Emotion

Emotions suffuse our lives: a symphony of feeling – usually whispering and murmuring in pianissimo but occasionally screaming and shouting in fortissimo crescendo – filling every waking moment and even invading our dreams. We can always be conscious of how happy, sad, annoyed, or anxious we feel, and also of the feelings we have relative to other persons: pride, envy, guilt, jealousy, trust, respect, or resentment. Developments in brain imaging and in capturing nuances of nonverbal display now enable the objective study of emotion and how biologically based primary emotions relate to higher-level social, cognitive, and moral emotions. This book presents an integrated developmental-interactionist theory of emotion, viewing subjective feelings as voices of the genes: an affective symphony composed of dissociable albeit interactive neurochemical modules. These primordial voices do not control, but rather cajole our behavior with built-in flexibility enabling the mindful application of learning, reason, and language.

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Emotion

A Biosocial Synthesis

Ross Buck
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To Nora, Maya, Will, Hannah, and all the children

People learn to hate, and if they can learn to hate, they can be taught to love, for love comes more naturally to the human heart than its opposite.

Nelson Mandela, *Long Walk to Freedom*

We live in a world where we have to hide to make love, while violence is practiced in broad daylight.

John Lennon

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Foreword

One of the defining pursuits of humanity is arguably to find answers to the *big questions*, such as where do we come from, where are we going, and who are we? Understanding humanity, in turn, cannot be achieved without a grasp of the concepts we currently refer to as *cognition*, *motivation*, and *emotion*. While thinkers in all cultures have tackled these for more than two thousand years, I join a significant number of fellow contemporary researchers in tracing the beginnings of scientific emotion research to the nineteenth century. Today's emotion science is standing on the shoulders of giants like Charles Darwin and William James. With the power of their interdisciplinary interests and their intellectual ideas they forged both the foundations and the prototypes of modern emotion theories. When reflecting on these achievements – and I recommend going back to read some of these texts in the original – I cannot help but marvel regarding one fact: someone like Darwin, or James for that matter, could be aware of basically *all* relevant research of the day. With respect to the output, all relevant research could fit in a decent library.

How times have changed! Today, knowledge is produced at a rate that prevents many a scientist from even retrieving, let alone reading all relevant material that is published, and this does not include the digestion of pertinent studies and publications. Today, we are further away from such a holistic analysis, and even more so from the capacity to synthesize the necessary bigger picture of emotion research. Yet, given the flood of research, we need an integrative view more than ever. Emotion science is a particularly tough cookie to swallow. An understanding of emotions does not just *benefit* from an interdisciplinary approach, emotion science *requires* a multidisciplinary approach! Affective processes cannot be understood at one level alone – they demand the multilevel approach that, for example Cacioppo and Berntson (1992), propagate. In "pop psychology," and the science columns of major national news outlets, there is presently much talk of how neuroscience provides *the* answers, *all* answers, to psychological questions. And while it should be clear to even the most critical reader that

neuroscience has advanced our understanding of many psychological concepts, including emotions, it is completely false to believe that the new tools will do the trick on their own. Permitting myself an analogy, modern DNA analyses have revolutionized forensics – but they do not solve cases. In my mind, it is the same with the fine tools we now have for looking at the activity of the living brain. For me, personally, all the bits and pieces we have accumulated in the last century regarding emotions, whether they are at the level of cells, of organs, of the organism, of psychological processes, of interactions in networks of different sizes, or of descriptions of cultural values and practices – all these pieces are like an enormous puzzle that requires to be put together, using creativity, critical analysis, and the capacity to really transcend a view that is solely based on one of these individual levels, viewing the others only as auxiliaries. I am still baffled by how some people, and not only lay-people, are surprised when a newly published study demonstrates a psychological process to be accompanied by specific brain activity. Where did they think this would happen? And yet, just because there is a specific central nervous activation, I would not be able to tell whether this pattern is learned or hard-wired. If it is learned, whether it can be derived from mere observation of a few cases, or whether it takes a lifetime of learning to make the connections. It is here that other disciplines must work with neuroscience. Personally, I find it important to underscore how much of emotion psychology in 2014 is still focused on the individual alone. Emotions, and already Darwin pointed that out, have very important intrapersonal *and* interpersonal functions. In fact, in some cases, it makes much more sense to think of emotional processes in terms of larger units than the individual. But, this is perhaps easier to say for a biologist than for a modern, or post-modern, psychologist. The pervasiveness of social processes in all of emotion is still not yet something that is in the minds of many.

