7 On the Pleasures of the Mind

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Pleasures of the mind are different from pleasures of the body. There are two types of pleasures of the body: tonic pleasures and relief pleasures. Pleasures of the body are given by the contact senses and by the distance senses (seeing and hearing). The distance senses provide a special category of pleasure. Pleasures of the mind are not emotions; they are collections of emotions distributed over time. Some distributions of emotions over time are particularly pleasurable, such as episodes in which the peak emotion is strong and the final emotion is positive. The idea that all pleasurable stimuli share some general characteristic should be supplanted by the idea that humans have evolved domain-specific responses of attraction to stimuli. The emotions that characterize pleasures of the mind arise when expectations are violated, causing autonomic nervous system arousal and thereby triggering a search for an interpretation. Thus, pleasures of the mind occur when an individual has a definite set of expectations (usually tacit) and the wherewithal to interpret the violation (usually by placing it in a narrative framework). Pleasures of the mind differ in the objects of the emotions they comprise. There is probably a small number of categories of objects of emotions that we share with other mammals. I discuss two: the unknown (giving rise to curiosity) and skill (giving rise to virtuosity), two others being nurturing and sociality. There is also a uniquely human category of objects of emotion: suffering.

> Don't make it a matter of course, but as a remarkable fact, that pictures and fictitious narratives give us pleasure, occupy our minds.
>
> —Wittgenstein 1958, §524

IT IS EASIER to point to pleasures of the mind than to define them. Imagine you're ending a magnificent meal with good friends at Troisgros with the celebrated *jeu de pommes*—Granny Smith apple tartlets, topped with caramelized confectioners' sugar and covered with a sauce of warmed acacia honey, calvados, and lemon juice (Lang 1988, 31) accompanied by a Coteau du Layon (Loire) sweet chenin blanc.[1]

Now remove the elements that made this a marvelous experience, except for the food. You eat the same dessert alone at home, on your everyday dishes, without having anticipated the delectable food or wine. What you have lost are pleasures of the mind. I do not wish to imply that you have lost *all* the pleasures of the mind or that the pleasures that remain are just pleasures of the body.

We can take the opposite tack, as the following anecdote suggests:

> My friend, a French painter and Resistance fighter, was put in a concentration camp by the Nazis. Every evening during his long incarceration, he and two or three of his fellow prisoners . . . entirely by means of conversation and gestures . . . dressed for dinner in immaculate white shirts that did not exist, and placed, at times with some difficulty because of the starched material that wasn't there, pearl or ruby studs and cuff links in those shirts. . . . They drank Châteauneuf-du-Pape throughout the meal and Château d'Yquem with the dessert pastry. . . . There were certain restaurants they did not patronize a second time because the lobster had been overcooked. . . . On the evenings that they saw themselves as men of letters, they quoted from the great poets while they dined. (Boyle 1985, 88)

We have removed the food; what we have *retained* are pleasures of the mind.

The notion of pleasures of the mind goes back to Epicurus (341–270 B.C.E.) who regarded pleasures of the mind as superior to pleasures of the body because they were more varied and durable.[2] As Cabanac (1995) remarks, these pleasures have been neglected by contemporary psychology. Their scope and their differentiation from other pleasures and from emotions need to be explored and eventually specified.

As we embark on our exploration, we must avoid being too restrictive. You might identify the pleasures of the mind with aesthetic pleasures—

the pleasures of listening to music, hearing poetry, or attending a play. But what you or I have learned to call aesthetic pleasures may not be universal. Some cultures, such as the BaAka pygmies, do not make a distinction between listening to music, performing it, and dancing to it.[3] Other cultures, such as certain Bedouin societies, have forms of poetry that cannot be interpreted unless it is known who recited the poem and under what circumstances (Abu-Lughod 1986). You might identify the pleasures of the mind with intellectual pleasures—the pleasures of hearing about a new discovery or a brilliant theory. But many cultures do not have the kinds of intellectual exploration that were institutionalized during the Renaissance in Europe.

As soon as we move beyond the restrictive categories of the aesthetic and intellectual pleasures of modern Western cultures, can we exclude pleasurable activities such as playing backgammon and gardening? We are faced with an embarrassment of riches. We don't know where to stop: should we include bird-watching, collecting stamps, and flirting? The answer to all of these is yes, for reasons that will become clear as my argument unfolds.

This chapter consists of three sections. In the first, I offer a definition of the pleasures of the mind, first by distinguishing them from pleasures of the body, and then by clarifying the relation between pleasures of the mind and emotions. I conclude the first section with my conjecture that all pleasures of the mind consist of sequences of emotions (in which moods and pleasures of the body may play a role). This is the heart of my thesis, and I ask the reader to keep it in mind as I develop my argument. In the second section, which deals with the ecology of pleasures of the mind, I analyze the situations and stimuli that give rise to pleasures of the mind. Here I suggest that different pleasures of the mind provide different temporal patterns and different intensities of emotions. I conclude the chapter with further differentiation of the pleasures of the mind. I suggest that they differ in the objects of their emotions.

Defining the Pleasures of the Mind

Pleasures of the Mind and Pleasures of the Body

We begin by exploring the distinction between pleasures of the mind and pleasures of the body, bearing in mind that we may come across cases that are difficult to classify.[4] As the dining example suggests, many pleasures of the mind are closely tied to pleasures of the body, because they amplify them or involve elements that are pleasures of the body.

The main sources of bodily pleasure are our sheath of skin and the holes in it—the nostrils, the mouth, the genitals, the urethra, and the rectum—that engage in material exchanges with the environment. These sources give us two kinds of pleasures of the body. In the first kind, the sources of pleasure for the skin and its orifices are specific stimuli, such as caresses, sweet foods, flowery aromas, or sexual stimulation.[5] The second kind of pleasure of the body stems from the fact that orifices are also valves. The orifices allow us to rapidly—at times explosively—evacuate or expel foreign objects or bodily fluids. As a result, we experience sudden and pleasurable relief from internal sources of discomfort or tension by sneezing, belching, micturating. Having an orgasm, even though not caused by irritants, is not dissimilar: a gradual increase in tension is ended suddenly with great pleasure.[6]

I call pleasures of the body of the first kind *tonic pleasures* because they are relatively extended in time. They are often called *positive hedonic states.* I call pleasures of the body of the second kind *relief pleasures* because they follow a prior tension or discomfort. In contrast to the tonic pleasures, they are relatively brief. In this respect, sexual pleasures are unique: they involve both tonic pleasures (such as caresses) and relief pleasures (such as the orgasm).[7] Table 7.1 compares the tonic and relief pleasures. (The skin is excluded because it doesn't afford relief pleasures.)

We not only need to show that pleasures of the mind have a standing separate from pleasures of the body but must also answer the question: Don't all pleasures of the body require mind? To be sure, awareness accompanies pleasures, and pleasures can have meanings beyond the immediate experience. For example, when primates groom each other, they are not only giving each other pleasures of the body but also reassuring and appeasing each other: "Grooming . . . is the social cement of primates" (Jolly 1985, 207). That assertion does not imply, however, that when you have a pleasure of the body you are necessarily having a pleasure of the mind. Nevertheless, I suspect that for humans most tonic pleasures of the body are embedded in pleasures of the mind. In contrast, bodily relief pleasures may not occur frequently in pleasures of the mind, although analogous pleasures—such as relief from tension or resolution of

TABLE 7.1 Comparison of Two Types of Pleasures of the Body

Source	*Tonic Pleasures*	*Pains or Discomforts*	*Relief Pleasures*
Nostrils	Aromas	Irritation (for example, horseradish, dust), disgusting odors (for example, rotting eggs)	Sneeze
Mouth	Good flavors	Burn, distastes (bitter), disgusts (rotting food)	Spit, cough, belch
Genitals	Sexual pleasure	Sexual tension	Orgasm
Urethra	?	Full bladder	Micturition
Rectum	Sexual pleasure	Full bowel, flatulence	defecation, passing gas

suspense—are a central feature of pleasures of the mind.

