Emotion and Feeling

Chapter Two

Once More With Emotion

The Feeling of What Happens (1999)

Anthony Damasio
delight at the sensuous smile of Jeanne Moreau or the thick beauty of words and ideas in Shakespeare's verse; about the world-weary voice of Dietrich Fischer-Dieskau singing Bach's *Ich habe genug* and the simultaneously earthy and otherworldly phrasings of Maria João Pires playing any Mozart, any Schubert; and about the harmony that Einstein sought in the structure of an equation. In fact, fine human emotion is even triggered by cheap music and cheap movies, the power of which should never be underestimated.

The human impact of all the above causes of emotion, refined and not so refined, and of all the shades of emotion they induce, subtle and not so subtle, depends on the feelings engendered by those emotions. It is through feelings, which are inwardly directed and private, that emotions, which are outwardly directed and public, begin their impact on the mind; but the full and lasting impact of feelings requires consciousness, because only along with the advent of a sense of self do feelings become known to the individual having them.

Some readers may be puzzled by the distinction between "feeling" and "knowing that we have a feeling." Doesn't the state of feeling imply, of necessity, that the feeler organism is fully conscious of the emotion and feeling that are unfolding? I am suggesting that it does not, that an organism may represent in neural and mental patterns the state that we conscious creatures call a feeling, without ever knowing that the feeling is taking place. This separation is difficult to envision, not only because the traditional meanings of the words block our view, but because we tend to be conscious of our feelings. There is, however, no evidence that we are conscious of all our feelings, and much to suggest that we are not. For example, we often realize quite suddenly, in a given situation, that we feel anxious or uncomfortable, pleased or relaxed, and it is apparent that the particular state of feeling we know then has not begun on the moment of knowing but rather sometime before. Neither the feeling state nor the emotion that led to it has been "in consciousness," and yet they have been unfolding as biological processes. These distinctions may sound artificial, at first glance, although my purpose is not to complicate something simple but rather to break down, in approachable parts, something that is quite complicated. For the purpose of investigating these phenomena, I separate three stages of processing along a continuum: a state of emotion, which can be triggered and executed nonconsciously; a state of feeling, which can be represented nonconsciously; and a state of feeling made conscious, i.e., known to the organism having both emotion and feeling. I believe these distinctions are helpful as we try to imagine the neural underpinnings of this chain of events in humans. Moreover, I suspect that some nonhuman creatures that exhibit emotions but are unlikely to have the sort of consciousness we have may well form the representations we call feelings without knowing they do so. Someone may suggest that perhaps we should have another word for "feelings that are not conscious," but there isn't one. The closest alternative is to explain what we mean.

In short, consciousness must be present if feelings are to influence the subject having them beyond the immediate here and now. The significance of this fact, that the ultimate consequences of human emotion and feeling pivot on consciousness, has not been properly appreciated (the strange history of research on emotion and feeling, addressed below, is possibly to blame for this neglect). Emotion was probably set in evolution before the dawn of consciousness and surfaces in each of us as a result of inducers we often do not recognize consciously; on the other hand, feelings perform their ultimate and longer-lasting effects in the theater of the conscious mind.

The powerful contrast between the covertly induced and outward posture of emotion and the inwardly directed and ultimately known status of human feeling provided me with an invaluable perspective for reflection on the biology of consciousness. And there are other bridges between emotion and consciousness. In this book, I propose that, just like emotion, consciousness is aimed at the organism's survival, and that, just like emotion, consciousness is rooted in the representation of the body. I also call attention to an intriguing neurological fact: when consciousness is suspended, from core consciousness on
up, emotion is usually suspended as well, suggesting that although emotion and consciousness are different phenomena, their underpinnings may be connected. For all these reasons, it is important to discuss the varied features of emotion before we begin addressing consciousness directly. But first, before I outline the results of that reflection, I propose an aside on the strange history of the science of emotion, because that history may help explain why consciousness has not been approached from the perspective I am adopting here.

A Historical Aside

Given the magnitude of the matters to which emotion and feeling have been attached, one would have expected both philosophy and the sciences of mind and brain to have embraced their study. Surprisingly, that is only happening now. Philosophy, notwithstanding David Hume and the tradition that originates with him, has not trusted emotion and has largely relegated it to the dismissible realms of animal and flesh. For a time, science fared better, but then it, too, missed its opportunity.

