

William James and Emotion: Is a Century of Fame Worth a Century of Misunderstanding?

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During his lifetime William James's complex ideas about emotion were oversimplified to the point of caricature, and for the next half century scientific research on emotion was driven by the oversimplified version—by the idea that emotions are merely the sensation of bodily changes. In fact, the interpretation of the stimulus was an essential feature of James's ideas, but one that seemed so obvious that it did not require explanation. Three damaging scientific consequences of the mischaracterization of James's views were (a) the nearly exclusive focus on bodily process, (b) the reification of emotions as entities rather than processes, and (c) the linear thinking produced by the concern with the sequence of affect, interpretation, and bodily response.

Ask anyone about William James's theory of emotion and you will almost certainly hear about the bear. James wrote a great deal about emotion, reviewing the available evidence; puzzling over the role of situational appraisals, feelings, bodily sensations, and actions; modifying and refining his ideas; defending himself against his critics; expressing ambivalence about the value of emotions; occasionally seeming to contradict himself; and never fully resolving the thornier issues in his own mind.¹ Yet almost from the first, it was the bear that was noticed, and a hundred years later it is the bear that is remembered. Read any account of James's theory of emotion and you will almost certainly read about the bear:

My theory . . . is that *the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur IS the emotion*. Common-sense says we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble. (1884/1969, pp. 247-248; 1890/1950, Vol. 2, pp. 449-450; emphasis in original)²

For the last hundred years, the scientific influence of James's writings on emotion has been predominantly the influence of this paragraph. By 1894, in the article reprinted here, the bear and what it stood for had already become the major focus of the attacks on the theory. Dr. Worcester is already making fun of the idea that bears elicit specific physiological responses, and all

of the critics James cited are objecting in one way or another to the idea that emotion consists of bodily symptoms. Thanks to the bear, the theory almost immediately became a caricature of itself, a "classic popularization" (Grastyán, 1984). James's actual claim—that the sensation of bodily changes is a *necessary condition* of emotion—was simplified and quickly crystallized into the idea that emotions are *nothing but* the sensation of bodily changes. A century later, this classic popularization still holds sway in textbook descriptions, even the best of them. The bear paragraph is quoted, and explained, for example, as follows: "In effect the theory asserts that the subjective experience of emotion is neither more nor less than the awareness of our own bodily changes in the presence of certain arousing stimuli (Gleitman, 1986, p. 391). Serious scholars have done little better.

Of course, James was not entirely a blameless victim. Like many a subsequent student of emotions, particularly those who write well, he was tempted by the extravagant phrase. He wrote the paragraph; he said "our feeling of the same changes as they occur is the emotion," using both italics and uppercase letters; and he probably felt rather pleased about it, since he repeated the whole paragraph verbatim in *Principles* 6 years later. By 1894, however, having read numerous articles calling him to account for simplistic ideas he did not believe, he was sorry: "I think that all the force of such objections lies in the slapdash brevity of the language used, of which I admit that my own text set a bad example when it said 'we are frightened because we run' " (1894, p. 519).³ "The Physical Basis of Emotion" is particularly interesting in that it was James's attempt to set the record straight and explain exactly what he did mean.

I am grateful to Ann Berthoff, Samuel Gross, David Gross, Alexandra Ellsworth Gross, William Miller, and Robert Zajonc for their useful comments on earlier drafts of this article. Jay Hook helped me with the history, and Barbara Brown helped with the typing and editing. I realize that several important points would benefit by further development and that still others are left out entirely, but I ran out of space.

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¹ James's major publications on emotion were "What Is an Emotion?" (1884/1969); "The Emotions" (In *The Principles of Psychology*, 1890/1950); "The Physical Basis of Emotion" (1894, reprinted here); and a popularized version in *Talks to Teachers in Psychology* (1899/1958). Discussion of emotions and, more generally, feelings pervades his writings on other topics, such as attention, belief, will, and consciousness.

² Much of James's 1884/1969 article was reprinted verbatim in the chapter on emotion in *Principles*, hence the double citation.

³ Of course, he never actually used the phrase "we are frightened because we run"; he is quoting the popular shorthand.

His attempt to explain himself was no more effective than most published retractions. Winton (1990), in an excellent article devoted to the resuscitation of "The Physical Basis of Emotion," pointed out that the 1894 article was rarely cited, and when it was, it was usually treated as indistinguishable from its older, more famous, more popular brothers, *Principles* and *What Is an Emotion?* Between 1955 and 1969 it was not cited at all, and between 1969 and 1988, during the recent resurgence of interest in emotion, it was cited fewer than a dozen times (Winton, 1990, p. 661). As far as science was concerned, James's theory of emotion was the theory in the famous paragraph.