As they become more dynamic and complex, we may be tempted to think of tonic pleasures of the body as pleasures of the mind. The tonic pleasures of the body, as we have defined them, involve objects or substances coming in contact with the body (the senses involved—smell, taste, and touch—are sometimes called contact senses) and relatively unitary experiences. But consider the following description: "This wine has a wonderful ripe nose that is full, rich, complex and intensely peppery and spicy. In the mouth, this wine was quite soft and round . . . with great extraction, balance and harmony. The finish is long and dignified."[8] If we used complexity or heterogeneity as a criterion of pleasures of the mind, we might say that this was a description of a pleasure of the mind. I do not think, however, that it will serve our purposes to make either complexity or variability criteria of pleasures of the mind. As I spell out later, the distinction between them does not rest on the simplicity, the brevity, or the absence of change of pleasures of the body. Rather, the difference is that pleasures of the mind are sequences of emotions. The sequence of experiences caused by the taste of wine may be a sequence of hedonic states, but not a sequence of emotions.

The so-called distance senses—hearing and seeing—can also give us pleasures of the body. Up to this point, we have discussed pleasures of the body that involve the contact senses. We must consider, however, sounds and sights we call attractive, pleasant, or harmonious—beautiful landscapes, graceful bodies, soothing harmonies, felicitous color combinations. I say that these are pleasures of the body because although they produce hedonic states, they do not provide emotions.

The role of the distance senses in giving us pleasure is complex because even though they can give rise to hedonic states, they are also important vehicles for the communication of pleasure. They do so by conveying and triggering emotions. For humans, the two most important vehicles of emotions are tone of voice and facial expression, transmitted, respectively, through hearing and seeing. Most forms of art[9] are conveyed by hearing and seeing. However, the sensory vehicle of a pleasure of the mind does not necessarily tie the pleasure to that sense. There is no more reason to call the pleasure we get from hearing a joke an auditory pleasure than there is to say that reading a poem gives us visual pleasure—disregarding the occasional shaped poem (Hollander 1975).

Furthermore, much that is received through other channels can modulate emotions conveyed by a distance sense. For instance, non-auditory knowledge affects our response to music. I listened to Smetana's beautiful tone poem *Vltava* with new emotions when I was told that it was composed soon after the composer went deaf (I felt compassion and admiration) and that it vividly depicts various parts of the river's course (I experienced curiosity).[10]

Finally, many pleasures of the mind are compound: they involve several senses. A film offers us sights, a sound track, and spoken dialogue; although it is in principle possible that the pleasure we get from a film can be captured by talking about the pleasures we get from each of these sources separately, it is unlikely. The pleasure it gives us is postsensory: it creates suspense, satisfies our curiosity, instructs (Burke 1973; Koubovi 1992), and moves us.

Having made some progress in differentiating pleasures of the body from pleasures of the mind, we turn to the differences between the pleasures of the mind and emotions.

Pleasures of the Mind and Basic Emotions

Although there is controversy in the literature on emotion, Ekman's (1992, 1994) view of the basic emotions (such as anger, fear, sadness, disgust, happiness) is a good point of departure: "(1) There are a number of separate emotions which

differ from one another in important ways. (2) Evolution played an important role in shaping both the unique and the common features which these emotions display as well as their current function" (1994, 170). The left-hand column of table 7.2 summarizes Ekman's eight features of emotions; the right-hand column shows that in most ways pleasures of the mind differ from basic emotions.

How can the pleasures of the mind be so different from the basic emotions? As I pointed out earlier, although the pleasures of the mind are complex, their complexity does not go to the heart of the difference. Rather, basic emotions are different from pleasures of the mind because emotions are *constituents* of pleasures of the mind.

CONJECTURE 1: The pleasures of the mind are collections of emotions distributed over time.

This formulation is reminiscent of Kahneman's work (this volume). He proposes a "bottom-up approach to well-being, in which the criterion variable [a person's assessment of her well-being] is a function . . . of the distribution of affective states over time." He summarizes the evidence in favor of a *peak-end evaluation rule.* "The participants in these studies . . . provided a real-time record of their experience during an episode . . . and later provided a global evaluation of the entire episode. . . . Global retrospective evaluations were well predicted by a simple average of the *peak* affective response recorded during the episode (in the case of aversive episodes, the worst moment) and of the *end* value, recorded just before the episode ended."

More generally, episodes in human life—important social transitions especially—have (or are described by people retelling them as having) a constant temporal structure, as Ruble and Seidman (1996) show. As they point out, a person starts out in a so-called *prior state,* consisting of concepts and schemata about her relation with her environment, in the light of which she interprets the events of her life. There comes a moment, which they call the *onset,* at which her relation with her context is disrupted. The new state of affairs requires a period of *change,* during which she tries to adjust to it or to reconstruct it. Either path leads her to a final phase of this transition, *equilibrium.* In reconstructing an episode in a person's life, one inevitably divides the constituent events into *kernels*—events that entail choices and are consequences of earlier kernels—and *satellites* that may fill in, elaborate, or complete the kernel (Chatman 1978). Each of these kernels gives rise to emotions. When a kernel event presents itself, we feel *suspense* which is accompanied by *fear* and *hope;* when the choice has been made, we may experience *surprise* accompanied by *disappointment* or *elation.* If the person emerges triumphant from the challenge, she will cherish the episode as a pleasure of the mind (for a demonstration of the peak-end rule in dramatic presentations, see Zillmann, Hay, and Bryant 1975). Thus, some episodes in human life provide sequences of emotions that are pleasures of the mind, some that are neutral, and some that may be called *displeasures of the mind.*

TABLE 7.2 Features of Emotions and Pleasures of the Mind

Emotions . . .	*Pleasures of the Mind . . .*
have a distinctive universal signal (such as a facial expression).	do not have a distinctive universal signal.
are almost all present in other primates.	at least some of them may be present in other primates.
are accompanied by a distinctive physiological response.	are not accompanied by a distinctive physiological response.
give rise to coherent responses in the autonomic and expressive systems.	do not give rise to coherent responses.
can develop rapidly and may happen before one is aware of them.	are relatively extended in time.
are of brief duration (on the order of seconds).	are usually not of brief duration.
are quick and brief; they imply the existence of an automatic appraisal mechanism.	even though neither quick nor brief, may be generated by an automatic appraisal mechanism.
are quick, brief, and involve automatic appraisal; therefore, their occurrence is unbidden.	are generally voluntarily sought out.

As Elias and Dunning (1986) illustrate, cultures have invented institutions that provide opportunities for pleasures of the mind:

> It may not be easy to find a clear consensus with regard to the characteristics of plays or symphonies which provide a high and low degree of audience satisfaction, although the difficulties may not be insuperable even in the case of concerts in spite of the greater complexity of the problems. With regard to sports-games such as football [soccer], the task is simple. If one follows the game regularly one can learn to see, at least in broad outline, what kind of game figuration provides the optimum enjoyment: it is a prolonged battle between teams that are matched in skill and strength. It is a game which a large crowd of spectators follows with mounting excitement, produced not only by the battle itself but also by the skill displayed by the players. It is a game which sways to and fro, in which the teams are so evenly matched that first one, then the other scores and the determination of each to score the decisive goal grows as time runs out. The tension of the play communicates itself visibly to the spectators. Their tension, their mounting excitement in turn communicates itself back to the players and so on until the tension reaches a point where it can just be borne and contained without getting out of hand. If, in this manner, the excitement approaches a climax, and if then suddenly one's own team scores the decisive goal so that the excitement resolves itself in the happiness of triumph and jubilation, that is a great game which one will remember and about which one will talk for a long time—a really enjoyable game. (86–87)

Consider the pleasures of the mind we get from works of art that unfold over time.[11] Take, for example *narratives.* "Every narrative . . . a structure with a content plane (called 'story') and an expression plane (called 'discourse')" (Chatman 1978, 146). Many stories have a structure that parallels the *prior state, onset, change,* and *equilibrium* pattern of episodes in a human life. They begin with an *exposition,* introduce a *complication,* and end with a *dénouement* and thus can provide sequences of emotions similar to those provided by episodes in human life (Brooks and Warren 1979).

