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Beauty as an Emotion: The Exhilarating Prospect of Mastering a Challenging World

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Beauty has received sparse attention from emotion theorists, some of whom have argued that aesthetic pleasure is cognitive in nature and too "disinterested" to be emotional. This view is supported by research suggesting that aesthetic pleasure is based on processing fluency. The authors review recent findings in the psychology of aesthetics and present two arguments. First, processing fluency explains the mild pleasure associated with simple or familiar objects, but it cannot account for the more intense pleasure associated with complex or novel objects. Immediately recognizing an object tends to be mildly pleasant, whereas sensing the prospect of successfully representing a complex object can be exhilarating. Second, to explain how these forms of aesthetic pleasures differ, a theory must go beyond cognitive dynamics. The authors' affect-based model of emotion differentiates aesthetic pleasures in terms of epistemic goals. Pretty, fluently processed stimuli implicate prevention goals that maintain and protect knowledge. Beautiful, novel stimuli implicate promotion goals that reshape and expand knowledge. The emotional nature of interest and awe are also discussed.

Keywords: beauty, aesthetics, emotion, appraisal theory

> What the imagination seizes as Beauty must be truth—whether it existed before or not. (Keats, 1860/1996, p. 1261)

John Keats (1860/1996) famously equated beauty and truth, a romantic view celebrated because of its source, a poet. Such a claim would make today's more bookish psychologists blush. Better to start much smaller with mild aesthetic pleasure (e.g., Martindale, 1988; Reber, Schwarz, & Winkielman, 2004), physical attractiveness (e.g., Langlois & Roggman, 1990; Rubenstein, Kalakanis, & Langlois, 1999), or mere preference (e.g., Zajonc, 1968). These operational definitions of beauty are far removed from Keats' idea of Beauty-with-a-capital-B. Nevertheless, they reflect the modest, everyday pleasures of perception, and they are more amenable to empirical study. Still, it may be worth challenging ourselves as psychologists to revisit Keats's carefully worded description of beauty. Does all aesthetic pleasure derive, as recent views have suggested, from the ease with which the mind categorizes an object, the object's similarity to a useful prototype, or its familiarity? Or does imagination play a role in seizing beauty, creating a psychologically novel truth out of a particularly demanding object or experience?

In this article, we argue that the experience of beauty goes beyond recapitulating something already represented in the mind. It instead reflects the prospect of understanding something novel and particularly meaningful. As Keats (1860/1996, p. 1261) went on to say, the experience of beauty is a "Vision in the form of Youth, a shadow of reality to come." Beauty presages understanding before one's cognitive faculties can be certain that an object or experience will yield to any coherent conceptual representation. Beauty is not discerned. Rather, it is the felt prospect of cognitively representing and achieving processing mastery over a challenging object or experience. As a result, beauty

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is best thought of as an exhilarating emotional experience.

Of course, beauty bears an important relationship to cognition and the products of understanding (concepts, schemas, etc.), but this relationship is notoriously difficult to describe (e.g., Kant, 1790/1951). If the experience of beauty depends on the prospect of understanding, not on understanding itself (i.e., forming a definite concept or schema that unites the features of a beautiful object), then what is the psychological basis of beauty? Recent theoretical developments in the psychology of affect and cognition offer insight into this question and, we believe, lend themselves to a rigorous treatment of aesthetic pleasure, one capable of distinguishing between the mild pleasure associated with familiar or easily categorized objects and the exhilaration associated with objects that challenge the mind's ability to understand them.

We begin this article with an overview of current work in the psychology of aesthetics. This work, which emphasizes the mild pleasure experienced when a person fluently processes a simple or familiar object, stands in sharp contrast not only with Keats's (1860/1996) notion of beauty but also with Kant's (1790/1951) more comprehensive theory of aesthetics. We summarize Kant's aesthetics to set the stage for our account of beauty as an emotional experience. Our view emphasizes the core affective properties of beauty, properties that have important cognitive and motivational correlates. The proposed explanatory framework leads to a more precise understanding of the phenomenology of beauty and enables us to locate beauty relative to other aesthetic emotions, such as interest (Silvia, 2006) and awe (Keltner & Haidt, 2003). We conclude the article with a discussion of how this framework can inform future theory and research.

Aesthetics: From Pretty to Beautiful

Aesthetics, insofar as it is the philosophy and science of beauty, has two interrelated tasks (see Hogan, 1994). It must deliver judgments of beauty, answering the question *Which objects of perception are beautiful?* Moreover, aesthetics must specify the systematic features of beauty to justify these judgments, answering the question *Why are such objects beautiful?* These tasks are complicated by beauty's apparent subjectivity. It appears that we need to understand the psychology of beauty before we can accurately identify which objects or experiences are beautiful. But how can we develop the systematic, psychological features of beauty without a sense of which objects or experiences are beautiful in the first place? This dilemma led Emerson (1860/1988, p. 274) to remark, "I am warned by the ill fate of many philosophers not to attempt a definition of beauty."

Although disagreement persists over how to accomplish aesthetics' tasks, no one denies that beautiful things are somehow pleasing. Unfortunately, the result of this minimal agreement has been the reduction of beauty to a simple end state, the pleasure resulting from perception. As psychologists who study aesthetics admit, the field tends to "use the words 'beauty' and 'aesthetic pleasure' interchangeably" (Reber, Schwarz, & Winkielman, 2004, p. 365). The operational definition of beauty is, in effect, "whatever is pleasing to the senses," a definition that is far too liberal. This inflation of the term *beauty* is not specific to psychology, nor is it a recent development. More than two centuries ago, Kant (1790/1951, p. 59) observed that many theories "fallaciously put forward, charm not merely as a necessary ingredient of beauty, but as alone sufficient [to justify] a thing's being called beautiful." In this section, we contrast the psychology of merely pleasant or "pretty" objects with Kant's alternative notion of a more significant experience associated with beautiful objects.

The Psychology of Aesthetic Pleasure

Summarizing the prevailing theory and research relevant to aesthetic pleasure, Reber et al. (2004) argued that a single phenomenon, processing fluency, connects a diversity of findings concerning aesthetic preference. In their review, they made a strong case that observed preferences for familiar objects (e.g., the mere exposure effect; Zajonc, 1968), prototypical and average objects (e.g., prototypical colors and computer-averaged faces; Langlois & Roggman, 1990; Martindale & Moore, 1988; Rhodes & Tremewan, 1996; Whitfield & Slatter, 1979), and objects with particular stimulus properties such as figural goodness and symmetry (Koffka, 1935; Reber, 2002) reflect the mind's ability to process these objects efficiently and with relative

ease. The link between preference and processing fluency is supported by priming studies in which direct manipulation of fluency (through priming-relevant knowledge structures) results in an increased preference for objects (e.g., Reber, Winkielman, & Schwarz, 1998). Moreover, processing fluency appears to account for the false sense of familiarity associated with many aesthetically preferred objects (e.g., average faces [Langlois & Roggman, 1990], prototypical objects [Rosch, 1978], and objects with enhanced clarity [Whittlesea, Jacoby, & Girard, 1990]) because judgments of familiarity are informed by the speed and ease of processing (Whittlesea, 1993).

According to Reber et al. (2004), fluent processing is inherently pleasant, spontaneously resulting in positive affect (Winkielman & Cacioppo, 2001). The experience of positive affect is attributed to the stimulus itself, mediating the effect of processing fluency on aesthetic preference. This explanation of preference is an application of Schwarz and Clore's (1983) influential "affect-as-information" model, which contends that people use their affective states to inform their status with respect to their environment and goals. The pleasant feeling that accompanies an easily identified object presumably signals that the object is safe or perhaps useful (e.g., Zajonc, 1968). More abstractly, it indicates that the cognitive system is making progress toward recognizing and interpreting the individual's environment (Carver & Scheier, 1990), or at least that the environment is unlikely to tax or threaten the individual's carefully guarded understanding of the world (see Greenwald, 1980). Reber et al. acknowledged that studies of judgments such as pleasantness, liking, and preference may not "capture the grand realm of beauty," yet they believe that these judgments enable us to "identify basic properties underlying the aesthetic experience" (p. 365), chief among which is processing fluency.

However, findings concerning simple aesthetic judgments need not generalize to every aesthetic experience. It may be a mistake to assume at the outset that "judgments of preference, liking, and beauty are closely related" (Reber et al., 2004, p. 365). This claim seems to be driven by practical considerations. Reber et al. argued that more powerful aesthetic experiences would be difficult to study while maintaining "the requirements of experimental control" (p. 365). Although more powerful aesthetic experiences may be difficult to study, this is hardly an argument for excluding them from research. Reber et al. further argued that it is sufficient to study liking and preference because "much of what most humans call 'beautiful' on a daily basis falls into the category of such mild experiences" (p. 365). The prevalence of mild aesthetic judgments is noteworthy, but this says very little about the existence or nature of a more Keatsian beauty. As a result, descriptions of aesthetic pleasure as generally low in intensity or "mild and subtle" (Martindale, 1988, p. 7) must be taken as the product of psychological studies that, by and large, "explore fairly mild aesthetic experiences" (Reber et al., 2004, p. 365).

Clearly, the study of simple aesthetic preferences emphasizes the processes underlying mild aesthetic pleasure, but can these investigations perhaps rise to Keats's challenge? Can they help us understand the role played by imagination in seizing beauty and presaging the cognitive system's movement toward new knowledge? Reber et al. (2004) acknowledged that more intense aesthetic experiences likely exist, and they saw no reason why the basic processes described by the fluency account would not apply to these more potent experiences. Like Martindale (1988), they argued that the subtle pleasure of cognitive ease of processing underlies all aesthetic pleasure, regardless of stimulus complexity. This theoretical stretch goes well beyond the study of simple judgments, and the conclusions it encourages are questionable. Martindale and Moore (1988), for instance, equated the pleasure associated with an artistic masterpiece, a brilliant mathematical theorem, or an inspiring sunset with the pleasure associated with a single color patch, a musical tone, or a teacup. Reber et al. (2004) went even further, invoking Keats as they concluded that "people use a common source of evaluations of both beauty and truth—processing fluency" (p. 377).