For James, emotion was multiply determined and multifaceted, and emotion played a role in almost every aspect of mental life, including thought. Many of the questions and ideas that characterize the contemporary renaissance of interest in the emotions have precursors in James's work; theorists who emphasize specific facial or bodily feedback, subjective experience, misattribution of arousal, cognitive appraisal, or the influence of mood on thought and memory can all find relevant passages to cite, and they have begun to do so (cf. Arkin, 1990). Rereading *Principles* on the occasion of its 100th anniversary, many of us have found that James anticipated our own ideas, even though we never noticed those ideas in the book before we thought of them ourselves. Current theory and research was not influenced by James's work to any great extent, nor did the recently rediscovered ideas generate much research historically. James's ideas about emotion are complicated and comprehensive, sometimes ambiguous, sometimes ambivalent, and never quite complete, even in the 1894 article. It is perhaps somewhat of a misnomer even to refer to James's ideas as a "theory." But the idea that stimulated decades of research is fairly simple and straightforward: Emotion is the perception of peripheral bodily changes, no more, no less.

This simplified version of James's ideas seriously impeded the study of emotion, even as it generated enormous amounts of research. A half century after the publication of *Principles*, research on emotion had practically disappeared. As one commentator put it,

With the appearance of each new book in psychology, the term emotion seems less likely to arise; authors seldom devote an independent chapter to the topic. . . . After the 1940's it seemed that the concept of emotion might dissolve in the complexities of motivational [physiological] phenomena. (Grastyán, 1984, p. 757)

In this article I describe three unfortunate consequences of the focus on the simplified version of James's theory, consequences that nearly eliminated emotion as a topic of scientific research. The first of these is the belief that research on emotion must consist of research on bodily processes; the second is the definition of emotions as categorically distinct rather than continuous; the third is the focus on the order of events in the generation of emotion.

The Body

James believed that bodily sensations were essential to the experience of emotion. Although nowadays we tend to give James credit (or blame) for originating this idea, in fact a debate

over the role of bodily processes in mental events can be traced back at least to Descartes (1649/1989) and had been in continuous progress since the late 18th century (Hook, 1993; Myers, 1986). The opposition, expressed in the writings of Maine de Biran (1760–1824) and most famously represented in James's time by Wilhelm Wundt, argued that the perception of the exciting object causes a pure, bodiless feeling of fear, anger, or some other emotion. The bodily manifestations are effects or expressions of this mental emotion. James took the position formulated earlier by Destutt de Tracy (1754–1836) and argued that without the bodily sensations there could be no feeling of emotion, that "a cold and neutral state of intellectual perception is all that remains" (1884/1969, pp. 253–255; 1890/1950, pp. 452–453). Although he used the phrase "the feeling of [the bodily] . . . changes as they occur *is* the emotion," the context makes it clear that he meant that the sense of the bodily changes provides the *emotionality* to what would otherwise be a neutral perception or interpretation of the situation. Bodily sensations are not the whole experience; they are the part that makes the whole experience emotional. The bodily sensations, "perceived, like the original object, in many portions of the cortex, combine with it in consciousness and transform it from an object-simply-apprehended into an object-emotionally-felt" (1884/1969, pp. 270–271; 1890/1950, Vol. 2, pp. 473–474). The bodily processes combine with the perception of the object to produce the emotion. In this respect, James's theory resembles Schachter and Singer's (1962) idea that emotion is a combination of cognitive and physiological responses.

Unlike Schachter and Singer, however, James did not believe that the bodily contribution to emotion consisted of an undifferentiated state of physiological arousal but rather that the physiological responses were "almost infinitely numerous and subtle" (1884/1969, p. 250), reflecting the infinitely nuanced nature of emotional life. Every fleeting change in feeling was accompanied by a corresponding change in the bodily sensations. James's view of the types of bodily response that contribute to emotion was comprehensive. Autonomic responses, hormonal responses, and muscular responses (including both those that are generally designated as "expressive movements," and the more instrumental "action tendencies"; cf. Frijda, 1986) all contribute to the complex bodily feedback that creates emotional feeling.⁴

But where do these infinitely subtle variations in bodily response come from? How does the body know which complex of reactions to produce when the bear shambles into view? This was the question that worried James's critics when they argued that bears do not automatically cause us to run or tremble. In "The Physical Basis of Emotion," James makes it perfectly clear that "the perception of the exciting fact," that is, the perceiver's appraisal of the situation, starts the process. *Of course* the message does not go straight from the retina to the viscera; of course the situation typically has to be interpreted. The role of interpretation (or appraisal) in emotion is so obvious that it needs no special emphasis:

⁴ The term *autonomic* was not in general use in James's time. He used the term *visceral*, or sometimes *involuntary* to distinguish autonomic feedback from muscular feedback, which he generally referred to as *somatic* or *voluntary*.