> Just as in ordinary circumstances an emotional response is the product of a perceived situation which is apprehended by the individual as promising or threatening, so the expressiveness of the imaginative work arises, at least in part, from the fact that it provides a dramatic representation of an action of which the evoked emotion is the expressive counterpart (Aiken 1955, 390).

The purpose of discourse is to add emotions to those provided by the story. Consider just one example from Chatman (1978). In Hawthorne's "Rappacini's Daughter," we read: "The youth might have taken Baglioni's opinions with many grains of allowance had he known that there was a professional warfare of long continuance between him and Dr. Rappacini." Chatman comments on this passage: "Giovanni could have discounted Baglioni's opinions, but he did not because he was ignorant of his rivalry with Rappacini. The narrator tells us in so many words what could have happened and did not" (226). As a result of the way in which the story is presented, what is not a kernel for Giovanni becomes one for us. The author (via the narrator) has planted a question in our minds: Will Giovanni see through Baglioni? As a result of this device, which is part of the discourse rather than the story, we are in an emotional state, suspense.

In brief, all works of art, and more generally all pleasures of the mind—from roller-coaster rides to gardening—derive their pleasurability from the sequence of emotions they bring about.

> CONJECTURE 2: The pleasures of the mind are collections of emotions distributed over time whose global evaluation depends on the intensity of the peak emotion and favorability of the end.

A brief reconsideration of the experience of a fine wine (like the description of the 1992 Jean-Louis Chave Hermitage quoted earlier) may clarify what I have said up to this point. The experience shares some features with pleasures of the mind: it resembles them insofar as it is complex, consisting of a sequence of pleasurable sensations. But the experience is not a pleasure of the mind because it does not give rise to a sequence of emotions. If an enologist were to report that the taste of a wine is accompanied by a series of emotions, then it would be a candidate for a pleasure of the mind. It is more likely, however, that an evening of wine-tasting, with its good wines and bad wines, with its anticipations and surprises, with its debates and disagreements, would count as a pleasure of the mind.

In the remaining two sections of this chapter, I address two questions about the pleasures of the mind (inspired by Shweder's [1991, ch. 6] cross-cultural analysis of emotion). The first is the *eco-*

logical question: How do certain stimuli give rise to sequences of emotions? The second is the *taxonomic* question: How do pleasures of the mind differ other than by the sequence of the emotions they produce?

The Ecological Question

Up to now I have emphasized the role of sequences of emotions as constituents of pleasures of the mind. I have already sketched part of my answer to the ecological question: the stimuli and activities that give rise to pleasures of the mind are those activities that give rise to certain patterned sequences of emotions. But I do not believe that this is the whole answer. Some stimuli are in themselves pleasurable, but they do not by themselves produce sequences of emotions. What is their role in the pleasures of the mind?

The role of pleasant and attractive stimuli seems to be the creation of a *context* for the generation of pleasures of the mind. When you describe a pleasure of the mind to someone, emotions are not the only mental states you refer to. You may also refer to *moods* (happy versus sad) and *levels of arousal* (excited versus calm). Moods and levels of arousal differ from emotions in an important way: they are not intentional, that is, they are not focused on objects. But moods and levels of arousal are related to emotions. Moods share at least one property with emotions: they both involve affect. For instance, a good mood is a state of unfocused pleasant feeling, which produces a general proclivity to see the positive (see Frijda 1993; Morris, this volume). Furthermore, levels of arousal are inextricable consequences of moods and emotions. So it is likely that levels of arousal and moods are facilitators of sequences of emotions.

Pleasurable Stimuli

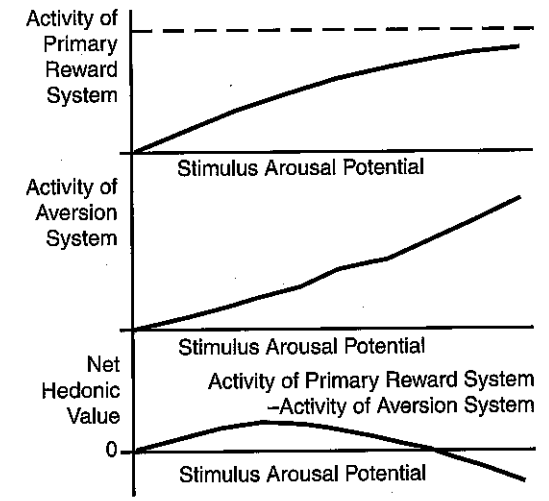
Even though levels of arousal and moods do not have objects, they can be affected by stimuli: background music, soothing colors, the babbling of a brook, the chirping of birds, the aroma of a freshly mowed lawn, the scent of a delicate perfume—these are stimuli that we like; they tend to reduce arousal and improve our mood.[12] I call these *pleasures of the distance senses* to make it clear that such pleasures do not count as pleasures of the mind.

Traditional psychological approaches to the relation between stimuli and pleasures of the mind have been narrower in scope than the one I am proposing. Two approaches have been tried. The first was formulated by Fechner in a paper on preferences for the proportions of rectangles, which is said to have founded the discipline of experimental aesthetics (Boring 1950). He asked: What properties should stimuli of a certain category possess to make people prefer them over other stimuli of the same category? For instance, are rectangles whose proportions approximate the Golden Mean[13] more pleasing than other rectangles? The second approach originated with Berlyne, who thought that arousal is the key to the appeal of stimuli. Since it is beyond the scope of this chapter to discuss both approaches, I have chosen to discuss Berlyne's.

Berlyne's Approach: Preference for Intermediate Levels of Complexity In the late 1950s Berlyne revived ideas first proposed some eighty years earlier by Wundt (1874) and embarked on an influential research program whose aim was to found a psychological aesthetics on the premise that the hedonic value of stimuli is maximal at intermediate levels of arousal.

Arousal is a general state of the organism that affects the vigor and organization of its behavior, between sleep and disorganization at one extreme and frenzy at the other. It can be affected by internal influences (drugs, hormones, and deprivation levels) or by external influences (the sight or smell of food, or painful stimuli). The foundation of Berlyne's theory (1960, 1967, 1971) is the so-called Wundt curve (figure 7.1). The curve follows

FIGURE 7.1 The Wundt Curve



Source: Adapted From Berlyne 1971, figures 8.3 and 8.4.

from several propositions about brain systems that control hedonic processes:

1. There are in the brain two antagonistic systems involved in the regulation of pleasure: a primary reward system and an aversion system.
2. Any stimulus has arousal potential; that is, it can increase the activity of these two systems.
3. The greater the intensity of a stimulus, the greater its arousal potential, and the greater the activity of the two systems.
4. The mathematical functions that relate the amount of activity in the two systems to stimulus arousal potential are different: the primary reward system is activated more effectively by weak stimuli than is the aversion system, but the reverse is true for strong stimuli.
5. The net hedonic value of a stimulus is given by the difference between the activity of the two systems (Berlyne, 1974; Francès 1970, 1971; Frank 1959; Jones, Wilkinson, and Braden 1961; Molès 1966; Schneirla 1959).

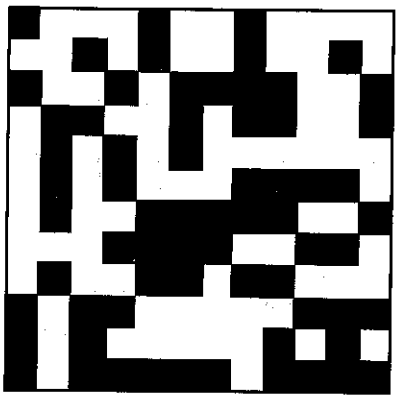
It is thus a theory of the pleasures of the mind. The reader may wish to consult Martindale, Morre, and Borkum (1990) for an excellent overview of this line of research.