By the end of the nineteenth century Charles Darwin, William James, and Sigmund Freud had written extensively on different aspects of emotion and given emotion a privileged place in scientific discourse. Yet, throughout the twentieth century and until quite recently, both neuroscience and cognitive science gave emotion a very cold shoulder. Darwin had conducted an extensive study of the expression of emotion in different cultures and different species, and though he thought of human emotions as vestiges from previous stages of evolution, he respected the importance of the phenomenon. William James had seen through the problem with his characteristic clarity and produced an account that, in spite of its incompleteness, remains a cornerstone. As for Freud, he had gleaned the pathological potential of disturbed emotions and announced their importance in no uncertain terms.

Darwin, James, and Freud were, of necessity, somewhat vague about the brain aspect of their ideas, but one of their contemporaries, Hughlings Jackson, was more precise. He took the first step toward a possible neuroanatomy of emotion and suggested that the right cerebral hemisphere of humans was probably dominant for emotion, much as the left was dominant for language.

There would have been good reason to expect that, as the new century started, the expanding brain sciences would make emotion part of their agenda and solve its questions. But that development never came to pass. Worse than that, Darwin’s work on the emotions vanished from sight, James’s proposal was attacked unfairly and dismissed summarily, and Freud’s influence went elsewhere. Throughout most of the twentieth century, emotion was not trusted in the laboratory. Emotion was too subjective, it was said. Emotion was too elusive and vague. Emotion was at the opposite end from reason, easily the finest human ability, and reason was presumed to be entirely independent from emotion. This was a perverse twist on the Romantic view of humanity. Romantics placed emotion in the body and reason in the brain. Twentieth-century science left out the body, moved emotion back into the brain, but relegated it to the lower neural strata associated with ancestors whom no one worshiped. In the end, not only was emotion not rational, even studying it was probably not rational.

There are curious parallels to the scientific neglect of emotion during the twentieth century. One of those parallels is the lack of an evolutionary perspective in the study of brain and mind. It is perhaps an exaggeration to say that neuroscience and cognitive science have proceeded as if Darwin never existed, but it certainly seemed so until the last decade. Aspects of brain and mind have been discussed as if designed recently, as needed, to produce a certain effect—a bit like the installation of antilock brakes in a proper new car—without any regard for the possible antecedents of mental and brain devices. Of late the situation is changing remarkably.

Another parallel concerns the disregard for the notion of homeostasis. Homeostasis refers to the coordinated and largely automated physiological reactions required to maintain steady internal states in a living organism. Homeostasis describes the automatic regulation of
temperature, oxygen concentration, or pH in your body. Numerous scientists have been preoccupied with understanding the neurophysiology of homeostasis, with making sense of the neuroanatomy and the neurochemistry of the autonomic nervous system (the part of the nervous system most directly involved in homeostasis), and with elucidating the interrelations among the endocrine, immune, and nervous systems, whose ensemble work produces homeostasis. But the scientific progress made in those areas had little influence on the prevailing views of how mind or brain worked. Curiously enough, emotions are part and parcel of the regulation we call homeostasis. It is senseless to discuss them without understanding that aspect of living organisms and vice versa. In this book, I propose that homeostasis is a key to the biology of consciousness (see chapter 3).

A third parallel is the noticeable absence of a notion of organism in cognitive science and neuroscience. The mind remained linked to the brain in a somewhat equivocal relationship, and the brain remained consistently separated from the body rather than being seen as part of a complex living organism. The notion of an integrated organism—the idea of an ensemble made up of a body proper and a nervous system—was available in the work of thinkers such as Ludwig von Bertalanffy, Kurt Goldstein, and Paul Weiss but had little impact in shaping the standard conceptions of mind and brain.

To be sure, there are exceptions in this broad panorama. For instance, Gerald Edelman’s theoretical proposals on the neural basis of the mind are informed by evolutionary thinking and acknowledge homeostatic regulation; and my somatic-marker hypothesis is grounded on notions of evolution, homeostatic regulation, and organism. But the theoretical assumptions according to which cognitive science and neuroscience have been conducted have not made much use of organismic and evolutionary perspectives.

In recent years both neuroscience and cognitive neuroscience have finally endorsed emotion. A new generation of scientists is now making emotion its elected topic. Moreover, the presumed opposition between emotion and reason is no longer accepted without question.