The rub here is that those who champion the processing fluency account of beauty draw on studies of simple judgments even as they generalize their claims to more profound issues such as beauty's connection to truth. This theoretical stretch is dependent on weak evidence, including one study of "truth" that asked participants to rate the accuracy of mundane statements in the form of "City A is in Country B" (Reber & Schwarz, 1999). Moreover, propo-

nents of processing fluency have failed to cite, let alone confront, disconfirming views. Neglected, for example, is John Dewey's (1934/1980) highly relevant cognitive processing account of aesthetic pleasure, which emphasizes active, demanding processing over processing fluency: "That which distinguishes an experience as esthetic is conversion of resistance and tensions, of excitations that in themselves are temptations to diversions, into a movement toward an inclusive and fulfilling close" (p. 56). Dewey's notion of aesthetic pleasure anticipates successful processing (i.e., conversion of resistance and movement toward fulfilling closure), but it is not the quick and easy success of fluent processing. Dewey described a processing challenge that must be overcome.

Dewey's (1934/1980) understanding of beauty seems more consistent with how art aficionados or even fervent mathematicians describe the beauty of their subjects. As Csikszentmihalyi (1990) observed while studying optimal "flow" experiences, those who deeply appreciate art report that "the total impact [of a beautiful object] comes to you after you've digested every nuance and every little thread" and that such art "thrills you" (p. 107). Powerful aesthetic experiences, unlike more mild and subtle aesthetic pleasures, require more prolonged, effortful processing as an object initially resists but then begins to yield to the mind's attempt to understand and unify its features. These observations are supported by a handful of laboratory studies. McWhinnie (1968), for example, found that art devotees prefer complex, unpredictable visual arrays, whereas individuals with less interest in art prefer simple, symmetrical stimuli. J. D. Smith and Melara (1990) found a similar pattern for musical preferences: Novices prefer simple, familiar chord progressions, whereas music experts prefer more complicated, difficult-to-process progressions.

The possibility that complex stimuli can trigger potent aesthetic experiences presents a challenge to fluency accounts of beauty. However, Reber et al. (2004) denied that complex stimuli, insofar as they are difficult to process, truly yield aesthetic pleasure. They argued that when this appears to be the case, one of a few alternative scenarios actually holds true. First, the object may exhibit "simplicity within complexity" (p. 373), appearing to be complex yet possessing a uniformity of features that allows fluent processing. Second, the object's physical features may be difficult to perceive, whereas its meaning is especially accessible, allowing for conceptual fluency in the absence of perceptual fluency. (These first two situations presumably account for why some beautiful objects cause initial confusion and surprise—a seemingly complex object surprisingly yields to fluent processing. The striking aesthetic pleasure that such objects inspire is an artifact of this contrast.) Third, the object might be difficult to process for most people, but an expert with refined mental structures might process the object fluently and therefore experience aesthetic pleasure. Finally, the object may not cause any pleasure at all. Difficult-to-process objects may be preferred when the observer applies cold criteria of aesthetic merit instead of relying on an affective reaction. In this last scenario, complex art is admirable, but not pleasurable.

Although the processing fluency account of aesthetic pleasure is not without merit, arguments on its behalf beg the question of whether complex objects *qua* complex objects can, in fact, result in an aesthetic experience of beauty. Rather than take sides in a polarizing debate, we believe that it is more productive to distinguish between two types of aesthetic experience and to develop as fully as possible the logic and usefulness of such a distinction. The distinction itself is straightforward. On one hand, it appears that a mild aesthetic pleasure reliably accompanies the experience of simple stimuli. On the other hand, a more exhilarated form of aesthetic pleasure may accompany the experience of more complex or novel stimuli. Throughout the rest of this article, we reserve the term *beautiful* to describe objects associated with the latter emotion.

We seek to reserve the term *beauty* for complex or novel objects because an apt term already exists to describe the aesthetic experience resulting from processing fluency. Simple, familiar stimuli that bring about mild aesthetic pleasure are pretty. *Pretty* can be defined as

> a: pleasing by delicacy or grace: superficially appealing rather than impressively or strikingly beautiful
> b: having conventionally accepted elements of beauty
> c: enjoyable for melody, lilt, or suggestion, but not intense, grand, or complex (*Webster's Third New International Dictionary, Unabridged*, 2002)

Taken together, these three definitions capture the important features of processing fluency and support our distinction between what is pretty and what is beautiful. The first definition captures the mild nature of pleasure resulting from processing fluency. Graceful objects are processed with ease, leading to pleasure that is subtle rather than striking. The second definition indicates that pretty objects please by adhering to conventional rules for membership in a particular category, rules that conventionally beautiful objects perfectly satisfy. The "best in show," for example, is the best member of a dog breed, the closest to the breed's prototype. Likewise, research has suggested that conventionally beautiful faces are merely prototypical faces (Langlois & Roggman, 1990). Such fit reflects particularly fluent processing. Finally, the third definition notes that pretty, fluently processed stimuli lack complexity and hence the capacity to inspire an intense aesthetic response. This implies that beyond prettiness, there is an exhilarating aesthetic pleasure caused by grand or complex stimuli.

Our view proposes a strong distinction between the experiences of pretty versus beautiful objects. However, we frame the issue in a manner that is consistent with the approach taken by Reber et al. (2004) and by Dewey (1934/1980). We agree that aesthetic experience reflects the individual's cognitive processing dynamic (i.e., the relationship between stimulus properties and the individual's knowledge structures), and we argue that both types of aesthetic pleasure are related to successful processing. However, each experience relates differently to successful processing. Pretty objects promote fluent processing and yield to immediate conceptual understanding. In contrast, beautiful objects resist fluent processing, thwarting conceptual understanding while nevertheless offering the prospect of such understanding. Although we may not understand a beautiful object (insofar as its features do not come in a familiar bundle), we sense that perhaps we could and that such understanding would be particularly meaningful to us.

The distinction we are proposing draws on the rich theorizing of Kant (1790/1951) and parallels a distinction made by Kant himself. Kant famously described the experience of true beauty as a sense of "purposiveness without purpose" (p. 55), a feeling that an object resonates with mental structures, yet only at an abstract level that does not involve recognition through a concept. Kant contrasted this "free" beauty with a "merely dependent" (p. 81) beauty, which closely resembles prototype preference and applies to objects that we have described as "pretty." In the experience of dependent beauty, an object resonates with mental structures by adhering perfectly to a concept, by being exactly "what the thing ought to be" (p. 78). In the following section, we summarize Kant's theory of aesthetics and highlight its relevance to contemporary psychological accounts of aesthetic pleasure.

Kant's Aesthetics

In his *Critique of Judgment*, Kant (1790/1951) carefully developed the conditions of something being properly judged beautiful (i.e., "a pure judgment of taste"). Kant's aesthetic theory has been called "the foundational treatise in modern philosophical aesthetics" (Crawford, 1974, p. 51). For psychologists interested in beauty, there is much not to like about Kant's theory of aesthetics. As translator J. H. Bernard remarked, the work's style, technicality, and repetitiveness make one wonder "if the author were really anxious to keep his meaning to himself at all hazards" (p. xiv). Moreover, Kant was dismissive in his treatment of psychology. He argued that beauty is based on a priori principles that "we can never attain by seeking out the empirical laws of mental changes. For these only enable us to know how we judge, but do not prescribe to us how we ought to judge" (p. 120). As a result, psychologists must decide for themselves which of Kant's ideas can be naturalized, with his more prescriptive claims left aside or otherwise reframed. To some, this will seem to distort Kant's views. Yet the wealth of Kant's insights concerning aesthetics warrants serious attention even if his insights must be reshaped in some respects to psychology's ends.

To our knowledge, no psychological account of beauty cites Kant (1790/1951), despite the seminal nature of his aesthetic theory. This omission is surprising, yet informative, reflecting psychology's emphasis on fluent processing, which Kant set aside early in the *Critique of Judgment*. As we have noted, Kant recognized that some aesthetic judgments derive from fluent cognitive processing, and he referred to these as judgments of dependent beauty. According to Kant,

the normal process of cognition occurs when "a given object by means of Sense excites the Imagination to collect the manifold, and the Imagination in its turn excites the Understanding to bring about a unity of this collective process in concepts" (p. 93). Dependent beauty results when such "normal," concept-bound cognition is particularly successful. As Kant explained, a dependently beautiful object immediately succumbs to conceptual understanding because it perfectly satisfies the "rules" for the application of a concept (p. 83). The object is the "perfection" of the concept (p. 81). Here Kant used a classical model of concepts (Aristotle, 350 BCE, 1996), in which conceptual categories are defined by certain necessary and sufficient conditions. Today, cognitive psychologists favor prototype models of concepts, which emphasize overlapping features or "family resemblances" as the basis of conceptual categories (Rosch, 1978; Wittgenstein, 1953/1999). Although Kant's theory of concepts may be out of step with contemporary psychology, his description of an object being "exactly what the thing ought to be" translates easily to Roschian models. Kant described the prototype for a category, an object that possesses the most frequently occurring features of a category, while lacking extra features that occur in other categories. Once reconciled with prototype models of concepts, Kant's notion of dependent beauty nicely describes the aesthetic pleasure associated with fluent processing.

Although conceptual fluency results in everyday beauty, Kant (1790/1951) regarded such judgments as "merely dependent" and "not pure" (p. 81). For Kant, objects that readily yield to conceptual understanding are attractive, but not truly beautiful. Kant offered, by contrast, a description of "free beauty," a more significant aesthetic experience. In free beauty, the normal process of cognition succeeds only abstractly. Generally, the faculty of imagination activates ideas in response to perceptual input, preserving and elaborating this input, whereas the faculty of understanding generates a conceptual framework that organizes and subsumes these ideas. The harmony between imagination and understanding typically leads to the deployment of concepts and the formation of accurate beliefs about an object or experience. In this way, cognition fulfills its "end in respect to knowledge" (Kant, 1790/1951, p. 242). In free beauty, however, the outcome of cognition is quite different. One fails to apply any definite concept to an object, yet one senses an abstract, potential unity of the features suggested by the object.

