sciences, to be one of the main evils of Western society. Neuroanthropology, providing new insights on the subjective emotional experience of the body (embodiment), is a “third culture” that overcomes philosophical and ethnographic traditional approaches (Campbell & Garcia 2009).

Anthropologists use the term *embodiment* to indicate the culturally influenced techniques through which every individual experiences his or her body: everyday practices (e.g. eat, greet, dance) incorporated in the process of socialisation (Mauss 1950). These actions and gestures are corporeal phenomena that each of us acquires and shares with others. As stated by the anthropologist Thomas Csordas (1999: 143):

If embodiment is an existential condition in which the body is the subjective source or intersubjective ground of experience, then studies under the rubric of embodiment are not “about” the body per se. Instead, they are about culture and experience insofar as these can be understood from the standpoint of bodily being-in-the-world.

Each individual is both a subject-body that socially manifests his culture and a biological entity with the brain as a place of somatic representations. This dual nature provides an opportunity to approach the body from both a biological and cultural point of view, suggesting the importance of the emotions in the embodiment of socio-cultural factors.

## Acknowledgements

This work was supported by the Istituto Italiano di Antropologia ([www.isita-org.com/](http://www.isita-org.com/)).

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## Povzetek

Že od Darwinovih dni so bila čustva pojmovana kot temeljni prispevek k naravnemu izboru z vidika zagotavljanja preživetja. Evolucijski pristop je vodil tudi revolucionarno, a sporno raziskavo Paula Ekmana o plemenu Fore na Novi Gvineji. Ekman je sklenil, da obstaja šest čustev, ki so izražena v vseh populacijah. Njegov univerzalistični pogled je v nasprotju s pogledi mnogih antropologov kot sta Margaret Mead in Gregory Bateson, ki so čustva obravnavali kot predvsem družbeno naučena in potentakem skoraj izključno v domeni kulture. Prispevek s tega vidika predlaga zakon med univerzalizmom in kulturalizmom, ki omogoča podlago za novo področje študija, znanega kot neuroantropologija, ki poudarja pomembnost čustev v delovanju družbeno-kulturnih dejavnikov.

**KLIJUČNE BESEDE:** čustva, evolucija, kulturni prenos, notranje stanje, utelesenje

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