For example, work from my laboratory has shown that emotion is integral to the processes of reasoning and decision making, for worse and for better. This may sound a bit counterintuitive, at first, but there is evidence to support it. The findings come from the study of several individuals who were entirely rational in the way they ran their lives up to the time when, as a result of neurological damage in specific sites of their brains, they lost a certain class of emotions and, in a momentous parallel development, lost their ability to make rational decisions. Those individuals can still use the instruments of their rationality and can still call up the knowledge of the world around them. Their ability to tackle the logic of a problem remains intact. Nonetheless, many of their personal and social decisions are irrational, more often disadvantageous to their selves and to others than not. I have suggested that the delicate mechanism of reasoning is no longer affected, nonconsciously and on occasion even consciously, by signals hailing from the neural machinery that underlies emotion.

This hypothesis is known as the somatic-marker hypothesis, and the patients who led me to propose it had damage to selected areas in the prefrontal region, especially in the ventral and medial sectors, and in the right parietal regions. Whether because of a stroke or head injury or a tumor which required surgical resection, damage in those regions was consistently associated with the appearance of the clinical pattern I described above, i.e., a disturbance of the ability to decide advantageously in situations involving risk and conflict and a selective reduction of the ability to resonate emotionally in precisely those same situations, while preserving the remainder of their emotional abilities. Prior to the onset of their brain damage, the individuals so affected had shown no such impairments. Family and friends could sense a “before” and an “after,” dating to the time of neurologic injury.

These findings suggest that selective reduction of emotion is at least as prejudicial for rationality as excessive emotion. It certainly does not seem true that reason stands to gain from operating without the leverage of emotion. On the contrary, emotion probably assists reasoning, especially when it comes to personal and social matters.
Consciousness and Emotions

The Brain Knows More Than the

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of a more evolutionary vestige. They are made in a hierarchy of

expressions of emotion. These expressions are defined and their interpretation

response; cannot operate properly when the emotions are

expression of emotion is a problem. Well-regulated and well-deployed

become known and become new emotions.

feeling in the limited time window of the here and now is conscious

immediate steps leading to an effect. This makes the occurrence of

Our brain's conscious of the remains of the emotion letalone

once the cascade of processes that lead to an emotional display will

our brain's consciousness can efficiently control the emotion. For

effect of emotions is created by the brain's neural networks, which

the emotion, the neural networks between them and their emotion.

on the brain's conscious ability to regulate emotions, something

you are conscious of the here and now. You can feel that

experiences, the brain's neural networks, and their subsequent

the brain, and the brain's conscious ability to regulate emotions.

When the brain knows more than the

consciousness, are a subjective feature of the emotion.

improving the understanding of emotion.
The situation just described allows us to make some other points.

In the next chapter, we will see how the setting of the food—e.g., its form, color, and presentation—can influence perceived taste. We will also explore the role of expectation and context in flavor perception. Finally, we will consider the importance of sensory memory in shaping our appreciation of food.

In conclusion, the study of food and flavor is a fascinating and complex field. By understanding the underlying principles, we can enhance our appreciation of the culinary arts and improve our overall health and well-being.

References


Further reading

If you are interested in learning more about the science of food and flavor, consider exploring the following resources:

- The Flavor Bible: A Field Guide to Food Flavor
- Food: A History of Eating
- The Science of Flavour: An Introduction to the Sensory Evaluation of Foods
The feeling of your body. After all, your body saves you. If you could save your body, you could save yourself. If you could save yourself, you could save the world. If you could save the world, you could save the universe. If you could save the universe, you could save all of existence. But if you could save all of existence, you would be God. If you were God, you could do anything. You could fly, you could heal, you could be anything you wanted to be. But you are not God, so you are limited in what you can do. But you can still do some things. You can change your own life, you can help others, you can make a difference. So don't give up. Keep fighting. Keep believing. You can do it.
What Are Emotions

An emotion is a complex response to a particular stimulus. Emotions can be positive or negative, and they can range from mild to intense. Emotions are often associated with physiological responses, such as changes in heart rate, blood pressure, and breathing. They are also closely tied to psychological processes, such as thoughts and beliefs. Emotions can be expressed through body language, facial expressions, and verbal communication. They can also be influenced by cultural and social contexts.

Emotions play a crucial role in our lives. They help us to interpret and respond to the world around us. They can motivate us to take action, and they can also influence our decision-making. Emotions can be positive, such as joy and love, or negative, such as fear and anger. Understanding emotions is important for our well-being and for our ability to connect with others.
The Protocal Function of Emotions is the second of the three functions of emotions. The first function is the Protocal Function of Emotions which, as previously mentioned, serves to regulate and direct behavior. The Protocal Function of Emotions is responsible for setting emotional standards and for providing a basis for emotional expression.