How is the abstract experience of harmony, which occurs in the absence of conceptual understanding, a reflection of true knowledge? According to Crawford (1974), Kant recognized this puzzle as the key to his account of beauty, and the solution is that

> somehow the pleasure in the beautiful must be based on cognition. Since the judgment of taste is not cognitive in the defining sense of making reference to a concept, though, the pleasure underlying the judgment of taste cannot be based on a particular (or determinate) cognitive state of mind, but only on "*cognition in general*." Kant identifies this with the free play of the cognitive faculties—imagination and understanding—in harmony with one another, a harmony we are aware of only through the feeling of pleasure. (p. 55)

Kant's solution, then, was to approach free beauty as a feeling state. This, however, presented him with an extraordinary challenge as he sought to defend the universal validity of aesthetic judgments. He had to explain, using universal principles, the conditions under which the subjective pleasure of free beauty is properly felt. In other words, Kant attempted to defend the universal validity of beauty's subjective pleasure. Thankfully, emotion theorists need not share Kant's ultimate goal to benefit from his insights about the nature of beauty as an affective experience. Indeed, our aim in this article is explicitly empirical, and we make no claims about the truth value of judgments of beauty. We are interested in describing the systematic features of beauty as a psychological phenomenon, not in prescriptions of how we ought to judge beauty.

So how did Kant (1790/1951) describe the pleasure of beauty? Essential to Kant's beauty is its basis in disinterested pleasure. Judgments of beauty are disinterested in the sense that a beautiful object is perceived and contemplated without being recognized as a means to any particular end (see also Burke, 1757/1850; Shaftesbury, 1711/1999; Zangwill, 1992). Interested pleasure, however, "presupposes, not the mere judgment about [the object], but the relation of its existence to my state, so far as this is affected by the object" (Kant, 1790/1951, p. 41). Kant relied on the notion of disinterestedness to

establish that judgments of beauty are universally valid. He insisted that beauty does not issue from an object's usefulness in accomplishing personal goals, for if this were the case, universal agreement concerning beauty would be impossible, insofar as personal interests vary from individual to individual.

Although Kant (1790/1951) argued that judgments of beauty are unrelated to particular interests, the pleasure of Kant's beauty is not exactly goal free. Kant described the disinterested pleasure of beauty as the satisfaction of a general cognitive end, an "end in respect of knowledge" (p. 242) that everyone shares. Specifically, the disinterested pleasure of beauty arises out of the harmony of the mind's "representative powers," that is, a state of mind that "refers the Imagination in its free play to the *Understanding*, in order to harmonise it with the *concepts* of the latter in general (without any determination of them)" (p. 117).

Kant (1790/1951), in our opinion, struggled to explain how a representation of something beautiful remains free of conceptual constraints, yet fulfills "an end in respect to knowledge" (p. 242). He used intriguing language to mark this crucial distinction, including "purposiveness without purpose" (p. 68) and "the mere form of purposiveness in the representation" (p. 70). We are not philosophers; however, we will adopt and attempt to develop one possible meaning of these terms, an interpretation suggested to us by Guyer (1997). Guyer reasoned that in Kant's free beauty, cognition

> leads to an aesthetic response not by finding a possible concept for a given particular, but by discovering that a given object fulfills the general condition for the possibility of the application of concepts without having any concept at all applied to it. (p. 78)

In other words, the cognitive processes characteristic of beauty are not those that identify a stimulus per se, but those that identify a stimulus' potential to be incorporated into our knowledge. These processes do not assign meaning. Instead, they detect signs of meaning.

What can psychologists, as scientists, make of Kant's (1790/1951) purposiveness without purpose? Although Kant's observations concerning judgments of dependent beauty are relevant to contemporary cognitive psychology and explanations of mild aesthetic pleasure in terms of processing fluency, are Kant's observations on free beauty equally meaningful? Have psychologists found mechanisms that detect the potential for concept application and have such mechanisms been shown to cause pleasure? In light of recent work by Ramachandran and Hirstein (1999), the answer to both questions appears to be yes. These neuroscientists have provided a psychological framework that captures the Kantian notion of "purposiveness without purpose" (p. 68).

Ramachandran and Hirstein (1999) proposed a model of aesthetic pleasure inspired by the discovery of projections from perceptual processing areas to limbic structures. These projections belong to neural networks that constitute early appraisal mechanisms, mechanisms that detect and reward certain processing dynamics. Some of these projections serve to reward the partial discovery of objects:

> The visual system is often called upon to segment the scene, delineate figure from ground and recognize objects in very noisy environments—i.e., to defeat camouflage—and this might be easier to accomplish if a limbic "reinforcement" signal is not only fed back to early vision once an object has been completely identified, but is evoked at each and every stage in processing as soon as a partial "consistency" and binding is achieved. . . . At *every* stage in processing there is generated a "Look here, there is a clue to something potentially object-like" signal that produces limbic activation. (pp. 22–23)

Thus, the brain rewards progress toward organizing the perceptual field into a meaningful configuration. Although ultimately comprehending an object is undoubtedly pleasant, progress toward doing so is equally enjoyable. That is, the process of discovering clues concerning the meaning of an object is rewarded at all levels of stimulus processing.

Ramachandran and Hirstein (1999) identified aesthetic pleasure with rewards for multiple processing dynamics, focusing mostly on progress toward object discovery. Their view suggests that art "teases" the mind with as many "potential object clues as possible" (p. 23). In other words, beautiful artwork is loaded with featural relationships that suggest the applicability of concepts, yet fall short of triggering concept application. Ramachandran and Hirstein's description of "teasing" by object clues nicely captures Kant's purposiveness without purpose. Their work explains how conditions for applying a concept can be met without the actual application of a concept and how this could lead to pleasure.

Importantly, the reward mechanisms associated with object discovery, according to Ramachandran and Hirstein (1999), are not confined to the early stages of perception. When they mentioned that these mechanisms work at "*every* stage of processing" (p. 22), they referred to higher, semantic-level cognitive processing as well (e.g., processing engaged by metaphor and other artistic devices). According to these authors, "seeing a deep similarity—a common denominator as it were—between disparate entities is the basis of all concept formation whether the concepts are perceptual . . . or more abstract" (p. 31). Detecting a relationship between an image and an abstract concept (or even between two abstract concepts) is rewarded by the same type of mechanism that responds to detected relationships at the level of basic physical features.

Limitations of Kant's Theory

Kant's (1790/1951) aesthetic theory is particularly useful because it provides a means of distinguishing between two aesthetic pleasures in terms of their processing dynamics. Kant's descriptions of dependent beauty and free beauty provide a contrast between the cognitive states of immediate and prospective understanding. However, Kant's aesthetic theory fails to distinguish dependent beauty from free beauty in terms of their affective states (i.e., in terms of their pleasures). According to Guyer (1997) noted, Kant treated pleasure as a "single psychological state . . . phenomenologically identical in all of its occurrences" (p. 71), as opposed to a class of states that vary on other dimensions (e.g., arousal). As a result, the distinctions that we make between prettiness and beauty go beyond Kant's aesthetic theory.

Despite this divergence, Kant's (1790/1951) approach to pleasure is still highly relevant to our project, as it provides a model for incorporating beauty into general theories of emotion. Although Kant argued that aesthetic pleasure is distinct from other pleasures because it is independent of personal interests, he nevertheless applied his general theory of pleasure to beauty. According to Kant, all pleasure depends on the connection of the subject to a situation. Specifically, pleasure occurs when a situation is represented as congruent with an aim. To explain aesthetic pleasure, Kant posited an epistemic aim, an "end in respect to knowledge" that is promoted by certain representational states. Thus, the aesthetic pleasure of free beauty, although distinct in its independence from personal interest, nevertheless conforms to the same theory and principles of pleasure in general. In the remainder of this article, we take a similar approach to beauty, explaining aesthetic pleasure in terms of contemporary emotion theory. In the same vein as Kant, we acknowledge the uniqueness of aesthetic pleasure without setting aside everything we know about positive affect. And fortunately, we write at a time when, thanks to a viable psychological science, there is much more known about the nature of affect. In the next section, we lay out this knowledge, summarizing the current state of emotion theory. From there, we develop a working theory of affect that supports our understanding of beauty as an emotion.

Beauty as an Emotion

Beauty is felt, not discerned. Still, the pleasure of beauty depends on a subtle relationship between emotion and cognition. We agree with Kant (1790/1951) that explaining the peculiar nature of beauty's pleasure is the key to understanding beauty itself. In this section, we evaluate beauty from the perspective of current emotion theory, doing so in a manner that illuminates how core aspects of emotion and cognition, as well as core aspects of motivation, interact to produce the exhilarated aesthetic pleasure of beauty. Our view, in short, is that beauty as an emotion bears directly on the mind's prospect and, indeed, goal of understanding particularly challenging stimuli when the potential to realize such understanding (i.e., actually achieving conceptual understanding) is tangible but distant. Beauty, unlike most emotions, entails no concrete behavioral goals. It reflects the mind's more abstract, overarching epistemic goals. Beauty is the exhilarating feeling that something complex, perhaps to the point of being profound, might yield to understanding. For the human mind, equipped as it is to take reality into itself through its symbolic representation of the world and itself, the feeling of beauty serves as Keats's (1860/1996, p. 1261) harbinger of a "reality to come."

Appraisal Versus Dimensional Approaches

Current emotion theory suggests at least two generic approaches to understanding beauty as a psychological phenomenon: an appraisal approach that stresses the differences between discrete emotions and a dimensional approach that stresses the components common to all emotional states. Theorists who emphasize the discrete character of a number of more or less basic emotions (e.g., fear, anger, sadness, disgust, joy, and surprise) have argued that emotional states differ qualitatively from one another, with each emotion defined by a particular constellation of features (i.e., a specific set of cognitive appraisals, physiological responses, and facial features; Lazarus, 1991). In contrast, theorists who adopt a dimensional approach emphasize core affect, the most elementary, subjectively experienced feelings associated with emotion (Russell, 2003; Russell & Barrett, 1999). One way to conceptualize core affect is to imagine what remains after a specific emotion is stripped of its more specific appraisal components, including the emotion's particular context, social objects, and goal-directed behaviors.