As Berlyne's ideas evolved, he and others came to identify stimulus arousal potential with complexity, defined in information-theoretic terms. As an example of the sort of research his ideas inspired, consider an experiment by Dorfman and McKenna (1966). They showed one hundred women sixty pairs of patterns resembling the one shown in figure 7.2. Each pattern consisted of a number of tiles (4, 16, 36, 64, 100, or 144) whose color—green or white—was determined randomly. The patterns were of the same size, but they differed in the number of tiles they comprised.

After the data were collected, Dorfman and McKenna grouped the participants into 6 classes, according to the number of tiles in the patterns they tended to prefer. (Twelve percent of the participants were excluded from the analysis because their preferences were ambiguous.) The data (figure 7.3) show that each class of participant had a single-peaked preference for a certain amount of uncertainty.

Results such as these were taken to imply that each person has a single-peaked preference for objects possessing differing degrees of complexity; that is, the further the complexity of objects departs from some optimum, the less appealing they are.

FIGURE 7.2 A Pattern Based on a Twelve-by-Twelve Matrix of White or Green Tiles



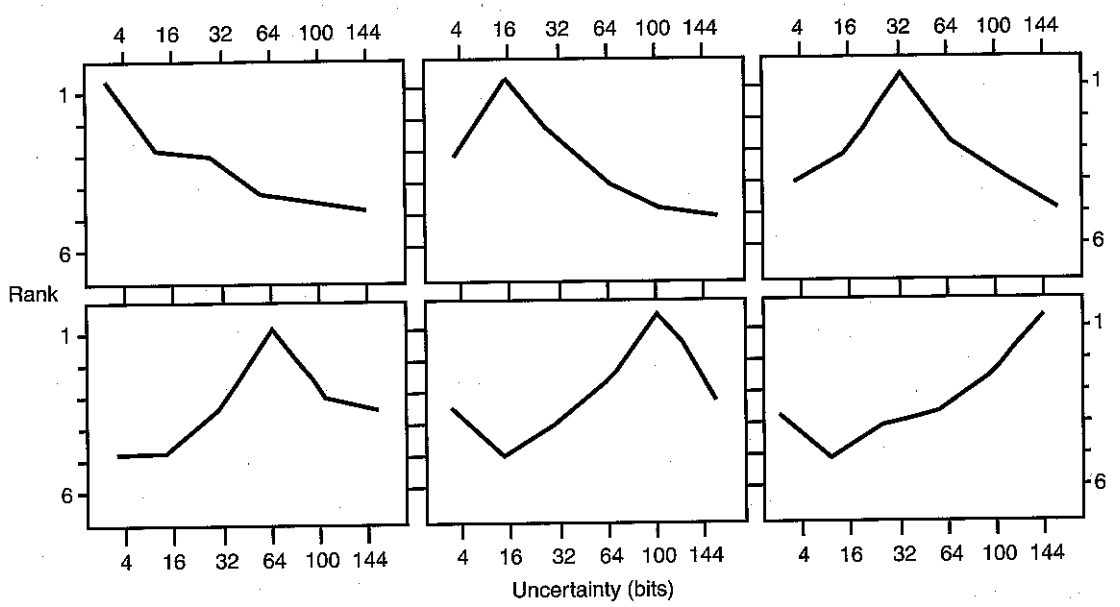
Source: Dorfman and McKenna 1966, figure 1.
Note: Black tiles signify green tiles.

Berlyne's approach suffers from three problems. First, it incorrectly considers complexity to be a measurable characteristic of single stimuli. Second, its claim that we prefer intermediate levels of complexity is theoretically weak and empirically unfounded. Third, it does not capture the phenomenology of pleasures of the mind; it represents an inappropriately reductionistic oversimplification of the pleasures of the mind.

Berlyne mistakenly thought that complexity is a measurable characteristic of single stimuli. Kahneman and Miller (1986), building on Garner's (1962, 1970) insights, have shown that "each stimulus selectively recruits its own alternatives and is interpreted in a rich context of remembered and constructed representations of what it could have been, might have been, or should have been" (136).

"Good [that is, simple] patterns have few alternatives," as Garner's title (1970) suggests. When John looks at a Mondrian and says that his four-year-old niece could have done as well, he is saying that the painting is simple because he is comparing it to few alternatives. He may think that all the artist could have done differently was to fail to stay within the lines or use different primary colors. John does not consider the many choices Mondrian faced in the placement of rectangles and boundary lines and in the balance of forms. On the other hand, John may admire the landscape painting taught on television because it in-

FIGURE 7.3 Number of Tiles Preferred by Six Classes of Participants in Dorfman and McKenna (1966) Experiment



Source: Adapted from Dorfman and McKenna (1966), figure 2.

volves many strokes of the paintbrush. To him, each stroke seems to be the result of a choice. If he realized that this painting actually has few alternatives, that he is watching the application of a few painterly tricks, applied according to simple rules of thumb, he might reconsider his judgment.

Thus, complexity is a property of the structure of an imagined set of alternatives to the object. A person's construal of the set to which an object belongs determines her judgment of the object's complexity.

Despite Berlyne's misconstrual of complexity, he was, in a sense, right: we are not entertained either by a blank wall or by random noise; both boredom and overload are unpleasant. One can always find a range of similar stimuli such that the simplest is too simple and the most complex is too complex. In that sense, we prefer intermediate levels of complexity,[14] and in that sense, the Wundt curve and Berlyne's theory are trivially true. But we need no experiments to realize that Berlyne's theory cannot be true for *any* individual and *any* set of stimuli: show me a set of ten random patterns varying between one million and ten million elements; I will surely judge all of them to be too complex to be pleasurable.

Keeping in mind that people assess the complexity of a stimulus with respect to the set to which it belongs, consider a collection of paintings by Rothko. The dimensions along which these paintings vary are not given; they must be discovered, or perhaps invented. Some viewers may focus on form, others may focus on colors, and yet others may focus on brush strokes. An individual's interest in and knowledge of the ways in which the set varies determines how the complexity of its constituent stimuli will be judged. People's interests and knowledge are more fundamental to their preferences than is complexity. This is what Martindale and his collaborators (Martindale and Moore 1989; Martindale et al. 1990) found: content has a much greater effect on preference than does complexity. In fact, they and Walker (1981) have shown that complexity does not predict preference well at all and that preference is not even a single-peaked function of complexity.

Berlyne's approach suffers from a third, even more serious, deficiency. It does not capture the *phenomenology* of pleasures of the mind. His concepts of arousal and complexity leave out the two fundamental features of pleasures of the mind: emotions and their temporal organization. His theory ignores the all-important emotional dynamics of pleasures of the mind. If my conjecture

is true, namely, that all pleasures of the mind consist of patterned sequences of emotions, then complexity should be relevant to pleasures of the mind only insofar as it contributes to the generation of emotions.

A Better Approach to Pleasurable Stimuli: The Naturalization of Beauty Let us think of beauty as the property we attribute to objects that give rise to pleasures of the distance senses. It is a commonplace of folk psychology that beauty is in the eye of the beholder. Scholars in the humanities (and probably many social scientists) hold a more subtle view, namely, that beauty is a social construction (Turner 1991). Berlyne's position minimized the role of subjectivity and the effect of culture. He proposed a *general mechanism* to account for what makes stimuli appealing. A general mechanism is one that is present in all humans, regardless of culture and individual differences within the culture. The search for such general mechanisms appeals to the reductionistic bent of psychology: whatever can be naturalized, that is, attributed to universal characteristics of the mind, should be naturalized.

Even though Berlyne's approach was appealing because he was trying to naturalize beauty, he was mistaken in how he tried to do so. Contemporary psychology has amassed considerable evidence that behaviors previously thought to be governed by general-purpose processing rules are in fact controlled by specialized modules (Cosmides and Tooby 1994; for an example of this hotly debated topic, see Shapiro and Epstein, 1998; Tooby and Cosmides 1998).