As soon as an object has become thus familiar and suggestive, its emotional consequences, on any theory of emotion, must start rather from the total situation which it suggests than from its own naked presence. . . . The same bear may truly enough excite us to either fight or flight,⁵ according as he suggests an overpowering 'idea' of his killing us, or one of our killing him. But in either case the question remains: Does the emotional excitement which follows the idea follow it immediately, or secondarily? (1894, p. 518, emphasis in original)

There is no question that when James used the term *perception* he meant more than simple sensation; he meant cognitive appraisal. On the first page of Volume 2 of *Principles*, he distinguishes perception from sensation as follows: "The fuller of relations the object is . . . the more it is something classed, located, measured, compared, assigned to a function, etc., etc.; the more unreservedly do we call the state of mind a perception, and the relatively smaller is the part in it which sensation plays" (1890/1950, Vol. 2, p. 1). James did not talk much about the perception because the idea that a situation generally has to be interpreted was self-evident, and he, like most of us, devoted most of his attention to what he thought was his most original idea—the role of the bodily responses. Unfortunately, this emphasis, along with his flashy prose, led readers to assume that the emotion was the bodily response and nothing more. It is interesting that of the three examples in James's famous paragraph, the bear is remembered. If later writers had focused instead on the loss of one's fortune, or even more so, on an insult from a rival, it would have been difficult to ignore the role of cognition in James's theory. Insults and rivals are obviously cognitive constructs in a way that bears are not.

Thus it is clear that, for James, cognition usually played a major, initiating role in emotion. He kept an open mind, however, on the question of the *necessity* of cognition and was intrigued by situations in which bodily influences might occur without corresponding cognitions. Dr. Worcester and Mr. Irons, anticipating Cannon and later critics, point out that many bodily symptoms of emotions also occur in nonemotional contexts—shivering from cold, for example, or vomiting from indigestion. James defended himself against these attacks, first, by arguing that the bodily symptoms must correspond to the perception of the situation (1894, p. 518) and, second, by denying that there are any specific bodily responses that are diagnostic of specific emotions. Shivering from cold is not accompanied by all of the other facial, somatic, and visceral responses characteristic of various types of fear, and so there is no reason to expect that a person who steps out into the cold should feel any kind of fear. Thus, in the vast majority of cases this objection is irrelevant.

However, James goes further and poses the question: What if the body were aroused in a way that duplicated fear symptoms exactly but without a fearsome stimulus? He concluded that this sort of exact mimicry does sometimes occur and that it is the basis for emotions such as objectless fear, grief, or rage, emotions which, on the whole, he considered pathological. Today objectless fear is referred to as free-floating anxiety, and attacks of objectless grief may be symptomatic of depression (Beck, 1976).

The idea that bodily sensations are sometimes sufficient to produce specific emotions never became generally accepted in psychology, but it never quite died, either, not even after Can-

non's (1927) persuasive criticism. It was reflected in the work of Bull (1951) and Gellhorn (1964). Tomkins (1962; Tomkins & McCarter, 1964) brought facial expression to center stage as the primary source of emotion, a view that was carried on in the work of Paul Ekman (1984) and Carroll Izard (1971) and that has generated a considerable amount of research in recent years (see Laird & Bresler, 1990; Winton, 1986), although many of these theorists tend to finesse the question that James addressed in 1894: What tells the face which expression to assume? (Tourangeau & Ellsworth, 1979). The idea that affect can occur without prior cognition has also been central to the recent research of Robert Zajonc (1980; Adelman & Zajonc, 1989; Zajonc, Murphy, & Inglehart, 1989).

James also considered the idea that the bodily arousal could outlast the perceptions that produced it and could still affect our feelings even after our appraisal of the situation no longer warranted an emotional response (1894, footnote on p. 522). The horror of a nightmare does not vanish instantly when we realize that it was only a dream, but persists. In some ways, as Winton (1990) pointed out, this idea anticipates the explosion of research on misattribution of arousal that followed the publication of Schachter and Singer's theory in 1962. Much of this research departs from the Jamesian point of view in that the new work typically views the bodily sensations as generalized sympathetic arousal (Schachter & Singer, 1962; Zillman, 1978), but some studies indicate that at least valence information may be conveyed by bodily feedback as well (cf. Winton, 1990).