Consider how these approaches to understanding emotion might treat jealousy, for example. Jealousy is a complex emotional experience that typically occurs in the context of romantic relationships and is directed at a potential rival and the romantic partner. Jealousy spurs behaviors ranging from violent outbursts against both partner and rival, to redoubled attempts to save the relationship, to self-protective attempts to withdraw from the relationship or minimize its importance (e.g., Salovey, 1991; White & Mullen, 1989). This analysis of jealousy treats the experience as a discrete emotion, but what is the core psychological machinery of an emotion such as jealousy? A dimensional approach suggests that all emotional phenomena build on a common substrate, a core affective feeling that can be defined by two continuous dimensions. Although there is some disagreement among proponents of this approach concerning the precise specification of these dimensions, the most straightforward framework distinguishes between an affective state's degree of pleasantness (or valence) and degree of activation (or arousal; Russell, 1980). Using these dimensions, we can say that the anger and distress typical of jealousy correspond to a highly activated, highly unpleasant core affective state. However, as a complex emotional "syndrome," jealousy may run a course that transitions, over time, to a relatively depressed state of withdrawal, blending a high degree of unpleasantness with much less activation.

Appraisal and dimensional approaches offer complementary perspectives on emotion, so a contentious debate over which approach is definitive is counterproductive. Appraisal approaches, on one hand, emphasize top-down cognitive differences that modulate and therefore distinguish between various emotional states. Dimensional approaches, on the other hand, emphasize the bottom-up "machinery" common to all emotional states. Neither approach is inherently superior. Appraisal theories nicely capture many distinctions between emotional states that dimensional approaches neglect. Dimensional approaches identify many similarities and interrelationships between emotions that appraisal approaches underestimate. As will become apparent, our view of beauty derives from a dimensional perspective but quickly builds to a point at which a complementary appraisal approach is essential.

A Tripartite Framework

Although our account of beauty stems from a dimensional approach to emotion, we emphasize not only core affect, but also the apparent connections between core affect and core aspects of both cognition and motivation. Together, these basic elements of emotion, cognition, and motivation make up a tripartite framework for understanding beauty. Figure 1 provides an overview of this tripartite model, which integrates several complementary lines of research (Higgins, 1997; Lazarus, 1984; Roseman, 1984; Russell, 1980; Scherer, 1982; Watson & Tellegen, 1985).

Core affect. At first glance, the dimensions of pleasantness and activation/arousal (see Figure 1) that define core affect may appear somewhat trivial. Are pleasantness and activation mere descriptions of affect's most simple properties? The methodologies that produce these two dimensions (e.g., factor analyses of self-reported emotional states and multidimensional scaling of emotion words and expressions; see Russell, 2003) leave open the possibility that

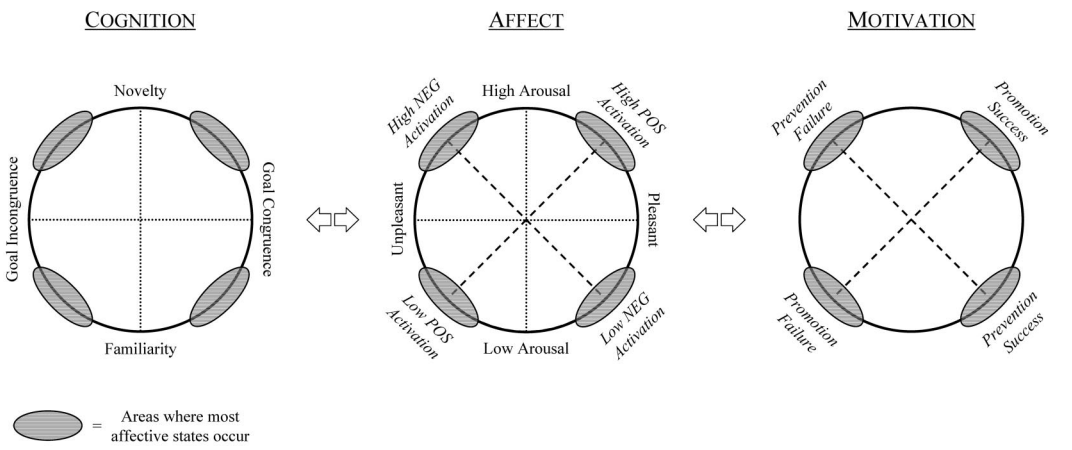

Figure 1. A tripartite model of core cognition, core affect, and core motivation. NEG = negative; POS = positive.

pleasantness and activation are constructs used to label affective states. Perhaps these dimensions are linguistic artifacts and reveal little about the properties of emotional states themselves. This is a concern worth bearing in mind, yet a number of considerations argue against it and suggest instead that a dimensional approach to core affect is quite meaningful.

First, although pleasantness and activation are orthogonal to one another (i.e., they are statistically independent), something intriguing occurs when these dimensions are used as axes to map a two-dimensional space (see Figure 1). Emotional states consistently arrange themselves along a circle around the intersection of these axes. This *affect circumplex* identifies a higher order interdependence between pleasantness and activation involving a systematic tradeoff between the two. If an affective state is at either extreme of one dimension, it will be at the middle of the other dimension. Russell (2003; Russell & Barrett, 1999) described this tradeoff as mathematical in nature. Indeed, the radius of the circle (i.e., the circumplex) constrains the combined distances along the component axes. However, these theorists' speculations concerning the interdependence between pleasantness and activation are limited. Russell and Barrett (1999, p. 809) concluded that the two dimensions "combine in an integral fashion, so that, subjectively, a person has one feeling rather than, for example, unpleasant and, separately, deactivated." Thus, the dimensions reflect an integrated psychological experience, but this claim does not address how the dimensions themselves interact. What is the nature of the tradeoff between pleasantness and activation? As we discuss below, there is reason to believe that the interaction between pleasantness and activation reflects, and therefore serves as a link to, core aspects of cognition.

A second consideration contributing to our interest in the dimensional approach concerns how emotions cluster along the affect circumplex. Emotional states, rather than being spread uniformly around the circumplex, appear to form loose clusters within each quadrant of the circumplex (Larsen, & Diener, 1992; Russell & Barrett, 1999; Watson, & Tellegen, 1985). These clusters occur at pleasant–active (feelings such as elation), pleasant–inactive (feelings such as tranquility), unpleasant–active (feelings such as fear and anger), and unpleasant–inactive (feelings such as sadness and dejection). Between the clusters, at the four poles of pleasantness and activation, the affective space is relatively sparse. This clustering calls for an explanation, but Russell and Barrett (1999) sidestepped any substantive discussion of it, perhaps because it supports a competing interpretation of the affect circumplex. This competing view, advanced by Watson and Tellegen (1985), argues that the axes of the affect circumplex should be rotated 45° and placed through the clusters of emotions. This results in dimensions that appear to describe two interrelated systems of activation,

positive activation and negative activation (see Figure 1). The dimension of positive activation extends from feelings such as sadness and dejection to feelings such as elation, whereas the dimension of negative activation extends from feelings such as tranquility to feelings such as fear, anxiety, and anger.

Although Watson and Tellegen's (1985) rotation of the affect circumplex is mathematically equivalent to a solution based on pleasantness and activation, a virtue of their approach is that positive activation and negative activation map nicely onto two distinct biological systems involved in motivation. As they noted, theorists such as Gray's (1987) distinguished between a behavioral activation system (related to the positive activation dimension of the affect circumplex) and a behavioral inhibition system (related to the negative activation dimension of the affect circumplex). Likewise, the emotions associated with positive activation and negative activation fit squarely within Higgins' (1997) contemporary theory of self-regulation. Higgins' theory distinguished between promotion-focused goal pursuit and prevention-focused goal pursuit. Depending on the success or failure of one's actions, the promotion system elicits feelings of enthusiasm or dejection (corresponding to the poles of the positive activation dimension), whereas the prevention system elicits feelings of calm or anxiety (corresponding to the poles of the negative activation dimension). Here again, the affect circumplex suggests that there is an interaction or tradeoff between positive activation and negative activation, and this tradeoff, as we discuss below, provides an informative link between emotionality and core aspects of behavioral motivation.

In sum, our theoretical perspective stems from a concern that most treatments of the affect circumplex are rather narrow and static. Proponents of circumplex models seldom offer any dynamic interpretation of the affect circumplex. Instead, the literature has expended a great deal of effort presenting evidence on behalf of the structure of current affect and arguing about which set of dimensions best defines the circumplex. Thus, as Russell (2003) noted, more than two decades after introducing the circumplex model of core affect, "the process of changing core affect is not fully understood" (p. 148). We believe this limitation can be overcome if more attention is paid to the dynamic properties of core affect and the connections between core affect and core aspects of both cognition and motivation. Addressing these connections may help illuminate the rich psychological system within which core affect is embedded. Below, we provide an overview of the parallel lines of theory concerning core cognitive appraisals and core self-regulatory systems that contribute to our view of beauty.

Core appraisal. Appraisal theorists (Lazarus, 1991; Roseman, 1984; Scherer, 1982; C. A. Smith & Ellsworth, 1985) are concerned with the cognitive processes that construct the meaning of an event. These processes are presumed to mediate between the individual's external situation and his or her internal, emotional response to the situation. Appraisal theorists attempt to define a limited number of cognitive appraisals that occur during an emotional episode. They then classify emotions according to these dimensions of appraisal. For example, fear can be classified at an abstract level with anger because both emotions involve the same appraisal of goal incongruence (both involve undesired events). However, fear and anger can be distinguished by the appraisal of potential control (during anger, the event is appraised as controllable, and during fear, the event is appraised as uncontrollable; C. A. Smith & Ellsworth, 1985).

One would expect appraisal approaches to emotion and dimensional approaches to core affect to cross paths often, given their overlapping subject matter. Yet proponents of these approaches generally act as though appraisal dimensions and core affective dimensions need not relate to one another. Russell and Barrett (1999) viewed appraisal dimensions as "relegated to aspects of emotion beyond core affect" (p. 812). Likewise, appraisal theorists have suggested that many appraisals have inconsistent effects on, and thus act independently of, core affect. For example, C. A. Smith and Ellsworth (1985) observed that appraisals indicating uncertainty about a situation or identifying obstacles to accomplishing a goal, which at first appear to be unambiguously negative, can be the source of pleasure in activities such as sports.

Although links between cognitive appraisals and core affect are not always clear, two appraisals have been found to have a reliable relationship with the dimensions of core affect.