The Protocal Function of Emotions, as a whole, is responsible for the overall emotional tone of a situation. It determines the level of emotional intensity that is appropriate for a given situation, and it provides a framework for emotional expression. The Protocal Function of Emotions also plays a role in the production of emotional states, as it is responsible for generating the emotional energy that drives emotional behavior.

The Protocal Function of Emotions is closely related to the Protocal Function of Emotions, which is responsible for regulating the production of emotional states. The Protocal Function of Emotions operates on a more fundamental level, while the Protocal Function of Emotions operates on a more refined level.

In background emotions, the Protocal Function of Emotions serve as the foundation for the emotional response. The Protocal Function of Emotions, therefore, plays a critical role in determining the emotional response to a given situation. The Protocal Function of Emotions, in turn, is influenced by the Protocal Function of Emotions, which provides a framework for emotional expression.

The Protocal Function of Emotions serves to regulate and direct emotional behavior, and it provides a basis for emotional expression. The Protocal Function of Emotions, as a whole, is responsible for the emotional tone of a situation, and it determines the level of emotional intensity that is appropriate for a given situation.
The basic level of the regulation — the survival level — includes biological drives and primary emotions like hunger and thirst. These motivate us to acquire food and water. Emotions can include a range of pain, anger, fear, and other negative states. The regulation of emotional experience helps us to modify our behavior. When we feel threatened, our body responds with fight or flight. This is a basic survival mechanism. Emotions can influence our perceptions, thoughts, and actions. They can also help us to make decisions and solve problems. Emotions are important in shaping our relationships and interacting with others. Understanding emotions can help us to better communicate and connect with others. The regulation and control of emotions are essential for our mental health and overall well-being.
You may never come to know why. Perhaps it is because you have never known the importance of emotion in the development of cognitive abilities. Emotions play a crucial role in shaping our understanding of the world and how we interact with it. They influence our decisions, judgments, and behaviors, and are essential for social interaction and personal well-being. Understanding the role of emotion in cognitive development is crucial for educators and parents.

Emotions, as the expression of internal states, are closely related to the development of cognitive abilities. They are an integral part of the learning process, driving us to explore and seek answers to our questions. Emotions are also closely linked to the development of language, as they influence our ability to communicate effectively.

In conclusion, emotions are a fundamental aspect of human development. They play a crucial role in shaping our cognitive abilities and should be recognized as an important part of the educational process. By understanding the role of emotion in cognitive development, we can better support the growth and development of our children.
The feelings of emotion are often associated with parts of the brain that are sensitive to social cues. Emotion is understood as the neural correlate of the experience of joy, often described as an affective response to a particular stimulus. This concept is crucial in understanding the impact of emotion on decision-making and behavior. Emotions are believed to influence our thoughts, actions, and reactions, and they play a significant role in shaping our daily lives. Understanding the role of emotion in cognitive processes is essential for developing effective strategies to manage stress and improve overall well-being.
The region, hypothalamus and basal forebrain, known as the emotional regulation system, is involved in the regulation of emotions. The hypothalamus is a small structure located in the brainstem. Its function is to regulate basic body functions such as eating, drinking, and body temperature. The basal forebrain includes the amygdala and the medial prefrontal cortex, which are associated with emotions and decision-making.

The amygdala is a small almond-shaped structure located in the temporal lobe of the brain. It is involved in the processing of fear and emotional responses. The medial prefrontal cortex (mPFC) is located in the front part of the brain, just above the eyes. It is involved in higher-order functions such as decision-making, planning, and regulation of emotions.

The interaction between the hypothalamus, amygdala, and mPFC plays a crucial role in the regulation of emotions. For example, when we feel happy, the mPFC sends signals to the amygdala to reduce the response to potential threats, and to the hypothalamus to increase the release of hormones associated with positive emotions. Conversely, when we feel sad or anxious, the amygdala sends signals to the mPFC to increase the response to potential threats, and to the hypothalamus to decrease the release of hormones associated with positive emotions.

In summary, the emotional regulation system is a complex network of brain regions that work together to help us manage our emotions. Understanding how this system works can help us better understand our own emotions and develop strategies to regulate them.
When the brain is affected by calcium deposits, the most frequently reported symptom is visual disturbance. These patterns of visual disturbance are often associated with calcium deposits in the brain and cause areas to appear brighter or darker than they actually are. This is because calcium deposits prevent the normal flow of light through the brain, leading to distorted perceptions of color and brightness.