None of this is intended as an argument that James knew a hundred years ago what we know now, or even that James "got it right"; it is only intended as an argument that his work included a great many more interesting, complicated, and valuable ideas than he usually gets credit for. Some of James's claims were definitely wrong, and others are confusing and possibly self-contradictory. He argued very firmly that there were "no special brain-centres for emotion" (1884/1969, pp. 270–271; 1890/1950, pp. 472–474), and this is certainly false. He was never very clear on whether the physiological feedback was a cause or a component of the emotion; he seemed to argue that the bodily sensations create a *feeling*, which is different from the sensations themselves, and that this feeling is the emotion (Myers, 1986, pp. 235–237). In his discussion of "The Subtler Emotions," referring to feelings of moral, intellectual, and aesthetic appreciation not generally included as emotions in modern theories, he tangled himself up in ambivalence about whether "some of us," sometimes, experience "genuinely cerebral forms of pleasure" (1890/1950, p. 468) with no bodily involvement. Perhaps some connoisseurs may make aesthetic judgments without bodily reverberations; James allowed such feelings "hypothetically to exist" (1894, p. 524) but doubted whether they could be called emotions (1890/1950, p. 470–471) and failed to resolve the issue.

More important for future research, James vacillated considerably in his statements about the kinds of bodily responses that

⁵ I cannot resist pointing out that "fight or flight" was the oversimplified phrase used to sum up the theory of James's nemesis, Walter Cannon. Thus James's penchant for exciting phrases not only provoked the work that consigned his theory to decades of oblivion but provided the cliché by which we remember the work of the man who did him in.

determine emotion. Most of his vivid descriptions include expressive movements, such as frowning; visceral feedback such as shivering; action tendencies such as cringing and clenching the fist; and various "pangs," "glows," "fullnesses," and "tingles" that are difficult to classify:

Rigidity of this muscle, relaxation of that, constriction of arteries here, dilation there, breathing of this sort or that, pulse slowing or quickening, this gland secreting and that one dry, etc. etc. (1890/1950, p. 477)

A glow, a pang in the heart, a shudder, a shiver down the back, a moistening of the eyes, a stirring of the hypogastrium, and a thousand unnameable symptoms besides, may be felt the moment the beauty excites us. (1890/1950, p. 470)

In the 1894 article, James criticized Lange for overemphasizing visceral feedback (p. 517), yet by the end of the article, he himself, commenting on Sollier's case study, seemed to claim a more important role for the viscera than for the muscles. I expect that James, who consistently argued that the bodily changes were "so indefinitely numerous and subtle that the whole organism may be called a sounding-board" (1890/1950, p. 450), strongly believed that all kinds of bodily sensations, somatic and visceral, voluntary and involuntary, contributed significantly to the emotional experience, but that he occasionally retreated to a special emphasis on visceral feedback as a defense against the chortling cheap shots of critics like Dr. Worcester, who found it easy to make fun of the role of voluntary behaviors: Why! If I am caught in a sudden shower and step into a shop to buy an umbrella, then according to James, "the fear in this case consists in buying the umbrella," ho, ho, ho (James, 1894, quoting Dr. Worcester, p. 519). Once again, the exciting phrase has obscured the ideas, and James defensively retreats to an emphasis on involuntary, autonomic feedback just a sentence or two later: "Yet let the word 'run' [from the bear paragraph] but stand for what it was meant to stand for, namely for many other movements in us, of which invisible visceral ones seem by far the most essential . . . and our theory holds up its head again" (1894, p. 519).

Whatever short-term gains James may have gotten from his occasional emphasis on the viscera were eclipsed, I think, by long-term losses. Partly because visceral feedback was so central to Lange's theory (1885/1922), and partly because James's own views of the relative importance of visceral and somatic sensations wavered, James's ideas became further oversimplified in the eyes of later researchers so that he was not only misread as saying "Emotion is (nothing but) bodily sensations" but further misread as saying "Emotion is (nothing but) autonomic sensations."