One is the appraisal of novelty, or the consistency of an event with one's expectations. Scherer (1982) is often credited with identifying the novelty appraisal, in the form of a "novelty check" that precedes other appraisals. This appraisal appears in other appraisal theories in various forms (e.g., C. A. Smith & Ellsworth, 1985), and for good reason. Evaluating a situation's novelty appears to be a basic and rather primitive process. Numerous studies have shown that novelty activates the primate amygdala, a brain region involved in the emotional experience of surprise, and this holds true for states of high positive activation and high negative activation (Dubois et al., 1999; Knight, 1996; Rossi-Arnaud & Ammassari-Teule, 1992). These studies have suggested that degree of novelty maps onto the overall activation level or arousal dimension of core affect. A second clear link between appraisal theories and core affect concerns goals or desired states. Roseman (1984) and Lazarus (1984) both argued that goal congruence is the primary determinant of pleasantness. According to these theorists, when an individual appraises a situation as congruent with a personal goal, pleasure results; when a situation is inconsistent with a personal goal, displeasure results. Whereas the appraisal of novelty maps onto core affect's arousal dimension, goal congruence maps onto core affect's valence dimension (see Figure 1).

Reisenzein's (2001) work is unique in attempting to clarify these links between cognitive appraisal and the circumplex model of core affect. He described two "core" appraisal mechanisms: one linking novelty to activation, the other linking goal congruence to pleasantness. These mechanisms are innate and hardwired, and through their automatic functioning they determine the core affect of any emotional episode. Reisenzein contrasted these core appraisals with peripheral appraisals, a term encompassing a large number of appraisals proposed by other theorists. Peripheral appraisals influence core affect by altering the context in which the core appraisals are being made. For example, one peripheral appraisal might frame an event as an insult to the self, and another might select a particular self-esteem goal as relevant. Together, these two higher order appraisals establish what Reisenzein called a "belief-desire" incongruence, which is registered by the core belief-desire appraisal. This elicits unpleasant affect. Similarly, when the appraised features of an event do not match one's accessible knowledge concerning the event, this establishes a "belief-belief" incongruence. The core belief-belief appraisal registers this incongruence, resulting in high affective activation or arousal.

Reisenzein's (2001) model provides an elegant account of the relationship between two core cognitive appraisals and the dimensions of core affect. The role of his core appraisals explains the apparently inconsistent yet systematic effects that peripheral appraisals can have on core affect. Recall C. A. Smith and Ellsworth's (1985) observation that an appraisal of uncertainty about a situation can lead to a pleasant emotion, such as hope, or an unpleasant emotion, such as fear. Reisenzein's model makes sense of this. Hope and fear both indicate incongruence between the appraised event and one's accessible knowledge (i.e., one is unsure about the outcome of the event). This belief-belief incongruence heightens core affect's degree of arousal. This arousal, however, can be either pleasant or unpleasant, depending on the meaning of uncertainty. With hope, uncertainty represents the possibility that something desirable will happen. This occurs with a core appraisal of goal congruence, which renders the emotion pleasant. With fear, uncertainty represents the possibility that something undesirable will happen. This occurs with a core appraisal of goal incongruence, which renders the emotion unpleasant.

In the next subsection, we see how this moderation of the significance of peripheral appraisals according to current goals dovetails with research and theory concerning basic or core motivations, thus rounding out a tripartite core consisting of interrelated elements of affect, cognitive appraisal, and self-regulation.

Core motivation. In addition to core aspects of affect and appraisal, there also appear to be core aspects of motivation. In the past century, many theories of motivation have converged on a fundamental dichotomy of needs. As Shah, Higgins, and Friedman (1998) noted, Maslow (1955) contrasted growth and deficit needs, Bowlby (1969) distinguished between nurturance and security needs, and Adler (1927) pitted a superiority drive against compensation for insecurity. This recurring dichotomy is recognizable in Gray's (1987) biologically based distinction between systems of behavioral activation

(primarily related to the organism's growth) and behavioral inhibition (related, in contrast, to the organism's security). As Shah et al. concluded, "These theories share a general assumption that individuals seek both safety and accomplishment, and they suggest that the pursuit of goals may serve either of these basic needs" (p. 286).

Recent research has shown that goals can indeed be separated into two classes: promotion goals serving "advancement, growth, and accomplishment" and prevention goals serving "protection, safety, and responsibility" (Higgins, 1997, p. 1282). When pursuing growth goals, individuals tend to frame situations in terms of the presence of absence of desired states, and they rely on approach behaviors to reach these desired states. When pursuing safety goals, however, individuals tend to frame situations in terms of the presence or absence of undesired states, and they rely on avoidance behaviors to prevent these unwanted states (Förster, Higgins, & Idson, 1998; Higgins, 1997). These styles of goal pursuit are termed *regulatory focus*; the former style of pursuing growth goals is referred to as a *promotion focus*, and the latter style of pursuing safety goals is referred to as a *prevention focus*.

Research and theory concerning regulatory focus has made a direct connection between prevention and promotion goals and core affect. Studies have suggested that for promotion goals, on one hand, consistent events produce cheerfulness-related feelings, whereas inconsistent events produce dejection-related feelings. For prevention goals, on the other hand, consistent events produce quiescence-related feelings, and inconsistent events produce agitation-related feelings (Higgins, Shah, & Freidman, 1997; Roney, Higgins, & Shah, 1995). This linking of promotion and prevention goals to specific affective outcomes maps perfectly onto Watson and Tellegen's (1985) interpretation of the affect circumplex. That is, promotion goals are associated with the dimension of positive activation, whereas prevention goals are associated with negative activation (see Figure 1).

To understand the relationship between the affect circumplex and self-regulatory goals better, we look to core appraisals. We suggest that Reisenzein's (2001) core appraisals of goal congruence and novelty are critical in determining the pleasantness and level of arousal of an affective state, but this relationship depends in part on whether one is promotion focused or prevention focused. The first part of this relationship is straightforward. Prevention or promotion goals are linked with pleasure or displeasure through appraisals of goal congruence (i.e., Reisenzein's core belief–desire appraisal). Goal congruence makes for pleasant feelings. However, the relationship between core motivation and affective arousal is more subtle. To understand this link, one must consider that promotion goals involve gains and growth. Because gains involve the incorporation of something new or foreign, goal attainment in a promotion focus will be associated with novelty (belief–belief incongruence). The appraisal of novelty leads to increased affective arousal, which is why we see high-arousal, positive emotions (e.g., cheerfulness and exhilaration) associated with the attainment of promotion goals. Conversely, failure to attain promotion goals leads to low-arousal, negative emotions because when a gain is unrealized, there is an absence of novelty—we are left with what we have, with what we know (i.e., belief–belief congruence). During such failures, one experiences feelings of boredom or, worse, dejection. Prevention goals, however, involve a desire to avoid losses from threats or punishment. In a prevention focus, we desire to maintain what we have, so goal attainment is associated with familiarity (belief–belief congruence). The appraisal of low novelty decreases arousal, which explains why the attainment of prevention goals elicits low-arousal, positive emotions such as quiescence and relaxation. Conversely, failing to attain a prevention goal leads to high-arousal, negative emotions because threats and lapses in routines come unexpectedly and are thus appraised as novel (i.e., belief–belief incongruence). In applying the tripartite model to aesthetic judgments, we will see that appraisals of novelty and familiarity do, indeed, shape the evaluation of objects in different ways depending on one's motivational state (Freitas, Azizian, Travers, & Berry, 2005).

Bringing together the tripartite framework. If Watson and Tellegen's (1985) interpretation of the affect circumplex is correct and maps onto underlying motivational systems, then Russell (1980, 2003) and others who emphasize the dimensions of pleasantness and activation must be mistaken, yes? Unfortunately, this is the type of reasoning that has characterized the

debate concerning the affect circumplex. We believe that both interpretations of the affect circumplex are fundamentally correct. Moreover, we think the two sides of this issue have failed to see how an understanding of both interpretations, and their relationship to one another, is essential to moving beyond mere description of the affect circumplex.

What does it mean if both pleasantness–arousal and positive activation–negative activation are legitimate interpretations of core affect and therefore offer key insights into the functioning of emotion? To answer this, we need only contrast what we have said so far about these competing interpretations of the affect circumplex. On one hand, we have an interpretation that maps the axes of core affect, via positive activation and negative activation, onto potentially distinct biological systems responsible for core behavioral motivations. On the other hand, we have an interpretation that maps the axes of core affect, via pleasantness and activation, onto verbal or cognitive constructs describing affect. At first glance, this latter approach seems the weaker of the two. However, Russell and Barrett (1999) argued, with Reisenzein (1994), that

> pleasure and arousal provide conceptually separate building blocks of core affective feelings. One can make sense of enthusiasm as a blend of pleasure and arousal, of distress as a blend of displeasure and arousal, and so on. Alternative rotations of the axes do not provide such building blocks. For example, it is not clear how Watson and Tellegen's (1985) concepts . . . define other concepts 45° away from them [such as surprise] in a similar manner. (p. 811)

In other words, pleasantness and arousal appear to map better onto core cognitive processes, a point that Reisenzein developed in great detail. Thus, we have one interpretation of the affect circumplex that links to core aspects of motivation, and we have another interpretation of the affect circumplex that links to core aspects of cognition. It is for this reason that Figure 1 depicts core affect between core cognition and core motivation, and this reasoning implies that core affect could play a mediating role between cognitive and self-regulatory processes. Although this claim is beyond the scope of this article and our application of the tripartite model to aesthetic experience, we think it is a tantalizing consequence of the tripartite framework that deserves further attention.

Aesthetic Pleasure and the Tripartite Core

Now that we have a working theory of affect in place, we can complete our description of beauty as an emotion. In the following section, we elucidate the core motivational, appraisal, and affective components of beauty. By applying an emotion framework to aesthetic pleasure, we diverge from past traditions that exclude beauty from the "rubric of emotion" (Lazarus, 1991, p. 292). Philosophers and psychologists have used the notion of disinterestedness to suggest that beautiful objects do not implicate personal goals and, therefore, cannot engage the emotion system. On such accounts, aesthetic experience consists of a subtle intellectual (Lazarus, 1991, p. 292) or cognitive (Martindale, 1984, p. 49) pleasure, as opposed to a significant emotional pleasure. We agree that aesthetic pleasure is disinterested and that aesthetic experience involves a uniquely cognitive pleasure. However, once properly understood, neither aspect of aesthetic pleasure precludes it from being an emotion. In Kant's (1790/1951) aesthetic theory, for example, disinterestedness does not deny the implication of goals. In line with Kant, we argue that although beautiful objects do not involve goals typical of other emotions, they nevertheless implicate an end with respect to knowledge. Likewise, a uniquely cognitive pleasure in beauty does not preclude a genuinely emotional pleasure. In our model, the cognitive pleasure from processing dynamics informs appraisals of goal congruence, and this ultimately causes pleasure through the pathways of the emotion system. In the next sections, we clarify the concept of an epistemic goal, as well as a cognitive pleasure, in an attempt to firmly establish aesthetic experiences under the rubric of emotion.