The contemporary project of naturalizing beauty relies on the idea that we have evolved domain-specific responses to stimuli that make a difference to our reproductive success. Each of these specific responses is an *evolved psychological mechanism,* defined by Buss (1996) as:

> A set of processes inside an organism that (1) exists in the form it does because it (or other mechanisms that reliably produce it) solved a specific problem of individual survival or reproduction recurrently over human evolutionary history; (2) takes only certain classes of information or input, where input (a) can be either external or internal, (b) can be actively extracted from the environment or passively received from the environment, and (c) specifies to the organism the particular adaptive problem it is facing; and (3) transforms that information into output through a procedure (e.g., a decision rule) where output (a) regulates physiological activity, provides information to other psychological mechanisms, or produces manifest action, and (b) solves a particular adaptive problem. (8)

Two examples of responses to stimuli to which we may have evolved domain-specific preferences—and therefore provide pleasures of the distance senses—are landscapes and faces.

A sample of North Americans were shown photographs of five types of landscapes (Balling and Falk 1982; Orians and Heerwagen 1992). While viewing these photographs, they were asked to rate how much they would like to "live in" or "visit" an East African savanna, three types of forest (tropical, deciduous, or coniferous), or a desert. Children (modal age eight) preferred the East African savanna over the other four (even though no animals or water were shown in any of the pictures). According to Orians and Heerwagen (1992), these data (particularly the preferences of young children) are consistent with the idea that our preferences for landscapes are the manifestation of an evolved psychological mechanism shaped during the Pleistocene Epoch.[15] These preferences are adaptive because they attract us to environments that provide food, water, protection from natural hazards, and freedom from predators or parasites. I cite this research not because it is particularly convincing, but because it is an example of what interesting research on the topic of hard-wired pleasures of the distance senses might be like.

Another—more persuasive—example of domain-specific preferences is drawn from Johnston and Franklin (1993), who studied preferences for women's faces. They created a computer program that allowed observers to manipulate the features of composite female faces. They first obtained the participants' ratings (on a 10-point scale) of thirty randomly generated composite faces. They interpreted these numbers as ratings of fitness. They then took the fittest face and probabilistically combined its features with one of the remaining twenty-nine faces (with a likelihood proportional to each face's fitness), to produce two new composite faces. The observer was then allowed to improve these faces by manipulating the position of the hair, nose, mouth, or chin and changing the interpupil distance. Then the observer rated the beauty of the resulting composite face. If either face was rated fitter than the least fit face in the

current population of thirty faces, then it replaced that face. This process was repeated until the participant gave a composite face a score of 10.

This experimental procedure generated forty faces. An average face formed from these "perfect" composites was quite different from an average formed from sixty-eight photographs of the local student population. Anthropometric growth curves allow us to estimate the age of a young woman from the relative size of her lower jaw (roughly speaking). By this measure, Johnston and Franklin (1993) estimated the age of the average "perfect" composite to be 11, whereas they estimated the age of the average of the local faces to be 18. (Their true mean age was 19.9.) However, when new observers were asked to estimate the age of the women depicted in the two average pictures, the age they assigned to the average of local faces was 27.4, whereas they thought that the age of the average "perfect" composite was 24.9. Now it so happens that 25 is about the age of maximum female fertility, and it is also the age that mates say is the ideal age for their long-term mate (Buss 1989). Noting that the growth of the lower jaw in females is controlled by adrenal androgens, Johnston and Franklin (1993) speculate: "A beautiful female face is that of a 25 year old female who has been less influenced by puberal androgens . . . and may [therefore] have an even higher fertility than the average 25 year old female" (196–97).

Even if we establish with certitude that some of our pleasures of the distance senses are based on evolved psychological mechanisms, what is considered beautiful or attractive cannot be explained without taking into account the powerful effects of culture. How else to account for the pervasive but culture-specific modifications of the body, such as foot-binding?

What is the "beauty-generating mechanism" through which culture works? Zajonc (1968) asked North American observers to rate how well they liked Chinese ideographs, after they had seen each either zero, one, two, five, ten, or twenty-five times (for two seconds each time). The more times they saw an ideograph, the more they liked it. In reviewing this "mere exposure" effect, Tesser and Martin (1996) conclude that "liking can be shaped without conscious awareness," and indeed, that it "may be stronger when the subjects are unaware of exposure than when they are aware" (403). The automaticity of the growth of liking and its independence from awareness are suggestive of a hard-wired mechanism. So even though not all our preferences are based on evolved psychological mechanisms, the mere exposure effect may be a manifestation of an evolved psychological mechanism that generates pleasures of the distance senses, and perhaps some pleasures of the body (such as a taste for certain spices). There are undoubtedly other mechanisms for the development of preferences, the foremost among them being classical conditioning. But their discussion is beyond the scope of this chapter.

The Generation of Emotion in Pleasures of the Mind

In the first part of this chapter, I suggested that pleasures of the mind consist of sequences of emotions. In the second part of this chapter, I complicated this position by discussing the role of pleasures of the distance senses in the pleasures of the mind. I now turn to the question of how activities that we consider pleasures of the mind give rise to emotions. I investigate this question using two examples: music and humor.

Music My explanation (a mere sketch, to be sure) of how music can give rise to sequences of emotions is based on Mandler's cognitive theory of emotions (Berscheid 1983; Dowling and Harwood 1986; Mandler 1984) and Maus's theory of narrative and music (Maus 1988, 1991, 1997). Its outline is this: (a) Whenever a musical event occurs, you interpret it in terms of your current schematic expectations. If the event is ambiguous, you interpret it in terms of the schema that comes most quickly to your mind. (b) If the musical event violates your expectations, your autonomic nervous system is aroused. (c) Because of this arousal, you search for an interpretation of the source of the violation of your expectation. (d) Your interpretation is based on your tendency to hear music as a narrative, and it can produce an emotional response.

About the time Berlyne was developing his theory, Meyer (1956, 1973) was developing an approach that has—in contrast—fared well. It is a theory about how tonal music pleases us. Fiske (1996) summarizes the theory well:

> During the course of a musical work listeners create on-going expectations about what particular tonal-rhythmic events are likely to occur "next" in the piece. The expected next-event is based upon

> the cumulation of events that have occurred in the piece so far. If this expected event is delayed or fails to occur at all, then emotional arousal will be stronger than it would be if the event had occurred as predicted. . . . For a piece to be meaningful, the composer must tread a thin line between absolute predictability of musical events and the fulfillment of predictability versus absolute unpredictability through the frustration, inhibition, and avoidance of expected events. (19, 107)

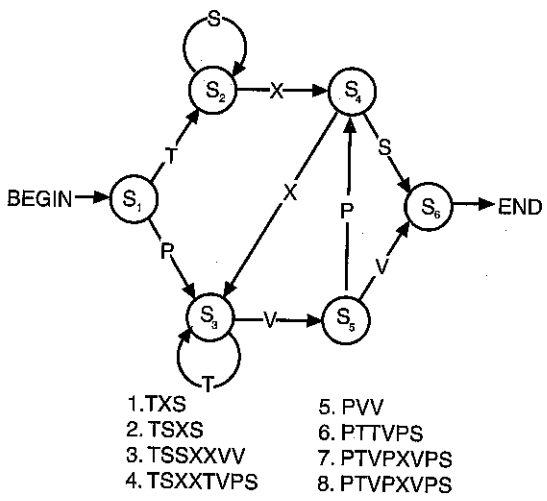
In Meyer's (1956) words: "Affect or emotion-felt is aroused when an expectation activated by the musical stimulus situation is temporarily inhibited or permanently blocked" (31).

In its most recent incarnation, Meyer's theory has been developed by Narmour (1990, 1992) in a monumental treatise on his implication-realization model. Narmour's theory is both broader than Meyer's and narrower. It is broader because it is far more explicit as a theory of music perception and as a theory of the formation and fulfillment of expectancies. For instance, Narmour conjectures that many of our musical expectations are the consequence of the bottom-up operation of universal (and perhaps innate) gestalt principles such as grouping by proximity, similarity, and symmetry. It is narrower than Meyer's theory because it does not explicitly address the issue of emotion or pleasure.[16]

The expectancy component of Meyer's theory has been tested empirically, thanks to the precision of Narmour's theory. Schellenberg (1996) has reported data that support Narmour's theory. He also successfully applied the theory to earlier data on the formation of expectancy in music (Carlsen 1981; Unyk and Carlsen 1987).