This simplistic formulation, reinforced by the advent of behaviorism, severely restricted research and theory on emotion for decades. The discovery of the bodily correlates of different emotions became the central goal. Physiological measures dominated the study of emotion, with facial expressions and other expressive movements as a secondary theme. Research on cognitive appraisals or correlates ("the perception of the exciting fact") disappeared. So did research on the feeling of emotion (cf. Izard, 1990), on the functions of emotion, and even on emotional behaviors or action tendencies. Woodworth and Schlosberg, in their comprehensive 1954 review of psychology, de-

voted 3 of their 26 chapters to emotion: one on expressive movements, one on the autonomic nervous system and the galvanic skin response, the third on "other bodily changes." In the preface, they stated that "most of the material on Feeling . . . [from the 1938 edition] has been dropped, since there seems to be little recent work" (Woodworth & Schlosberg, 1954, p. vi).

The search for peripheral correlates of specific emotions was disappointing. Researchers sometimes succeeded but more often failed to find clear physiological patterns corresponding to fear, anger, grief, or love. Even the research on facial expression was dismissed as showing no clear relation to emotion (Taguri, 1968; and cf. Ekman, Friesen, & Ellsworth, 1972, for a review). The studies that brought serious consideration of facial expression to a halt (Landis, 1924; Sherman, 1927) were published at about the same time as Cannon (1927) delivered the coup de grace to serious consideration of the autonomic nervous system as a source of emotional differentiation.

A theory that has been reduced to a single phrase is easy to demolish; refute the phrase and there is nothing left. Cannon's work was a brilliant refutation of the idea that emotion is nothing but the sensation of autonomic processes. That this idea was not James's theory is irrelevant; it was the idea that was in the air and that was believed to be James's theory.⁶ Cannon argued that (a) the same visceral changes occur in different emotional states and even in some nonemotional states, such as physical exercise; the viscera are (b) too insensitive and (c) too slow to account for the variety of emotional experience, and (d) visceral arousal alone does not create emotion. His strongest argument was that (e) animals still showed emotional behavior when feedback from the viscera was surgically eliminated.

Cannon's work had the very important positive consequence of ushering in the slow, painful, but ultimately fruitful search for emotional mechanisms in the brain. It had the negative consequence of reducing all other research on differentiated emotions to a trickle. All the body did was to provide a general state of arousal (Lindsley, 1951), and questions about the differentiation of emotion and the experience of emotion were largely ignored for 30 years. The field of emotion research became barren and boring because it had been narrowed to a single hypothesis, and then that hypothesis was discredited. Imagine what would have happened to other areas of psychological research if investigators had been required to demonstrate clear physical correlates of the processes they studied. If students of memory, learning, problem solving, attitudes, or cognitive development had had to show physical changes in order to make creditable statements about the mental processes they described, these fields could not have advanced. The field of psychology might well have returned to the province of the biologists on the one hand, and the philosophers on the other.

James, had he been alive to do so, would probably have responded to Cannon by saying that he never meant to restrict bodily feedback to the autonomic nervous system, that the interpretation of the situation was essential to the emotional experience, and that what he cared about was the feelings of human beings, not the whinings and scratchings of sympathectom-

⁶ If it had not been attributed to a scientist of James's eminence, it might have been regarded as too simple and silly to generate much research.

mized cats. Not until the 1960s was the field ready to entertain these arguments. Tomkins (1962) revived interest in bodily feedback, avoiding the Cannon critique by emphasizing facial rather than autonomic influences. Schachter and Singer (1962), later followed by the cognitive appraisal theorists (Frijda, 1986; Ortony, Clore, & Collins, 1988; Roseman, 1984; Scherer, 1984; Smith & Ellsworth, 1985; Stein & Levine, 1989; Wiener, 1985), brought back “the perception of the exciting fact.” Zajonc (1980) and Izard (1990) made feelings respectable again.

Words, Categories, and Dimensions

In the paragraph about the bear, James named three different emotions—fear, sorrow, and anger, each with a characteristic behavior. The problem I want to talk about in this section is the tendency for language to reify the referent, for discrete terms to imply discrete entities: fear, sorrow, anger. It is unfortunate that James should have resorted to such a list in his most famous paragraph because, in general, he took great care to deny the existence of emotions as discrete entities. James wanted to argue, and did argue, that every slight change in bodily sensation creates a change in the quality of the emotional experience (1884/1969, p. 252; 1890/1950, p. 450), that emotions, like consciousness, are a continuous stream rather than a collection of separate states. Nonetheless, like the rest of us, to be understood he had to use terms like fear, anger, and grief: “We are afraid because we tremble.” Such statements encouraged his critics to interpret him as saying, “there is a distinct category of feeling, *fear*, and it consists of trembling.”