Emotion research is notorious for a multitude of definitions and approaches. Cornelius (1996) likens the stories emotion theorists weave to the ancient tale of the blind men who try to describe an elephant; their descriptions differ wildly because each of them can grasp, literally, only a part of the animal and not the elephant in its entirety; in fact, this analogy is echoed in the preface later in the present book. This is the challenge at stake in the here and now. And it is here that attempts are needed to put all of these pieces together. We need attempts at perceiving *The Big Picture* and converting it to a coherent narrative. And it is here where this book comes in that you are holding in your hands whether in the good old-fashioned print format or on a digital device. Ross Buck's *Emotion: A Biosocial Synthesis* draws that Big Emotion Picture with bold strokes. I am not surprised at the scope and the power

of synthesis that Ross wields in this text – however, I sit in awe as it is revealed page by page. Ross Buck's writing had a significant influence on my thinking at an early stage in my career. While attending grad school at Dartmouth College, in the late 1980s, two of his books left a particularly strong impression on me – *Human Emotion and Motivation* (1976) and – even more so – *The Communication of Emotion* (1984). I remember very well the first time I witnessed Ross in action, asking very thoughtful questions at the 1994 meeting of the International Society for Research on Emotion (ISRE), for which I have the honor of presiding at the moment. Since then we have met many times and I continue to enjoy his views on emotion research, as he continues to integrate biological and social aspects of emotion theories.

This book, using a systems approach, convincingly ties together all the levels I mentioned before – and it particularly bridges that still wide-open divide between neuroscience and the social layers – which might be due to the fact that unlike many of our colleagues in the "emotion business," Ross is located in a Communication as well as a Psychology Department. The result is inspiring. This is the type of big synthesis of which we see perhaps less than a handful per decade. I am glad to benefit once again from his deep and broad insights. And I know that this book will inspire many students and scholars of the emotions. It provides not only a very useful conceptual framework, but also a guideline, a kind of road-map for the future trajectory of emotion research. Surely, as new research, particularly in social neuroscience, provides new insights on specific processes or structures in the years to come, details of the story will change, but just as in Magda Arnold's opus magnum *Emotion and Personality*, it is the functional analysis that will likely stand the test of time for quite a while.

To be clear – this is no product of a "consensual analysis" like Kleinginna and Kleinginna's attempt at defining emotions (1981b). This is a highly personal view, with a specific framework, idiosyncratic terminology, and strong choices – Ross Buck's power of vision is the strength of this book. Yet, it does not require the reader to believe every bit, or to buy into each element. Doubtlessly, this book will stimulate exchanges, discussions, as well as controversies, while pushing emotion research to the next frontier.

Arvid Kappas
Bremen, December 2013

Preface

"There will never be an integrative theory of emotion."
Niedenthal and Brauer (2012, p. 275)

Emotion is attracting burgeoning interest in the social, behavioral, and life sciences, but although the empirical evidence demonstrating its importance is overwhelming, important conceptual and definitional difficulties remain. In the issue of the journal *Emotion Review* current at this writing there was an extensive section on the definition of emotion, with one paper asserting that it is a concept "in crisis" and seriously questioning whether the concept of emotion "can be expected to operate as part of a truly scientific lexicon" (Dixon, 2012, p. 338). Emotion is widely considered to be momentary, fleeting, ephemeral, and resistant to study; while cognition is somehow stable, enduring, and well suited to empirical investigation. Also, the *Annual Review of Psychology* summary of the emotion field current at this writing began by questioning whether scientists can or should study emotion, and concluded that an integrative theory of emotion is impossible because the very definition of the term "emotion" is useful only in the context of a given research program (Niedenthal and Brauer, 2012). This recalls the famous parable from India about ten blind men arrayed around an elephant, each trying to describe the nature of the beast from his restricted experience of feeling a trunk, a leg, a tail; and arguing heatedly.

In this book I aim to present a general synthesis of the biological and social aspects of emotion. I regard emotion as an ever-present phenomenon central to all living things, evolving from the first stirrings of life nearly four billion years ago. I submit that only by understanding emotion can we understand *motivation* and *cognition*: each of these is involved with the others so closely that we cannot fully comprehend one without understanding how it relates to the others. Also, only by understanding emotion can we appreciate the fundamental similarities between human beings and other animals, as well as the fundamental difference: the human capacity for language. And, only by

understanding emotion can we appreciate how fundamentally we differ from even the most impressive of computing machines. Computers are, in the final analysis, merely tools.