Expectancies are probably formed by *implicit learning,* a process whereby people learn rules (a) without having been told that what they are trying to memorize is governed by rules, and (b) without realizing that they are learning the rules. For instance, participants in an experiment by Reber (1993) were randomly assigned to two groups. Members of one group were asked to memorize sets of four strings of letters generated by the "grammar" represented in figure 7.4; the members of the other group were asked to memorize sets of four strings of the same letters in random order. Both groups made the same number of errors before they committed the strings to memory, but only for the first and second sets (about eighteen and eight, respectively). After that, the members of the group that learned the random strings ceased to improve, whereas the performance of members of the group that learned the rule-governed strings gradually improved until, by the seventh set, they made, on the average, fewer than three errors. Although subjects did become aware of some of the rules they were using, they were unable to articulate all the rules. In other words, some of their learning was implicit or tacit.

FIGURE 7.4 Reber's (1993) Artificial Grammar and the Eight Strings It Generates



Source: Reber 1993.

Notes: Reber's artificial grammar can be learned implicitly. To generate a letter, you move from one "state" (S_1, S_2, . . . S_6) to another. When you are in a given state (the *source state,* say, S_3), you may go only to states (the *target states,* such as S_3, which generates a *T*, and S_5, which generates a *V*) that are connected with the source state by an arrow directed toward the target state.

A newcomer to Reber's tasks would find his artificial grammars easier to articulate than a musically uneducated listener can express the rules that govern a piece of music. And yet—as Schellenberg (1996), Krumhansl (1990), and others have shown—they do form expectancies.

Let us suppose that your knowledge of a piece of music grows in two ways: tacitly, a process of which you are not directly aware, and explicitly, a process of which you become aware as your ability to sing the music—or at least sing along with it—grows. Your tacit knowledge triggers expectations automatically and uncontrollably. (Bharucha 1994] calls this *schematic expectation;* Dowling and Har-

wood, [1986] call it a *schema.*) The Stroop effect is an example of this sort of process: suppose the letters RED were printed in blue and you were asked to name the color of the ink. Suppose that on another occasion you were asked to perform the same task with the letters DOG printed in blue. You would involuntarily read either string of letters as a word, even though you had not been asked to do so. Because RED is a color name, it would give rise to internal processes that interfere with your saying "blue," thus slowing down your response, whereas the processes triggered by DOG would not.

According to Mandler's theory, you do not experience an emotion until you have found the source of a physiological arousal. The Meyer-Narmour theory provides us with the arousal component of the emotion, but not with its object. Maus (1997) quotes an analysis of the slow movement of Mozart's Symphony No. 39:

> The second violins initiate a new exchange in their darkest tones, reinforced in their darkness by the cellos and double basses and by a pulsating E-flat pedal tone in the violas. The first violins respond, alone in their treble. . . . The first violins strain to break away from their E-flat mooring. The dialogue has taken on an air of urgency and anxiety. On their third try the first violins succeed in breaking away and immediately become frisky in their new freedom. The lower strings abandon their seriousness (have they meant it?) and join in the spirit of the first violins, contributing staccato punctuation while the first violins replace the dots with rests to lighten their iambic rhythm. (Treitler 1989, 205)

Maus believes that a common strategy for listening combines emotional ascription (for example, to take "on an air of urgency and anxiety") with other attributions of action (for example, "the first violins succeed in breaking away") and psychological states ("become frisky in their new freedom"). It is this narrative interpretation of music that allows us to understand the final stage of the generation of emotion in music (the finding of an object of the emotion) as we might understand the generation of emotion in response to any narrative.

But what happens to our emotional responses when we have heard the music more than once? This is a problem that has received considerable attention in the aesthetic literature but has not been discussed much in the psychological literature. Bever (1987) believes and Jackendoff (1989) concurs that because the emotions should not survive beyond one listening, Meyer's approach collapses.

> The central assumption of the arousal theory of aesthetics cannot explain how one could possibly enjoy a melody the second time, never mind the thousandth time, since the expected tone sequence is the actual tone sequence once the melody has been memorized. It is striking how theorists in the optimal-arousal school deal with this simple fact—generally they argue that our memory is mercifully short, so we keep forgetting what we have heard and are able to be re-surprised by it afresh to *juuuuuuuust* the right degree. (319)

Bever's criticism is valid only if at least one of the following claims is true: (a) expectancies are controlled by explicit memory, or (b) our tendency to perceive music in narrative terms decreases as we become familiar with it. We have seen earlier that the first of these two claims is probably false. Your conscious familiarity with the melodic line of a specific piece of music goes through several stages. There is a stage at which you know the line well enough to hum along, that is, when prompted by the performance you can hum a few bars, but you are stymied from time to time. Your ability to reproduce the melodic line is confined to the more predictable parts of the melody. At a later stage, you might know the melody so well that you can hum it from beginning to end without prompting. (Bharucha [1994] calls this *veridical expectation.*) At that point, if Bever were right, pleasure would vanish. But perhaps your conscious knowledge of the melodic line has outstripped the ability of the implicit learning system, which is strongly bound to rules it has acquired over the years. The tacit system, operating automatically, may still be generating expectations that are temporarily thwarted, then eventually resolved, just as Meyer described. This system may be a source of pleasure even when you are in a choir singing Handel's *Messiah* or doing karaoke to the Beatles' "Eleanor Rigby." Perhaps when even our schematic expectations have reached the point where the piece does not defeat them, we tire of the piece. (For a similar account, see Jackendoff [1989], 240–45.) As to the second claim, does our tendency to ascribe agency, sentience, and emotionality to a piece of music decrease as we become more familiar with it? I do not know of any empirical research on the topic. However, I conjecture that the opposite is true. The tendency proba-

bly *grows* as the music becomes more familiar, thus reinforcing our ability to construe the music as providing objects of emotion.

In summary, the Meyer-Narmour theory, supplemented with a theory of tacit expectancies and narrative interpretation, could account for the pleasures of the mind we get from listening to music repeatedly.

Humor Our second example of how activities can create patterns of emotions concerns humor. The most comprehensive current theory of humor is that of Wyer and Collins (1992), which draws on insights from the work of Suls (1972, 1977) and Apter (1982). It is based on the very same assumptions as Mandler's theory, which I summarized earlier.

Suppose you walk into a movie theater after the film has begun. On the screen you see a man sitting at a desk and staring at a blank sheet of paper. He pats the pockets of his jacket, and you assume that he's looking for a pen; you're interpreting the action in terms of preexisting concepts and schemata. The man's action is ambiguous; he could be looking for a cigarette, but the desk and the paper make the pen-search schema come to mind more quickly than the cigarette-search schema. You are now expecting the man to produce a pen, or to discover that he has none. To your surprise, he brings out a cigarette lighter. You look for a different set of concepts and schemata that fit the current and past events: you wonder whether he's planning to burn the sheet of paper.

The crux of the theory is this: if the reinterpretation paints a more mundane or less desirable picture of the protagonist or the event (a process that Apter [1982] and Wyer and Collins, [1992] call *diminishment*), then you will find the event to be humorous. Although you were surprised by the lighter, the reinterpretation does not involve diminishment.

As soon as he pulls out the lighter, the protagonist quickly slams it against the sheet of paper, crushing a fly that you glimpse briefly before it disappears under the lighter. You chuckle, and wonder whether what you thought was going to be a *film noir* is actually a spoof of one.

The assumptions of the Apter/Wyer theory of humor are similar to the assumptions of our theory of emotion in music. They share the idea that we get pleasure from the violation of expectations followed by a return to a stable state. So how does a joke differ from a piece of music? (This is not the opening line of a joke.) Is the level of abstraction at which I am answering the question not too high? I think not. I think that there are two parts to the answer: one part involves the sequence of emotions produced by the two; the other has to do with an aspect of the pleasures of the mind we have not yet discussed, to which we will turn in the next section.