Their attacks followed predictably: Sometimes I feel fear, and I do not tremble; I buy an umbrella. Sometimes I tremble, and I do not feel fear; I feel cold. James was in the difficult position of trying to argue that emotional states are characterized by specific patterns of bodily sensations while denying both the existence of discrete, uniform emotional states corresponding to English-language categories and the one-to-one correspondence between any particular physical symptom and any particular verbal category. Not even facial expressions are diagnostic: “Such a question as ‘What is the “real” or “typical” [facial] expression of anger or fear?’ is seen as having no objective meaning at all” (1890/1950, p. 454). James believed that an infinite number of emotional states existed, that there was no reason to believe that different people’s emotional experiences and bodily responses to a state they called “anger” should be identical, and in fact there was good reason to expect them to be somewhat different. Because there are far fewer words than feelings, similar states are absorbed by a single name. “[The] angers . . . of different men still preserve enough *functional* resemblance, to say the very least, in the midst of their diversity to lead us to call them by identical names. Surely there *is* no definite affection of ‘anger’ in an ‘entitative’ sense (1894, p. 520, emphasis in original).

James did his best to discredit the idea that emotion terms correspond to discrete and uniform states. He expressed disdain for the competing taxonomies and lists of contemporary categorical theorists, and the second most famous statement in his writing on emotion is his expression of utter boredom on reading these accounts: “I should as lief read verbal descriptions

of the shapes of the rocks on a New Hampshire farm as toil through them again” (1890/1950, p. 448).

His efforts were largely unsuccessful. In the first place, the power of language is hard to resist, and our language is far richer in words for static states than it is in words for processes or streams. It is impossible to discuss emotions without using words like fear, anger, and sorrow, and it is difficult to believe they are no more concrete or uniform or neatly bounded than emotional states that have no English names. Modern theorists struggle with semantics as much as their predecessors, arguing over whether “surprise” or “interest” or “contempt” is *really* an “emotion,” over “cognition” versus “affect,” and over the boundaries of “emotion” itself, as though all of these terms referred to discrete and insular entities.

In the second place, James’s belief that there were no discrete emotional states identifiable by specific physical criteria severely undermined the *testability* of his theory. If one laboratory attempts to create fear by threatening subjects with electric shock, and another opts for live snakes, who is to say that a failure to replicate discredits the theory that all emotional states have specific physiological correlates? The fear of shocks and the fear of snakes may be as different as the fear of a bear and the fear of rain. Worse yet, according to James, there was no reason to expect that two subjects in the same experiment would respond identically. Experience, excitability, imaginative ability, and culture may affect a person’s response (1884/1969, p. 256; 1890/1950, p. 475). So the simplifying assumption of one-to-one correspondence between emotional stimuli or labels on the one hand, and physiological responses or emotional experiences on the other, seemed essential for testing the theory, even though the actual theory had to be jettisoned in the process.

Categorical theories, in which emotions such as fear, anger, and sorrow are assumed to be discrete entities, have been around at least since Aristotle and continue to thrive today, exemplified by the work of Tomkins, followed by Ekman and Izard, who have argued for the existence of from 6 to 10 different “basic” emotions—innate, universal, and linked to specific neural programs in which facial expressions play an essential role. A common alternative view, proposed by Wundt (1896), is that all emotions can be defined and differentiated in terms of variations on a few underlying dimensions. Wundt proposed the three dimensions of pleasantness, arousal, and tension; current “circumplex” models (e.g., Russell, 1980) emphasize the first two; and the appraisal theorists (see Ellsworth, 1991; Frijda, 1986; Ortony et al., 1988; Roseman, 1984; Scherer, 1984; Smith & Ellsworth, 1985; Stein & Levine, 1989; Wiener, 1985) argue for six or more, corresponding to dimensions of perceptual appraisal such as novelty, pleasantness, certainty, control, and agency.

James fits neither of these traditions. He would have applauded Tomkins’s emphasis on bodily feedback, but he would never have endorsed a theory that classifies emotions into a limited number of categories. He would have approved of the dimensional theorists’ assumption of an unlimited number of emotions, and their view of emotions as processes rather than entities. He would have regretted their inattention to the body (but see Smith, 1989; Ellsworth, in press). More important, James generally believed that feelings were “simple, indivisible,

and unanalyzable" (Myers, 1986, p. 237). Even if the bodily feedback could be analyzed into separate elements, the resultant mental state could not, and this is what dimensional theorists, particularly appraisal theorists, try to do. Thus, although current categorical and dimensional theorists can both find support for some of their ideas in James's theory (Arkin, 1990), James was neither. He adamantly resisted all taxonomies, but he was also highly suspicious of the idea that feelings could be described as patterns of other mental elements.