Epistemic goals. A key tenet of Lazarus's (1991) appraisal theory is that emotions involve goals: "Without a goal and personal stake in a transaction, an encounter will not generate an emotion" (p. 824). Lazarus believed that disinterestedness spells trouble for beauty as an emotion. He argued that "if the viewer had no personal stake in [beauty] it is difficult to view it as an emotional, as opposed to an exclusively intellectual, aesthetic process" (p. 292). Although Lazarus cited Shaftesbury (1711/1999) and Burke (1757/1850) when discussing disinterestedness,

he appears to have overlooked Kant's (1790/1951) more nuanced writing on the topic. As reviewed earlier, Kant described the disinterestedness of beauty in two senses. Initially, he argued that during an aesthetic experience, one does not have a personal stake in the object's concrete existence; the individual cares only about contemplating the object. This aspect of disinterestedness seems exclusively intellectual. However, Kant later incorporated beauty into his broader theory of pleasure, in which pleasure results from the perceived congruence of an event with one's aims (Guyer, 1997). Importantly, Kant located the disinterestedness of aesthetic pleasure not in its independence from aims, but in the type of aim involved. For Kant, beauty involves an abstract epistemic aim pertaining to one's interest in possessing knowledge. This abstraction of beauty's purpose shrewdly clarifies the meaning of having no particular stake in a beautiful object while nevertheless having an epistemic stake in the object with respect to the mind's greater understanding of the world.

Our model of aesthetic pleasure grants beauty goal relevance by using the Kantian notion of an end in respect to knowledge, and thereby returns aesthetic experience to the rubric of emotion. However, we divide this aim into two epistemic goals—maintaining and expanding knowledge—and posit two aesthetic emotions that involve congruence with these goals. Just as other goals can be divided into two classes, growth and security, we believe that the epistemic aims can be separated into promotion and prevention goals, which correspond to separate motivational contexts. When promotion focused, a person will seek novelty to gain new cognitive structures for coping with the world. Alternatively, when prevention focused, a person will avoid ambiguity and inconsistency to prevent confusion and to maintain existing knowledge structures and belief systems. Beautiful, difficult-to-process objects pertain to the former motivational state, whereas pretty, easy-to-process objects pertain to the latter. Figure 2 depicts this distinction as an application of the tripartite framework.

Philosopher Anthony Savile (1987), writing on the separate styles of cognition in Kant's free and dependent beauty, provided support for our viewpoint. Savile described the "ordinary cognition" of Kant's dependent beauty as a style of representing the world that upholds constraints of "consistency, conservatism, simplicity, plausibility, and so on" (p. 140). He explained that during ordinary cognition, we "stick with the representations of [a situation] that we have so far arrived at" (p. 136) instead of striving for a new understanding of the situation. Kant's ordinary cognition appears to involve a prevention focus, as it aims to maintain present knowledge

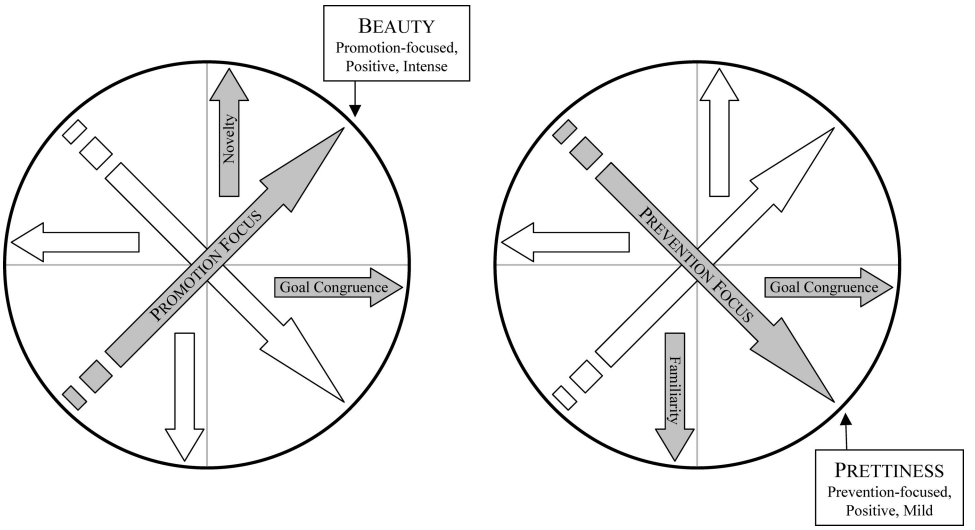

Figure 2. The tripartite model applied to aesthetic emotion.

by adhering to constraints. During Kant's free beauty, these constraints on cognition are lifted and the mental faculties enter into "free play." As Savile wrote, we "exercise our understanding-cum-imagination further and elaborate some ameliorated view of the given situation" (p. 136). Instead of subsuming the object under the first available concept, the individual contemplates the object, seeking unity within the object's features. This interpretation of free play suggests a promotion focus, as one seeks to expand knowledge by surpassing present concepts. Instead of protecting one's knowledge against the threat of inconsistency, one welcomes novelty for its promise of yielding to understanding. Thus, we not only have separate epistemic goals, we have separate cognitive styles for pursuing these goals. In ordinary cognition, a person smothers uncertainty with a familiar concept to avoid confusion. During free play, a person contemplates a novel stimulus, while holding prior understandings at bay, to expand his or her knowledge structures.

Levels of appraisals. In addition to implicating unique goals, we argue that aesthetic emotions have unique antecedents. Prettiness and beauty begin with appraisals of processing dynamics. These appraisals go by different names in different theories: Martindale (1984) referred to hedonic analyzers, Ramachandran and Hirstein (1999) referred to peak shift and object discovery reward mechanisms, and Winkielman, Schwarz, Fazendeiro, and Reber (2003) referred to a fluency monitoring mechanism. These mechanisms all serve to detect and reward certain representational states. In doing so, they explain the existence of cognitive pleasure (see Clore, 1992), the subtle pleasure that accompanies much of our cognition, yet becomes noticeable mainly during the perception of beautiful or pretty objects.

Appraisals of processing dynamics are said to detect "intrinsic pleasantness" (Scherer, 1988, p. 97) because they occur before higher cognitive processing can take into account situational factors, such as current goals or plans. Appraisals of processing dynamics can be contrasted with appraisals of goal congruence, which determine whether a stimulus helps or hinders active goals. We view appraisals of processing dynamics and appraisals of goal congruence as separate pathways to pleasure, branching off at different points in the stream of stimulus processing. Appraisals of processing dynamics form an early pathway, and appraisals of goal congruence form a later pathway. Some theorists have referred to beauty as a merely cognitive as opposed to an emotional pleasure because they assume that aesthetic pleasure involves only the early pathway to pleasure. Martindale (1984), for example, claimed that aesthetic pleasure is determined not by appraisals of goal congruence, but instead "by [a] set of analyzers that are devoted to perceptual and conceptual processes" (p. 662). As a result, he concluded that "theories of motivation and emotion cannot explain [aesthetic] phenomena very well" (p. 661).

We view beauty as both a cognitive and an emotional pleasure, a confluence of the pathways to pleasure. Here, our approach is guided by Scherer (1988), who stressed the importance of distinguishing intrinsic and goal-related pleasure, as well as the importance of examining their interaction. In our model, appraisals of processing dynamics inform appraisals of goal congruence, as the outputs of the former become inputs to the latter. As a person pursues an epistemic goal, goal attainment is measured against the processing dynamic one feels. During the experience of prettiness, the feeling of fluency indicates success at avoiding the unknown and maintaining the knowledge that one possesses. During the experience of beauty, the feeling of prospective understanding indicates progress toward expanding knowledge. Initial support for these claims comes from research on fluency and motivational context. Freitas et al. (2005) induced participants into either a prevention or a promotion focus and then presented figurally primed stimuli (causing fluent processing). They found that participants liked the fluently processed stimuli only when in a prevention focus. Promotion-focused individuals seemed to disregard the pleasure of processing fluency. Our theory would predict this finding, insofar as promotion-focused individuals should prefer novel, difficult-to-process stimuli that would hold the potential for knowledge gains.

So far, we have shown how one dimension of affective quality is determined in aesthetic emotions: We have explained how appraisals of processing dynamics and goal congruence determine pleasantness. Clearly, the experience of both prettiness and beauty are pleasant. To differentiate between these emotions in terms of

their felt quality, we need to examine the second dimension of core affect, level of activation or arousal. As mentioned earlier, arousal has been consistently linked with the appraisal of novelty. Stimuli that are novel or unexpected cause an increase in arousal, and stimuli that are familiar or expected cause a decrease in arousal. Arousal, like pleasure, appears to be generated by appraisals at multiple levels of stimulus processing (Leventhal & Scherer, 1987). Whereas monitoring processing fluency at the sensory and conceptual levels provides an early, automatic appraisal of novelty, higher cognitive appraisals gauge novelty by comparing events with our expectations for them. In this sense, the appraisal of novelty can be dissociated into the early appraisal of familiarity and the later appraisal of expectedness.

With the emotion of beauty, novelty is first detected when a concept cannot be applied to the stimulus, causing dysfluency at the conceptual level. As Kant (1790/1951) noted, however, we sense that a concept could be applied because we somehow detect potential unity between features. In the words of Ramachandran and Hirstein (1999), we sense "a common denominator" between "disparate entities" (p. 31). According to our view, the appraisal of coherence between features leads one to anticipate concept application, to expect closure of the representational process. When this expectation is contradicted, when a concept is not applied and the "free play" of representational processes continues, novelty is appraised at a higher level, and affective arousal becomes even greater. As Ramachandran and Hirstein put it, during beauty we are "teased" by the unfulfilled prospect of conceptual understanding (p. 23).

