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MEMORY LANE

The Expression of the Emotions in Man and Animals: Darwin's forgotten masterpiece

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SUMMARY

The Expression of the Emotions in Man and Animals has been considered Charles Darwin's forgotten masterpiece and is his only book on psychology. It is also the first ever systematic application of Darwinian theory to the expression of emotions and has been considered by some to be the foundational text of evolutionary psychology. This article explores some key concepts in the book and gives reasons why both psychiatry and psychology can benefit greatly from becoming better acquainted with this work.

KEYWORDS

Emotional expression; Darwin; Darwinian theory; evolutionary biology; ethology.

Despite the fact that *The Expression of the Emotions in Man and Animals* (henceforth *Expression*) has remained continuously in print since its publication in 1872, it has been referred to as Darwin's forgotten masterpiece. This remarkable work, clearly ahead of its time in many ways (but of its time in others), has been hiding in plain sight for many decades and remains little known by psychiatrists and psychologists even today.

Darwin's main objectives were to show how human facial expressions constitute a shared heritage of our species, have parallels with the expressions of other animals and hence provide a behavioural argument for evolutionary continuity (de Waal 2003; Ekman 2003a). It took more than six decades for another scientist to pick up the study of primate facial expression from where Darwin left it (Ladygina-Kohts 1935) and even then, this Russian work was not translated into English for many decades. Although the demonstration of a shared ancestry did not disprove creationist explanations of separate human origins in creation myths, it provided a powerful counterargument to the racist theories of Darwin's day regarding the separateness and superiority of the European races from the rest of humanity.

Importantly, *Expression* is a book about the expression of emotions and not about the nature of emotions. Darwin hardly considers the function of emotions at all in this work. His approach is primarily a phylogenetic one, which is to establish the continuity of emotional expression between humans and animals as well as its universality across human populations. Hence, anyone approaching this work with the expectation of obtaining an answer to the question as to why we possess emotions at all will be disappointed. Tackling this vital question had to wait until the last quarter of the 20th century and the rise of evolutionary psychology, and is still work in progress.

Darwin's scientific method

Given that Darwin had set out to explore virgin territory in this work, his achievements are truly astounding and this is testament to his meticulous attention to detail as well as his unique powers of observation. He clearly approached diverse aspects of daily life over many decades with a patient and empirical scientific mind where he kept diaries and recorded observations on matters he considered worthy of further exploration, including the minutest aspects of his own children's development (which he reports in various chapters of the book). *Expression* is a demonstration of Darwin's unique ability to see the world through fresh eyes and to recognise novelty and wonder where others would see the ordinary and the mundane. This attribute, which is the hallmark of the true scientist, is encountered repeatedly. Darwin's interest began as a medical student. The 1824 edition of Sir Charles Bell's *The Anatomy and Philosophy of Expression* argued for human exceptionalism and a plainly creationist dimension to the subject. In contrast, Darwin's biological approach is scientific and materialist, requiring no supernatural intervention.

Expression was the first science book to publish a range of photographs of facial expressions of basic human emotions as well as photographs and drawings of animals expressing various emotional states. It was also the first time that such

photographs were used to survey people from an extraordinarily wide range of cultures and ethnicities, and even pathologies, including neuropsychiatric patients (and people who were deaf and blind), unmatched in their breadth even today. Astonishingly, Darwin appeared to have been aware of the need to go beyond surveying those from WEIRD (Western, educated, industrialised, rich and democratic) populations (Henrich 2010) in order to uncover human universals. To appreciate the significance and prescience of this insight one should note that modern psychologists did not fully start to address the anomaly of limiting data collection to WEIRD populations until the last decade, i.e. more than 140 years after Darwin's foundational work.

The structure and presentation of *Expression*

Expression consists of 14 chapters, with the first 6 discussing general principles and issues of expressions in both humans and animals, followed by 7 chapters dedicated to an array of specific emotional expressions and a final chapter titled 'Concluding remarks and summary'.

Darwin relied heavily on the pioneering work and the photographs provided by Guillaume Duchenne, renowned French physician and arguably the founder of the discipline of neurology. References to Duchenne's work and to their extensive correspondence appear repeatedly throughout the book. Also, Darwin refers repeatedly to his extensive correspondence with two of the most eminent psychiatrists of his time, Henry Maudsley and James Crichton-Browne.

Although Darwin always comes across as respectful of people of other cultures and ethnicities, some of the 19th-century expressions used in the book to refer to non-European, pre-industrial/pre-literate people are clearly of their time and can sound somewhat harsh to modern ears. The book is very heavy on anatomical and physiological detail to an extent that many, if not most, psychiatrists and psychologists can find taxing, even superfluous. However, the reader soon comes to appreciate Darwin's approach, which involves the relentless, patient and meticulous attention to detail of any phenomena he happens to be analysing.