The Order of Events

Most theorists of emotion agree that emotion involves interpretation of a stimulus, physiological arousal, expressive behaviors such as facial expressions, impulses to instrumental behaviors, and some sort of subjective feeling, although they differ markedly in the emphasis they place on each of these characteristics. They also differ in their descriptions of the timing of these various components, each author moving his or her favored element to a spot near the beginning.

The enduring concern with timing was one of James's most influential contributions to work on emotions, and perhaps his most original. The debate over the role of bodily processes in mental events was old when James was young, but James's explicit concern with the *order* of events was new, and he specifically described his new idea as an idea about timing: "The hypothesis here to be defended says that this order of sequence is incorrect" (1884/1969, p. 258; 1890/1950, p. 450).

The old theory, the commonsense theory, which James criticized, assumed the following sequence: *STIMULUS* → *INTERPRETATION* → *AFFECT* → *BODILY RESPONSE*.⁷ The commonsense theory of a century ago is easily recognizable as the commonsense theory of today. With interpretation emphasized and bodily response generally neglected, it also resembles the current ideas of cognitive scientists (Ortony et al., 1988) and of appraisal theorists. A person interprets an event and a subjective affective experience results.

The crucial change in James's theory was to reverse the order of the affect and the bodily response: *STIMULUS* → *INTERPRETATION* → *BODILY RESPONSE* → *AFFECT*. Interpretation precedes the bodily response, but little more was said about it in the original statement of the theory and nothing at all in the bear paragraph. The important part is that the visceral and motor responses "follow directly the perception of the exciting fact," and the awareness of these bodily changes is what makes that perception emotional. With the viscera downplayed and feedback from the facial muscles emphasized, this is also the model proposed by current facial feedback theorists who, with the exception of Tomkins, say little about the initial perception of the situation. Sometimes interpretation becomes interpretation of the bodily response (cf. Laird & Bresler, 1990), and sometimes it is moved to the end of the line (cf. Adelman & Zajonc, 1989).

A third revolutionary re-ordering was proposed by Zajonc in 1980. According to his affective primacy theory, the sequence is as follows: *STIMULUS* → *AFFECT* → *INTERPRETATION* → *BODILY RESPONSE*. Zajonc argued that often our very first responses to a stimulus are affective: We sense whether we like it or not before we know anything else about it (see also Murphy &

Zajonc, 1993). It was revolutionary in that it put affect before interpretation.

These three viewpoints have all been set down in simplified terms, both by myself here and, in some cases, by the authors in their original statements. Just as James qualified and expounded his ideas in the 1894 article, so the authors of affective primacy theory, facial feedback theories, and cognitive appraisal theories have qualified some of their flashier statements. The reason I have set them down here with such "slapdash brevity" is that I want to address a general problem raised by the abiding concern with sequence itself rather than to analyze the different theories. Off and on for a century, psychologists have argued about the order of events such as interpretation, subjective feeling, visceral feedback, facial expression, and instrumental behavior, arranging and rearranging these elements in different sequences and worrying about which ones were fast enough to be first. This fascination with the proper order of the elements, I think, has unwittingly led us to take it for granted that the things that we arrange and rearrange actually *are* elements, primary and indivisible. Thinking about the order of interpretation, feelings, and bodily responses suggests that they are things, like billiard balls. The interpretation ball hits the bodily process ball, which is set in motion and finally hits the subjective feeling ball. But of course they are not things, or elements, or billiard balls. Interpretation, subjective feeling, visceral and motor responses are all processes, with time courses of their own. There is no reason to believe that all of the bodily feedback should reach the brain before any subjective feeling results, or that the interpretation of the situation must be completed before the body can begin to respond, or that a fully nuanced emotional experience must occur before interpretation can begin. Yet many of the arguments for and against the various sequence theories have taken this form. To say, for example, that "visceral changes are too slow" to contribute to the differentiation of emotions (Cannon, 1927) is to imply that a complete, well-defined subjective feeling has sprung into being by the time the person feels her or his skin crawl and that therefore the sensation of the skin cannot play a role in the feeling.

One contribution of the appraisal theorists is to break down one of these "elements," the element of interpretation, into smaller components, which need not occur simultaneously and probably rarely do (Scherer, 1984; Ellsworth, 1991). The interpretation develops over time, and so does the feeling, in a continuously interactive sequence, often a very rapid one. Neither interpretation, nor bodily feedback, nor subjective experience comes first; at the very most, one can talk about which of these complex temporal processes *starts* first. I suspect that in different contexts, any one of them may start the process, although of course, like James, I believe that new sequences usually begin with the perception of an exciting fact.