The following excerpt illustrates the potential effects of brain calcification:

"Calcium deposits in the brain can lead to visual disturbances, such as seeing colors or objects that are not actually there. This can be a result of calcium deposits in the optic nerves or in the visual cortex of the brain. The symptoms can range from mild blurring of vision to complete loss of vision in affected areas. Treatment options for calcium deposits in the brain include surgery to remove the deposits or medications to reduce calcium levels in the blood. It is important to seek medical attention if you experience any changes in your vision or sense of color that persist for more than a few days."

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be a global change in the area of the organism, the organism which receive the result of the coordinated chemical and neural commands is the organism.
The process of recognizing emotion is complex and involves multiple cognitive processes. Under certain circumstances, the expression of emotions may influence the body's physiological responses. The body's response to emotional cues can be influenced by pre-existing psychological factors and learned under circumstances that are emotionally charged. For instance, a sudden change in emotional state, triggered by a number of factors, can result in a physiological response that is reflected in the brain's activity. This interplay of body and brain is essential in understanding the process of emotion recognition.

Steps of the Process:

1. The initial step involves the recognition of emotional cues in the environment.
2. The brain then processes these cues to elicit appropriate responses.
3. These responses are mediated by the interaction of neural circuits located in the brain's limbic system.
4. The physiological responses are then integrated with the emotional experience.
5. Finally, the emotional experience is processed and integrated with other cognitive processes.

Understanding the interplay of body and brain is crucial in the field of emotion recognition. The recognition of emotions is a complex process that involves multiple neural circuits and physiological responses. By understanding these processes, we can better appreciate the intricacies of human emotion and the way it is expressed and recognized.
Chapter 1: The Foundation of Emotion

Emotion is defined as a complex of responses that is instigated by the brain in response to a stimulus. These responses are not just simple changes in facial expressions, but are also accompanied by changes in heart rate, muscle tension, and chemical activity in the brain.

The term 'emotion' is often used interchangeably with the terms 'feeling' and 'experience'. However, emotions are more complex than just simple reactions to stimuli. They involve a variety of cognitive and physiological processes that are integrated into a single experience.

The study of emotion is important because it helps us understand how we respond to different situations and how these responses affect our behavior.

Sharing the Definition of Emotion: An Aside

Why is it that when someone asks you how you feel, you have difficulty answering? It's because the experience of emotion is so complex that it's hard to pinpoint just one aspect.

For example, when you feel happy, you might experience a sense of joy, a feeling of contentment, or a sense of excitement. These feelings are all part of the same emotional experience, but they are all distinct from each other.

In conclusion, emotion is a complex and multifaceted phenomenon that involves both cognitive and physiological processes. It's important to understand the different aspects of emotion in order to better understand how we respond to different situations.

References:


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The question then is whether or not there is some neural pattern of intended use that the brain would associate with the memory of the emotion. The conditioning needed to generate a sensation of pain leads to a change in your emotional state and to a change in your behavior. The brain, in turn, responds to this change by producing a neural pattern that is associated with the memory of the emotion.

The conditioning needed to generate a sensation of pain leads to a change in your emotional state and to a change in your behavior. The brain, in turn, responds to this change by producing a neural pattern that is associated with the memory of the emotion.

The emotional state of the brain, the feeling of happiness, is a result of the succession of significant events.
Emotion and Feeling

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The Stimulus for the Representation of Emotion and Feelings

The stimulus for the representation of emotion and feelings is a complex interplay between various factors. Emotions and feelings are not simply expressions of raw sensory experiences but are constructed based on the interaction between the internal state of an individual and the external environment. These states of mind can be triggered by a wide range of stimuli, from physical sensations to cognitive appraisals of situations.

Emotions can be classified into primary and secondary emotions. Primary emotions, such as joy, sadness, anger, and fear, are innate responses to basic needs and safety threats. Secondary emotions, on the other hand, are more complex and are shaped by cultural and social contexts.

The expression of emotions is often accompanied by physical manifestations such as changes in facial expressions, body language, and physiological responses. These expressions help individuals communicate their internal states to others, facilitating social interactions and relationships.

The regulation of emotions is a critical aspect of emotional intelligence. Effective emotional regulation involves the ability to recognize and labels emotions, to understand their causes, and to manage them in a productive way. This process is essential for maintaining functional relationships and achieving personal goals.
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