Three principles governing emotional expression

Darwin set out three principles that govern the formation of expressive actions across species, including humans. The principles are expressed in 19th-century English and may not be readily comprehensible to general readers. Neither are they clearly based on Darwin's theory of natural selection. The principles are: (a) movements that gratify certain natural desires if repeated can become habitual and performed even without any benefit, (b) the principle of antithesis, which is the habit of performing opposite movements under opposite impulses and (c) when neither of the above apply there is direct action in which an overflow of emotion is widely discharged, producing more generalised emotional expression.

Modern ethologists and evolutionary biologists refer to the first principle as 'ritualisation', the second as 'antithesis' and the third as 'other' (de Waal 2003). Ritualisation refers to the process of turning reflexes into communication signals by making them more stereotyped and conspicuous (de Waal 2003). Ritualisation can lead to the same signal acquiring completely different connotations in different species; for example, teeth-baring signals radically different states in different species. Van Hoof (1973) analysed the phylogenetics of human smiling and laughter and concluded that there are continuities between chimpanzees and humans in both. Also, de Waal (1988) found that the bonobo's 'play face' bears a striking resemblance to human laughter.

Blushing and the inhibition hypothesis

Darwin shares a number of unique insights in *Expression*. These include his observation that blushing is a uniquely human phenomenon, which he asserts does not occur in other animals but is innate as it occurs in blind people and is a cultural universal. This view has been upheld in recent literature, although surprisingly little progress has been made in the study or understanding of this intriguing and highly complex phenomenon where even such basic questions as what constitutes a blush remain unanswered (Crozier 2010).

Darwin described blushing as 'the most peculiar and the most human of all expressions' (Darwin 1872: p. 310). Although Darwin's own theory of blushing seems odd and is almost certainly wrong (that any part of the human body being subject to human attention will undergo increased blood flow), his observation that blushing pointed to a unique aspect of human psychology was significant and important. Blushing is a ubiquitous yet little-understood phenomenon that is both involuntary and uncontrollable. An actor may simulate a smile, laughter or a frown, but not a blush! This may be an important clue as to the function.

Also, Darwin hypothesised that muscles of the face that are difficult to voluntarily activate could also be difficult to inhibit or suppress, for example in attempts at deception. This has been termed as

the 'inhibition hypothesis' (Ekman 2003b) and remains untested to this day.

A question that was not raised by Darwin is: Why are some emotions associated with specific and universal facial expressions (happiness, sadness, fear, anger, surprise and disgust) whereas others (e.g. jealousy, love, lust, suspicion, guilt) are not? It is interesting to consider what distinguishes these two types of emotional state.

What of natural selection?

Surprisingly, 'natural selection', Darwin's big idea and the core of his theory of evolution appears only four times in the entire text of *Expression*, two of these in the final, concluding chapter. And, even more surprising, the phrase 'survival of the fittest', borrowed from Herbert Spencer and which Darwin had not used before, appears once. An unexpected problem is the almost Lamarckian view expressed in the last chapter regarding the origins of certain expressions:

> 'It is perhaps worth consideration whether movements at first used only by one or a few individuals to express a certain state of mind may not sometimes have spread to others and ultimately have become universal, through the power of conscious and unconscious imitation' (Darwin 1872: p. 356).

This is followed only a couple of pages later by a redeeming and very Darwinian paragraph:

> 'I have endeavoured to show in considerable detail that all the chief expressions exhibited by man are the same throughout the world. This fact is interesting, as it affords a new argument in favour of several races being descended from a single parent-stock, which must have been almost completely human in structure, and to a large extent in mind, before the period at which the races diverged from each other. No doubt similar structures, adapted for the same purpose, have often been independently acquired through variation and natural selection by distinct species … ' (Darwin 1872: p. 361).

Hence, although Darwin did not tackle the evolutionary question of how and why human and animal emotions were shaped by selection or what the functions of the human emotional system are, he managed to demonstrate with great eloquence and meticulous detail how very many human emotional expressions are universally shared across cultures and ethnicities and that they form a continuum with non-human species. Thus, *Expression* became the third and final element (following on from the *On the Origin of Species* and *The Descent of Man*) of his theory of evolution by natural selection that spectacularly succeeded in erasing all boundaries between humans and the rest of nature.

Conclusions

Both psychiatry and psychology can benefit greatly from becoming better acquainted with this work for two reasons. The first is to start to address the need for psychiatrists and psychologists to develop an in-depth understanding of the normal, functional, human emotional system and the second is the need to appreciate the value and importance of applying Darwinian principles to the understanding of both normal and abnormal emotional states (as well as to mental health generally).

Author contributions

R.A. wrote the first draft and both P.S.J.-S. and R.A. revised, amended and approved the final version.

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Declaration of interest

None.

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