Appraisal theorists who have written about the sequencing of appraisals (Ellsworth, 1991; Frijda, 1986; Scherer, 1984) have suggested very simple appraisals as entry points into the realm of emotions: a sense of attention or novelty, a sense of attraction or aversion, a sense of uncertainty. Rather than whole emotions,

⁷ Italicized terms indicate the parts of the sequence that most interest current proponents of each theory.

each *appraisal* may correspond to changes in the brain, the body, and the subjective feeling. At the moment when the organism's attention is aroused by some change in the environment or the stream of consciousness, certain neural circuits in the brain are activated (LeDoux, 1989; Posner & Peterson, 1990; Posner & Rothbart, 1992), the heart may slow, the head may turn, and the organism *feels different* than it did before the event. Arousal of attention does not necessarily lead to emotion—the novel event may be easily explained as trivial or familiar, and the organism returns to baseline—but attention is very often the first step in emotional arousal. No nameable emotion has yet developed, but already there are cognitive, physiological, behavioral, and subjective changes. If the organism senses that the stimulus is attractive or aversive, the feeling and the bodily responses change again. As each succeeding appraisal is made, mind, body, and feeling change again. The sequence may seem to burst forth all at once, or it may unfold over a much longer period of time. When all the requisite appraisals have been made, quickly or slowly, the person may say he or she is in a state corresponding to one of the familiar emotions catalogued by ancient and modern taxonomists. Nevertheless, such states may be rare (Izard, 1972; Ellsworth & Smith, 1988). Often the situation may be ambiguous with respect to one or more of the appraisals, or an appraisal may be variable, or the situation we perceive may change—on its own or in response to our own behavior so that no steady state is possible, at least not until long afterward, when the emotion has been catalogued in recollection.

Debates about the primacy of cognition, bodily responses, or feeling make little sense when emotions are considered as a stream. The question of the role of peripheral feedback only makes sense when phrased as the question James's hypothesis originally posed: Are bodily sensations necessary for the subjective feeling of emotion? The question of whether what is occurring is an emotion at all becomes a matter of semantics, of different theorists' preferences for different moments in the flow of events when, according to their different definitions, "cognition," or "affect," or "bodily feedback," or "emotion" has been achieved. Over the past century, James's stunning paragraph, describing the sequence of events in large units of perception (see a bear), behavior (tremble, run), and feeling (feel afraid) has drawn our attention away from the recognition that none of these units is elemental, none is stable. They are all in motion, all the time, and there is no reason to believe that one must end before another begins.

Conclusion

To be remembered and quoted after a century is a glorious thing, but it is humbling to think that if we are remembered, we may be remembered not for our best ideas but for our most careless exaggeration. In the bear paragraph we find the roots of the oversimplified notion that emotion is nothing but physiological arousal, when all James meant to say was that bodily feedback was a necessary condition for emotion. We find phrasing that allows us to think of each emotion as a distinct entity with a diagnostic symptom, although this was an idea James rejected. And we find the beginning of a century of research on the order of events, which distracted us from exploration of the

simultaneous time courses of interpretation, feeling, and bodily responses. This caricature of James's work was not the result of decades of memory distortion; it occurred immediately, and the bear was a major culprit. It occurred in time for James to try to bring back his actual ideas in place of the caricature; the article reprinted here is his attempt to do so, and it was a failure.

The tendency for psychologists to pick out the most outrageous statements from a rival theory and attack it as though it represented all its author ever thought is a tendency that flourishes today, and in an odd way it is comforting to see that our ancestors in the golden age were no better than we are. But it is cold comfort when we consider the effects that the trivialization of James's theory had on the psychological study of emotion. Now that the study of emotion has become vigorous and exciting again, I am tempted to urge that we read our contemporaries with a more generous eye than we are accustomed to, looking for commonalities and ideas worth developing rather than for mistakes and exaggerations worth exploiting. However, I expect that this idea is utopian and many may regard it as dangerous to their careers. Instead I will suggest a safer and much more enjoyable alternative: read *The Principles of Psychology*, or read it again. It is one of those great books that changes every time it is read, curiously rewriting itself to address the current concerns of the reader. It is grand in scope, full of wonderful ideas, and well written.

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Received August 15, 1993
 Accepted August 15, 1993 ■