With respect to emotions, humor and music differ in emotional pacing and emotional intensity. Telling a joke may take a minute or two, after which the punch line causes the listeners to reinterpret the situation rapidly and radically. If the reinterpretation involves diminishment, the joke is successful, and the audience laughs. A piece of music (tonal music, that is) reaches a cadence (a return to a resting point, literally a "fall," from the Latin *cadere*) roughly two or three times a minute and usually does not involve a radical reconceptualization of what was just heard.

Work to Be Done on the Ecological Question

We need an ethology of emotional patterns generated by activities that give us pleasures of the mind. To do so, we could, for example, have sports fans watch videos of games and collect their categorizations of their moment-to-moment emotional states and their ratings of the intensity of these states. We could also collect the commentaries of experts on what is at stake in the moment-to-moment progress of the game. We do not yet know how to characterize the emotional pacing and emotional intensity (together they might be called the *emotional rhythm*) of different pleasures of the mind. Novels, as a group, are likely to have different emotional rhythms from sports events (even though both are heterogeneous categories). Caring for children surely has a unique emotional rhythm: calm some of the time, punctuated by unpredictable and sometimes overwhelming crises, ending with what kind of adult the child grows to be. We would probably find systematic differences in parents' retrospective assessments of how much pleasure they got from raising a child, and we probably could discover a few ideal child-rearing pleasures of the mind. Caring for pets is a pleasure of the mind that has some of the same features as child-rearing, but on a smaller time scale.

The ethology of pleasures of the mind is, of course, complicated by individual differences in preferences for emotional rhythms. A good example is the personality dimension of sensation-seeking, reviewed by Green (1997, 390, 399–404).

The Taxonomic Question: The Objects of Emotion

We have dealt at some length with the role of emotions in the pleasures of the mind. It is unlikely, however, that people seek particular pleasures of the mind just on the basis of their emotional rhythm. Suppose that it were possible to create two pleasures of the mind with similar emotional rhythms. What would be the best way to distinguish them?

We have seen that emotions are intentional: they are *about* something; they have an *object.* When you are enjoying a pleasure of the mind, the emotions you experience are about events. In fact, philosophers classify emotions as a species of *propositional attitude:* a state of mind whose content is a *proposition,* or an *assertion* about the world. To say that you are afraid of the dog is to say something about your state of mind vis-à-vis a certain dog. So fear is a propositional attitude. To believe, to hope, to doubt, are propositional attitudes (Scheffler 1991). So in addition to being differentiated by their emotional rhythms, pleasures of the mind differ with respect to the contents of their propositional attitudes, that is, the objects of their emotions.

I will discuss two categories of objects of emotion (OOE) that are present to varying degrees in most pleasures of the mind: curiosity and virtuosity. Both of these are rooted in our animal natures and based on evolutionary adaptation. There are certainly other categories, such as nurturing and sociality, which I will briefly touch on later.

The Unknown: Curiosity

To be curious means that you get pleasure from learning something that you did not previously know. So the OOE we are dealing with is the unknown. Curiosity is not limited to humans but has its roots in animal behavior. The behaviorists did not understand this: from Watson's behaviorist manifesto (1913) until Hull's death in 1952, American psychology was dominated by the image of a satisfied, sleeping, sated animal and by the belief that drive reduction was the fundamental principle of motivation. This was thoroughly disproved by showing that rats will work to drink a non-nutritive solution of saccharin in water (Sheffield and Roby 1950), and that male rats will work to obtain access to a female in heat even if they are not allowed to ejaculate (Sheffield, Wulff, and Backer 1951).

Moreover, the notion of animals that sleep as much as possible does not apply to animals that have evolved complex foraging strategies (Krebs and Inman 1994; Ollason and Lamb 1995; Real 1994). Curiosity evolved from the need to search for food. But curiosity has a long-term adaptive function that goes beyond foraging. Bell (1991) reports, for instance, that animals often explore immediately after feeding and often explore more when satiated than when hungry.

Curiosity implies preference for an environment that can satisfy it. Indeed, many species of mammals, when offered the choice between environments of varying complexity, choose—or even work to obtain—the richer environment (Dember, Earl, and Paradise 1957; Havelka 1956; Hebb and Mahut 1955). Surveys of this literature, which burgeoned in the 1950s and 1960s, may be found in Kreitler and Kreitler's *Psychology of the Arts* (1972, ch. 1, notes 13 and 14) and in Loewenstein (1994).

There is little doubt about the insatiable curiosity of human beings, documented so thoroughly by Shattuck (1996). In our species, curiosity can extend to the contents of our own minds or someone else's. Under these circumstances, propositional attitudes apply to other propositional attitudes. For instance, when I *believe* that I am *remembering* a phone number correctly, the object of my belief (a propositional attitude) is directed toward my remembering (also a propositional attitude) a phone number (the object of the second propositional attitude). Following Scheffler (1991), we say that a *cognitive emotion* is an emotion that rests on a supposition relating to the contents of a person's propositional attitudes (beliefs, predictions, expectations) and bears on its epistemological status (for instance, confirmation). He proposes two such emotions that are familiar to scientists but widespread in entertainment as well. The *joy of verification* is characteristic of much puzzle-solving, and the *feeling of surprise* is a feature much sought after in the mystery genre.

Virtuosity

By virtuosity I mean the pleasure we have when we feel we are doing something well. We say, for example, that an act is performed with virtuosity if it is difficult for most people to do but is carried out with ease and economy. Tightrope-walking and performing lightning mental arithmetic are two examples. However, virtuosity as a source of pleasure does not require that the achievement be

extraordinary. We think of our own acts as exhibiting virtuosity when we can perform them when we once could not, even if our skill is no greater than that of others. We then experience the pleasures afforded by virtuosity relative to our previous lack of ability. Sudnow (1978, 1979), for example, describes the feelings of achievement over a period of six years during which he learned to improvise jazz on the piano.

As with curiosity, virtuosity can also be traced back to animal behavior. Anecdotes (Hearne 1987, 1991, 1993) suggest that many domesticated animals enjoy working. Hearne (1987), paraphrasing an animal trainer she admires, writes:

> He says that there are motivations more powerful than instinct, including the instinct to play games. Dogs, he says, *like people*, get the greatest satisfactions from doing something that is difficult well. But he is not so foolish as to suggest that difficulty in the abstract . . . is a motivator. . . . A dog who is track-sure is, most of all, undistractible. Pheasants may explode under her nose, or her worst enemy may offer to fight, she may become footsore, hot, cold or lonely, but if she has a true handler she will keep tracking. (87)

Pryor (1991) writes: "I have seen a dolphin, striving to master an athletically difficult trick, actually refuse to eat its 'reward' fish until it got the stunt right" (346). And finally, an anecdote from Jolly (1985): "The psychologist D. O. Hebb was once testing a chimpanzee on oddity problems when he ran out of banana slices. He noticed that the chimpanzee had been hoarding, rather than eating the rewards, so he took a chance at continued testing. The chimp not only solved his problems but rewarded Hebb with a slice of banana. He ended 22 slices to the good." (409)[17]

Such animals do not "misbehave." The behaviors they learned do not drift toward the fixed action patterns they performed when untrained (Breland and Breland 1961). This suggests that they are doing something for which they are well suited, doing it consistently, and with determination (see D'Amato's [1974, 95–97] discussion of "the work ethic in animals and children").

It is not only domesticated animals that show such tenacity. Consider a rhesus monkey who in the wild leaps over and over again, varying where and how, but persisting in his repetition of the same act. Simpson (1976) has called the repetition of similar actions "projects." Such patterns of behavior are often thought of as play because they appear to be circumscribed in time and they do not satisfy an immediate need.

The projects of two animals can become coordinated if they are compatible. Mitchell and Thompson (1991) have shown how one animal can engage in its project while offering another the opportunity to engage in another project. For instance, one dog's project may be chasing while the other's is running away, or one chimpanzee may play tickle-the-other while playing avoid-tickles-from-the-other.