Prettiness, as mentioned before, involves fluent processing that decreases affective arousal. Although pretty stimuli are appraised as familiar, what occurs at higher levels of appraised novelty? During prettiness, is fluent processing expected? Interestingly, processing fluency only leads to aesthetic preference when it is mildly unexpected (Reber et al., 2004; Zajonc, 1968). When we have reason to expect processing fluency (e.g., if we are aware of our repeated or extended exposure to a stimulus), we do not interpret fluency as a sign of the object's inherent pleasantness or goal congruence. We suggest that during the experience of a pretty object, fluent processing is neither surprising nor expected. Otherwise, if fluent processing were significantly unexpected, it would lead to an excited pleasure, as opposed to the relaxed pleasure observed in research.

Reber et al. (2004) seemed to agree. They suggested that if fluency were significantly unexpected, it would lead to a "stronger" (p. 365) pleasure, unlike the mild everyday pleasure of most fluent processing. Invoking the novelty–activation link mentioned above, they claimed that stronger aesthetic pleasure may occur in response to complex, seemingly difficult-to-process stimuli when, unexpectedly, they are processed fluently. Sometimes there is "simplicity in complexity" (Dickie, 1997), allowing fluent processing when difficulty is expected. Here, Reber et al. came close to explaining beauty. They recognized the complexity of the stimuli involved and the appraisal of novelty that lends activation to the pleasure of beauty. However, they remained too tied to the dynamic of processing fluency, failing to acknowledge an alternative dynamic. Kant (1790/1951), as well as Ramachandran and Hirstein (1999), recognized two processing dynamics in aesthetic pleasure: one of immediate understanding (fluency) and one of potential understanding ("purposiveness without purpose" or "object potential"). During the pleasurable perception of complex stimuli, what Reber et al. termed fluency is not the swift application of a single concept but instead the effortful detection of potential concept application.

To summarize, prettiness and beauty can be distinguished in terms of their core motivational, cognitive, and affective components (see Figure 2). On one hand, prettiness is experienced when a person is avoiding novelty and inconsistency out of a concern for maintaining knowledge. Beauty, on the other hand, occurs when a person approaches novelty and inconsistency in search of deeper commonalities. These commonalities provide the potential for understanding and thus signal progress toward the goal of expanding knowledge. Both aesthetic emotions are pleasant because they involve the detection of inherently pleasant processing dynamics (immediate or potential understanding), which are appraised as congruent with an active epistemic goal (maintaining or expanding knowledge). However, this pleasure is distin-

guished by appraisals of novelty. The fluent processing of pretty stimuli signals familiarity, lowering arousal and leading to a calm pleasure. The dysfluent processing of beautiful stimuli, as well as the disruption of processing expectations, increases arousal, leading to an exhilarated pleasure.

Beyond Beauty

One of the strengths of our model of aesthetic emotion is its ability to account for a variety of phenomena. A central flaw of the fluency theory of beauty is its rigidness; by claiming that fluency is the basis of all aesthetic pleasure, fluency theorists are forced to marginalize or distort aesthetic experiences that do not fit the fluency mold. As reviewed earlier, fluency theory must be stretched thin to account for "stronger" pleasure associated with more complex stimuli. So far, we have shown how emotion theory not only accounts for multiple aesthetic pleasures, but also sheds light on the cognitive and motivational processes that differentiate these pleasures. We now apply our theory beyond clearly pleasurable states to different forms of aesthetic experience. A key topic in aesthetics is the sublime, a source of powerful experience that blends pleasure and displeasure. The sublime is just beginning to attract psychological research, through its relationship to the emotion of awe (see Keltner & Haidt, 2003). Another aesthetic experience, interest, has been on the margins of emotion research for some time (Darwin, 1892/1965; Izard, 1972; Silvia, 2005; Tomkins, 1962). Whereas awe vacillates between pleasure and displeasure, interest appears to be mostly neutral, involving highly aroused yet neither particularly pleasant nor unpleasant affect. In applying our theory to these additional aesthetic emotions, we follow the contour of the circumplex, moving first from the high-arousal, pleasant emotion of beauty to the valent-neutral activation of arousal. From here, at the top of the circumplex, we move slightly further in a counterclockwise direction, entering the borderlands of negative affective space, where awe verges on terror in the powerful experience of the sublime.

Interest

A close relative of beauty is the emotion of interest (Darwin, 1892/1965; Izard, 1972; Silvia, 2005; Tomkins, 1962). These two emotions have much in common, not only in terms of their appraisal structure, but also in terms of their history. Interest and beauty have both suffered disregard from emotion researchers who have construed them to be too cognitive, or too intellectual, to deserve status as an *emotion*. Recalling the exclusion of interest in Ekman's groundbreaking, cross-cultural research on emotion, Ellsworth (2003) noted that

> interest, at that time, seemed like a tough emotion to sell because . . . it seemed too cognitive, too closely associated with intellectual pursuits, and the theoretical division between cognition and emotion was still huge. (p. 84)

Fortunately, as emotion theorists began moving away from theories of basic, discrete emotions to theories of appraisal dimensions, the inclusion of new emotions became less controversial. Although a strict, basic emotions theory must alter its defining feature—its count of emotions—to incorporate a new emotion, an appraisal theory merely has to specify a new pattern within the appraisal dimensions already posited (Ellsworth, 2003).

Silvia (2005), for example, incorporated interest into appraisal theory by way of two well-established appraisal dimensions:novelty (Scherer, 1982) and coping potential (Bandura, 1997; Lazarus, 1991; Scherer, 1982). Silvia's framework treats novelty as "disrupted and dysfluent" processing. This extends the scope of the appraisal to include, beyond the extent that a stimulus is simply "new," the extent that the stimulus is "ambiguous, complex, obscure, uncertain, mysterious, contradictory, unexpected, or otherwise not understandable" (p. 90). The other well-established appraisal, coping potential, Silvia summarized as "estimates of resources, power, abilities, and control in relation to an event" (p. 90). Silvia explained that for the emotion of interest, coping potential involves one's ability to deploy cognitive resources to understand a stimulus or otherwise find meaning in it.

In his research on randomly generated polygons and other stimuli, Silvia (2005) has found that participants identify an object as interesting when they appraise it as novel or complex, yet potentially understandable. Silvia (2006) has

also found that participants judge artwork interesting when they find it moderately difficult to interpret, yet potentially meaningful. It would seem that Silvia's emotion of interest is no different than our emotion of beauty, but an important distinction remains. He has found that interesting stimuli are not rated as enjoyable, suggesting that the emotion of interest is neutral in terms of pleasantness (Silvia, 2006). In contrast, ratings of enjoyability occur more often with less complex, easier-to-understand stimuli (i.e., stimuli that are fluently processing). Indeed, numerous other studies involving a variety of stimuli (e.g., videos, anagrams, and melodies) have found that simple stimuli elicit pleasure, whereas complex stimuli elicit interest (e.g., Aitken, 1974; Berlyne, 1974; Boykin, 1977; Crozier, 1974; Normore, 1974). However, as Silvia (2006) summarized in his comprehensive book on interest, researchers using a dimensional core affect approach to emotion have found that interest loads high on positive activation (Watson, 2000; Watson, Wiese, Vaidya, & Tellegen, 1999) or within the high-arousal, pleasant quadrant of the circumplex (Russell & Barrett, 1999). To make matters somewhat more puzzling, some appraisal researchers have found interest to be associated with pleasure (Ellsworth & Smith, 1988). Somehow, interest appears to be pleasant, yet not enjoyable!

We believe that our aesthetic theory can resolve this conflict in the interest literature. First, consider Izard's (1977) description of the experience of interest, highlighted in Silvia's (2006) book: "There is a feeling of wanting to investigate, become involved, or extend or expand the self by incorporating new information" (p. 216). This desire to derive and incorporate new information from a stimulus is the precise desire that we posit in beauty as an emotion. We refer to this desire as an epistemic promotion goal. Without such a goal, a beautiful stimulus can only cause pleasure through subtle cognitive feelings, via the pathway of perceptual reward mechanisms. By prompting a desire for new information—by engaging the approach motivational circuitry associated with promotion goals—a stimulus can cause pleasure through the pathway of goal congruence. This can lead to more sustained, more intense pleasure, but not necessarily. When aesthetic interest appears anhedonic, this may be because the desire for more information about a stimulus is not necessarily satisfied, or its satisfaction ebbs and flows. Perhaps the "complex" stimuli used in some interest research, such as randomly generated polygons, are sufficient to prompt a desire for more information about the stimulus, yet lack the richness of features to sustain sufficient progress toward the epistemic promotion goal characteristic of beauty. As mentioned earlier, Ramachandran and Hirstein (1999) claimed that art teases the mind with as many "potential object clues as possible" (p. 23). Although complex polygons may provide enough object clues to orient attention and motivate further processing, with further processing these object clues may become exhausted, leaving the stimulus' ability to facilitate epistemic promotion goals largely unrealized.

Thus, we are suggesting that Silvia's (2006) emotion of interest and our emotion of beauty can be distinguished by the appraisal of goal congruence. Silvia (2005) suggested that interest involves epistemic goals related to "exploration, information seeking, and learning" (p. 89), yet he argued that an appraisal of goal congruence is not "essential" to interest (p. 99). Beauty, we argue, requires not only the activation of epistemic promotion goals, but also the appraisal of congruence with such goals. This is not to suggest, as others have (cf. Lazarus, 1991), that interest is not an emotion. Interest may lack the distinct pleasure that accompanies goal congruence, but it still involves the appraisal of goal relevance, as interesting stimuli activate goals for understanding. Although hedonically neutral in terms of valence, interest nevertheless has a distinct "feeling"—that is, interest involves sustained high arousal. As Izard (1991) observed, "The interested . . . person has the feeling that he is 'alive and active'" (p. 216). This fits nicely within our model of emotion. Interesting stimuli have a high degree of novelty, which elicits affective arousal through appraisal mechanisms that detect dysfluent processing. Alone, this is not enough to elicit a pronounced, positive emotion. Beauty, by comparison, involves sustained novelty at higher and higher levels of appraisal and is accompanied by appraisals of goal congruence. This results in an extremely potent, exhilarated form of interest.