A major conceptual aim of this book is to describe how biological emotions are *natural kinds* discoverable by science, and how they relate to higher-level social, cognitive, and moral emotions. *Biological emotions* are seen to constitute natural kinds at two levels. First, they are based upon primary motivational-emotional systems (*primes*) associated with *readouts* of specifiable neurochemical systems in the brain. Second, biological emotions are natural kinds in that they are organized by their functions in the *ecology*: e.g. the physical and social environment in which the individual lives. It is at the ecological level that emotions can be organized and defined in terms of specifiable and observable displays, such as facial expressions, vocalizations, body movements, and postures; as well as intimate touches, scents, and odors. These displays are responded to automatically by preattunements to those displays in receivers, this process often involving mirror neuron systems. These display–preattunement associations take the phenomenon of emotion out of the head of the individual, as it were, into the social and communicative environment.

Chapter 1 introduces a general biosocial approach that views emotions in terms of emergent systems involving an interaction between biological potential and social experience over the course of development: a *developmental-interactionist* theory. Emotions emerge naturally and effortlessly from underlying biological potential as self-organizing dynamical systems over the course of development. This view might be termed "emotiocentric" in contrast to other approaches in the behavioral and social sciences. The chapter considers how experienced emotion, or *affect*, relates to other aspects of experience; as well as other aspects of emotional responding: expressive displays and physiological responses. The chapter also considers the process of *emotional education*: the complex ways that we learn to label and understand our subjective affective feelings and hopefully attain *emotional competence*.

The next three chapters consider basic *biological emotions* that are directly related to specifiable neurochemical systems in the brain: the active ingredients to the emotion cocktail, as it were. These include widely recognized dimensions of emotion – arousal and valence – as well as discrete emotions: the *primary affects* of happiness sadness, fear, anger, and disgust. They also include less widely acknowledged *reptilian emotions* (sex and power) and *prosocial emotions* (attachment, love, nurturance, bonding, separation anxiety).

Later chapters in the book consider "higher-level" social, cognitive, and moral emotions, and how these are grounded in the biological

emotions but emerge to respond to universal ecological contingencies. I regard biological emotions as contributing the physiological bases for higher-level emotions. This book takes an *ecological-systems* view of higher-level emotions; they obtain their primordial experiential "fire" from biological emotions associated with attachment, expectancy, and a hypothesized emotion of moral approbation termed *gust*. Thus "fired" biologically, higher-level emotions respond as emergent dynamical systems to ecologically universal social and situational challenges occurring naturally during development.

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I am indebted to many students, including Erika Anderson, Emil Coman, Mats Georgson, Christian Rauh, Ipshita Ray, Nanciann Norelli Smith, and Georgios Triantis. In particular, a number of my doctoral students have contributed ideas and research particularly relevant to a number of aspects of the developmental-interactionist analysis offered here. These include work with Arjun Chaudhuri on emotion and persuasion; Michelle Pulaski Behling on music and emotion; Caroline Easton and Jacquie Cartwright-Mills on emotional communication in schizophrenia patients; Cheryl Goldman on emotional communication in behaviorally disordered children; and Megan Sheehan on emotional communication and personality. I particularly wish to acknowledge in this regard the work of Mike Miller, Christopher Kowal, Stacie Renfro Powers, Stephen Stifano, Rebecca Ferrer, Makoto Nakamura, Emil Coman, Ed Vieira, Maxim Polonsky, and Christian Rauh. Also, I am indebted to students in my graduate seminars on Nonverbal Communication, Motivation and Emotion, and Emotion and Persuasion who have read and commented on parts of this book as it has developed over the years; to Hillary Siddons, who did yeoman

work assisting with the preparation of the references; and to Mike Miller, who was enormously helpful in obtaining permissions. Needless to say, none of my colleagues is responsible for any failings of this book, but they have contributed greatly to its strengths.

The cover figure is based on the idea of a mandala combining a brain, globe, and Greek masks. It was brilliantly realized by Donna Drasch, an artist from Ashford, Connecticut, USA; and was the logo for the Newsletter of the International Society for Research on Emotions (ISRE) when I was editor and is still used occasionally by ISRE. I am very grateful to the artist and to ISRE for permission to use it for a cover illustration, as it captures the essence of the view of emotion as a biosocial synthesis. I am also very grateful to Arvid Kappas, current president of ISRE, for writing the Foreword. With his broad and deep understanding of emotion, Arvid's views are greatly valued.

Finally, I am deeply indebted to my family for their support and encouragement: my children Ross William Buck, Maria Lenore Buck, Nancy Jenney Buck, and Theodore Reed Buck; my daughters-in-law Meghan Gaffney Buck and Jennifer Saraceno Buck; and grandchildren Eleanor Violet and William Christopher Buck (Bill and Meghan's children) and Maya Rose and Hannah Judith Buck (Ted and Jenn's daughters). This book is dedicated to my grandchildren. And of course this work would have been impossible without the help and support of my wife, Marianne Jenney Buck: the love and joy of my life.