Awe

Closely related to interest is the aesthetic emotion of awe, which is experienced in re-

sponse to the sublime. Kant (1790/1951) described two kinds of sublime objects. One class of objects are "mathematically" sublime because they present extremes of perception that surpass our concepts of size or quantity. As an example, Kant imagined standing next to an Egyptian pyramid or a towering mountain. The other class of sublime objects are "dynamically" sublime, as they present extremes of force that surpass our concept of power (or alternatively, our concept of resistance, which Kant suggested we use as an inverse measurement of force). Kant's examples mostly included forces of nature, such as exploding volcanoes, massive waterfalls, and looming thunderheads. In Keltner and Haidt's (2003) psychological theory of awe, we find a similar division, with one class of stimuli prompting awe through vastness and a second class prompting awe through power.

The notion of disinterestedness, discussed earlier in the context of beauty, is traditionally applied to the sublime as well. This makes sense, as we are primarily interested in the sublime's implications for understanding, making the object's immediate physical existence less relevant. Moreover, disinterestedness is required in the sublime to prevent the emotion from turning to fear. For example, a person can experience awe in the face of an exploding volcano only when he or she does not appraise the event as physically threatening. Otherwise, contemplation of the explosion would cease, and the person would flee in fear. To experience the sublime, we must "regard an object as *fearful*, without being afraid *of* it" (Kant, 1790/1951, p. 110). However, despite being disinterested, we would argue that awe is an emotion for the same reason beauty is an emotion. Although the violence of the sublime does not implicate concerns for the body, it clearly implicates concerns for the mind insofar as it threatens our cognitive structures for understanding and coping with the world. In the mathematical sublime, for example, our most fundamental concepts are made inadequate by unimaginable magnitude.

Keltner and Haidt (2003) explained the sublime's implication for the mind as a "*need* for accommodation" (p. 304), in light of a failure to assimilate stimuli into present concepts and schemata. They noted, however, that awe can blend into elation when accommodation succeeds, when a person manages to grasp the vastness before them. We agree that accommodation is involved in the sublime. However, we are not sure whether it is needed, as opposed to desired. This is an important self-regulatory distinction. Framing awe in terms of needs suggests a prevention focus, as one struggles to accommodate a stimulus to avoid representational failure. As mentioned earlier, in a prevention focus, one's actions are directed at avoiding an unwanted outcome. In a promotion focus, however, one's actions are directed at approaching a desired outcome. Instead of doing something out of obligation, we do something out of aspiration. Framing awe in terms of desire suggests a promotion focus, in which a person willingly approaches vastness (cognitively) out of desire to grasp the stimulus.

Izard (1977) parted with Keltner and Haidt's (2003) prevention framing by viewing awe as a more intense version of interest. He suggested that awe, like interest, motivates exploration. Recall that Izard invoked a promotion focus in interest, positing a desire to "expand the self by incorporating new information" (p. 216). Izard's viewpoint is supported by the fact that during awe, successful accommodation leads to elation. If awe involved the need to avoid mental harm, then the pleasure of successful accommodation might be more akin to relief. As mentioned earlier, attaining prevention goals leads to a low-arousal pleasure, such as quiescence (Higgins et al., 1997). However, the motivational context of awe becomes more complicated when the consequences of failure are considered. Keltner and Haidt reported that the representational strain of failing to accommodate the sublime feels similar to terror. Such a high-arousal, negative affective experience is associated with failure to avoid harm, not failure to attain benefits (which results instead in low-arousal dejection). Awe appears to be a motivational contradiction, involving a promotion focus when accommodation succeeds, yet a prevention focus when accommodation fails.

To account for the motivational complexity in awe, we suggest that awe involves a core motivational juncture. As Izard (1977) suggested, one enters awe through a promotion focus, desiring to incorporate something novel and difficult to process. At this point, one is actively pursuing goals for expanding knowledge, as one appraises a potential for understanding. The vastness of the sublime, however,

soon becomes overwhelming. As Kant (1790/1951) suggested, the free play of representational processes becomes difficult to tolerate, as one "listens to the voice of reason which . . . requires totality [and] consequently desires comprehension in *one* intuition" (p. 102). Here, we find a motivational juncture, as the vastness transitions from inviting to imposing; instead of desiring understanding for its pleasant reward, we begin to *need* understanding to reduce representational strain, to cope with a stimulus that overwhelms our most basic concepts of magnitude. At this juncture, we are neither cognitively approaching nor avoiding the stimulus. Instead, as Keltner and Haidt (2003) described, we are held in "submission" (see also Burke, 1757/1850).

Regardless of what becomes of attempts to accommodate the vastness of the sublime, affect will reach the extremes of activation, as even the most basic concepts of size and magnitude are held at bay. This massive dysfluency at the conceptual level of processing is registered by novelty appraisal mechanisms, which cause corresponding affective activation. Whether this activation tends toward the positive or negative poles of the affect circumplex depends on the success of accommodation, as noted by Keltner and Haidt (2003). If the goal of accommodation is realized, the affective experience will tilt clockwise into elation and come very close to an experience of beauty, especially if representational closure remains elusive. However, if accommodation fails, the experience tilts counterclockwise, creating the affect of terror without the behavioral disposition to flee.

Implications for Research

By fitting aesthetic pleasure into the framework of emotion theory, we create the potential for novel empirical approaches to aesthetic pleasure. Much of the past research on aesthetics has focused on manipulating aspects of a stimulus and its processing. However, if beauty is an emotion, then researchers should also consider manipulating the motivational state of the individual. Research by Freitas et al. (2005), although not explicitly concerned with aesthetic phenomena, is a step in this direction. As mentioned, these researchers found that the pleasantness of fluent processing was, indeed, moderated by the motivational state of the individual. They found that participants in a promotion focus did not show a preference for fluently processed stimuli. Instead, such a preference was only found among prevention-focused individuals. This study sheds light on the role of motivational context in aesthetic pleasure, but it leaves open an important question: What processing dynamic would lead to aesthetic preference in a promotion focus? We have presented a diverse array of theoretical evidence for a processing dynamic associated with potential understanding, and we have argued that this processing dynamic leads to the experience of beauty when a person is promotion focused. To provide empirical evidence for these claims, we are currently replicating Freitas et al.'s (2005) study with an additional processing manipulation, one that creates the dynamic of potential understanding.

Additional research questions include how to induce the processing dynamic of potential understanding and how to demonstrate that it has occurred. In past research, potential understanding has been manipulated by presenting artwork that varies on a dimension from abstract to realistic. Another source of processing variance comes from randomly generated polygons, which vary in complexity depending on their number of sides and their regularity. One way to verify the complexity of a stimulus is through psychophysiological measures. As Vrana (2008) noted, "The orienting response, and consequential heart rate decrease, is larger with more interesting, complex, or meaningful stimuli" (see "An Approach to the Psychophysiology of Emotion," para. 6). In addition to peripheral psychological measures such as electromyography and cardiography, central psychophysiological measures, such as electroencephalography, could also be of use in verifying processing dynamics. Complexity of a stimulus can be gauged by the "novelty P3" event-related potential (Courchesne, Hillyard, & Galambos, 1975). As Ramachandran and Hirstein (1999) noted, central psychophysiological measures can also detect the grouping of stimulus features that indicate the potential for concept application (Crick & Koch, 1998; Singer & Gray, 1995). This processing dynamic, which is essential to our notion of potential understanding and Kant's (1790/1951) notion of purposiveness without purpose, should be observable as a particular synchronization of action potentials.

Not only can psychophysiological measures provide fine-grained measures of processing dynamics, they can also be used to measure the affective response to processing dynamics. Winkielman and Cacioppo (2001) used facial electromyography to show that processing fluency engages the zygomaticus (the "smiling muscle") and therefore produces genuine, "hot" affect. We would predict that zygomaticus activity is also correlated with the synchrony of action potentials that indicates successful grouping of stimulus features. Furthermore, we would predict that zygomaticus activity would be greater in response to such synchronization during a promotion focus. Other objective, psychophysiological measures of aesthetic pleasure could include left frontal asymmetry (Davidson, 1992), as well as the modulation of certain reflexes, specifically inhibition of the startle blink reflex (Vrana, Spence, & Lang, 1988) and potentiation of the postauricular reflex (Benning, Patrick, & Lang, 2004).

Conclusion

In the past half-century of psychological research, numerous psychologists have been deeply influenced by the writing of philosophers. Some have been able to "naturalize" philosophical positions by situating them within a psychological discourse and, ultimately, supporting them with empirical evidence. Clear examples are Rosch's (1978) use of Wittgenstein's (1953/1999) "family resemblance" in her prototype theory of concepts, Haidt's (2001) use of Hume's (1740/1969) emotivism in his intuitionist model of moral judgment, and Damasio's (2003) use of Spinoza (1663/1905) in his embodied view of cognition and emotion. We have attempted to undertake a project similar in nature, situating Kant's (1790/1951) aesthetic theory within current psychological discourse on cognition and emotion. In a naturalized, albeit modified Kantian theory of aesthetics, we have attempted to qualify processing fluency explanations of aesthetic pleasure. Although acknowledging the contribution of processing fluency to the mild experience of prettiness, we have also shown how a processing challenge can produce the separate, stronger aesthetic pleasure of beauty. Furthermore, we have used Kant's concept of an end with respect to knowledge to show how beauty can truly implicate goals and elicit emotional pleasure, above and beyond mere cognitive pleasure. Returning aesthetic pleasure to the rubric of emotion, we have used recent advances in contemporary theory to elucidate the appraisal structure, motivational context, and affective quality of two aesthetic emotions, prettiness and beauty. Last, we have related beauty to other aesthetic emotions, namely the overlooked emotions of interest and awe. We hope that by providing a coherent tripartite framework for understanding aesthetic experience, topics such as beauty, interest, and awe will no longer languish on the margins of empirical investigation.

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Correction to Belmonte (2008)

In the article, "Does the Experimental Scientist Have a 'Theory of Mind'?" by Matthew K. Belmonte (*Review of General Psychology,* 2008, Vol. 12, No. 2, pp. 192–204), a reference was listed in incorrect order. The reference, "Lévi-Straus, C. (1926). *La pensée sauvage* [The Savage Mind]. Paris: Plon." should have followed, "Lesslie, A. M., & Thaiss, L. (1992). Domain Specificity in conceptual development: Neuropsychological evidence from autism. *Cognition, 43,* 225–251."

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