From an evolutionary perspective, play evolved to get individuals to practice skills they need to survive. For instance, rough-and-tumble play appears to be an exercise in hunting, avoiding predators, and within-species fighting (Bekoff and Byers 1981; Fagen 1974, 1978, 1981; Konner 1975, 1977; Symons 1974, 1978a, 1978b). The evolutionary perspective does not tell us what process ensures that the individual will engage in play. This, I submit, is the function of pleasures of virtuosity. The pleasures of virtuosity make us want to do things well, and hence we play in order to achieve this pleasure, which gives us skills we need to survive.

The projects of animals at play mentioned in the preceding paragraph are a good example. All of us have experienced the pleasure of a chase. The chaser's anticipation of the pounce grows as she closes in on the pursued, but the emotion changes to momentary disappointment when the pursued dodges a lunge, leading to redoubled efforts on the part of the chaser, and so on. This little episode of play has the required features of a pleasure of the mind: it consists of a sequence of emotions, against the background of a mood of friendliness. At least one object of these emotions is virtuosity—success in a physical activity that requires skill.

Csikszentmihalyi's (1975, 1989) work on *flow*, which may be described as an attempt to develop a theory of the pleasures of the mind,[18] has particular bearing on my discussion of virtuosity. Csikszentmihalyi (1990) describes flow:

> One of the main forces that affects consciousness adversely is psychic disorder [or psychic entropy]—that is, information that conflicts with existing intentions, or distracts us from carrying them out. . . . The opposite state from the condition of psychic entropy is optimal experience. When the information that keeps coming into awareness is congruent with goals, psychic energy flows effortlessly. There

> is no need to worry, no reason to question one's adequacy. But whenever one does stop to think about oneself, the evidence is encouraging: "You are doing all right." . . . We have called this state the *flow experience*, because this is the term many of the people we interviewed used in their descriptions of how it felt to be in top form. (36, 39–40)

"Being in top form" captures well the experiences Csikszentmihalyi equates with flow. Here are two of his examples: (1) Rico has a repetitive job on an assembly line, but he does not get bored because he approaches his task the way an athlete approaches a competition: he challenges himself to improve the speed of his performance, and when he does well, the experience is enthralling. (2) Pam is a young lawyer who sometimes spends hours in the library; her concentration is such that she skips meals and doesn't notice the passage of time.

Csikszentmihalyi (1990, 48–67) lists eight properties of enjoyment, two of which I interpret as features of virtuosity, and two of which I consider to be features of all pleasures of the mind. (Unfortunately, I can do no more than mention the latter two here.) The four properties are shown in table 7.3.

As I have characterized virtuosity, I have made it clear that it is a pleasure that is present only in animals that play. It is a pleasure that is functional in altricial species that do not come into the world fully equipped to perform whatever tasks they need for survival. The more learning the young of the species needs to do, the greater its pleasure from virtuosity. In contrast, curiosity is a far more primitive pleasure (although the human form of reflexive curiosity has no apparent evolutionary antecedent); it emerged out of foraging far earlier in evolutionary time than did play.

Work to Be Done on the Taxonomic Question

I have only scratched the surface of the taxonomic question. There is much work to be done on the role of curiosity and virtuosity in the pleasures of the mind. But I have not even touched on two important issues regarding the taxonomic question. The first is the existence of other evolutionarily important categories of OOEs. I have given some thought to two likely categories: the pleasures of nurture and the pleasures of belonging to a social group. The former may contribute not only to pleasures that involve child-rearing but to any activity that requires taking care of living things, such as gardening, nursing, or teaching. The latter may contribute to activities that involve social interactions, essentially variants of primate grooming and human gossip (Dunbar 1996; Levin and Arluke 1987).

The second important taxonomic issue is the existence of what might be called *negative pleasures of the mind*, which are unique to humans. These are pleasures whose function is to relieve the psychological suffering that is our fate. Two kinds of suffering may be palliated through pleasures of the mind: *mundane suffering* and *existential suffering*. Mundane suffering consists of psychological pains such as shame and guilt (Schneider 1977/1992; Lewis 1993), whereas existential suffering consists of fears of death and related concerns (Becker 1973; Solomon, Greenberg, and Pyszczynski 1971). Whether each of these categories gives rise to a different set of pleasures, and what particular OOEs are involved, are open questions. It is likely that some spiritual pleasures are related to these forms of suffering and are thus negative pleasures. It is also likely that pleasures of the mind whose OOE arouses disgust or depicts violence belong to the category of negative pleasures.

TABLE 7.3 Reinterpretation of Four Features of Flow

Category	*Features*	*Reinterpretation*
Nature of the activity	Neither too easy nor too hard (49–53) Has goals (54–56) Gives feedback (56–58)	Features of activities that offer opportunity to acquire virtuosity
Effect of the activity	We feel in control (59–62)	Effect of acquiring virtuosity
Nature of our involvement in the activity	We immerse ourselves in it (53–54)	Precondition of all pleasures of the mind
Effects of the activity	Makes us forget ourselves (58–59, 62–66) Time slows down (66–67)	Effects of all pleasures of the mind

Source: Csikszentmihalyi (1990). The page numbers refer to this text.

Conclusions

The pleasures of the mind present numerous research problems that touch on cognition, personality theory, and social psychology; anthropology and primatology; philosophy; and literary and music theory. I have proposed a research framework that characterizes the pleasures of the mind by claiming that they are delimited (but not necessarily continuous) experiences that we seek out and cherish, they involve sequences of emotions, and they differ from each other in three ways: the emotions they consist of, their temporal organization, and the objects of these emotions.

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Notes

1. You may substitute whatever gastronomic joy you wish. I chose this restaurant because, according to http://www.eurogourmet.com/rest/rindex.html (accessed August 17, 1997), it gets the highest marks from Michelin and Gault-Millau.
2. According to Epicurus, the highest pleasure is the pleasure of tranquillity, which is to be obtained by the removal of unsatisfied wants. The way to do this is to eliminate all but the simplest wants.
3. For instance: "Among BaAka (central African pygmies) . . . not moving, singing, or clapping or at least commenting socially in an active way means one is not 'there'" (M. Kisliuk, personal communication, June 19, 1997).
4. This section owes a great deal to Paul Rozin (this volume).
5. For my present purposes, I exclude from these material exchanges drinking, sniffing, snorting, eating, or inhaling substances that alter moods, perception, or behavior by acting on the central nervous system.
6. How the female orgasm fits into this scheme—whether it involves a physiological analog to ejaculation—is a matter of debate (see, for example, Alzate 1985).
7. Relief pleasures should not be confused with the emotional *opponent processes* that occur after the removal of emotionally charged stimuli (Mauro 1988; Sandvik, Diener, and Larsen 1985; Solomon 1980; Solomon and Corbit 1974). A discussion of the relation between opponent processes and relief pleasures would be profitable but beyond the scope of this chapter.
8. A description of a 1992 Jean-Louis Chave Hermitage from the Northern Rhône, found at http://www.interaxus.com/pages/wrhone92.html (accessed July 1, 1997).
9. The visual, graphic, plastic, decorative, and performing arts, to which we can add music and architecture.
10. At http://ourworld.compuserve.com/homepages/R_Behringer/smetmol.htm (accessed November 28, 1997) R. Behringer quotes Smetana's description: "The work depicts the course of the river Vltava, beginning from the two small sources, the cold and the warm Vltava, the joining of both streams into one, then the flow of the Vltava through forests and across meadows, through the countryside where festivals are just being celebrated; by the light of the moon a dance of water nymphs; on the nearby cliffs proud castles, mansions and ruins rise up; the Vltava swirls in the St. John's rapids, flows in a broad stream as far as Prague, the Vyšehrad [the oldest building in Prague] appears, and finally the river disappears in the distance as it flows majestically into the Elbe."
11. Even the immobility of painting does not mean that our experience of it is static. Indeed, the search for a temporal pattern in the scanning of pictures is one of the motivations for recording the eye movements of viewers (Gandelman 1986; Kristjanson and Antes 1989; Molnar 1976–77; Sprinkart 1987; Zangemeister, Sherman, and Stark 1995). Also keep in mind that not all works of visual art are immobile (for example, the paintings of Agam, which change as you walk past them).
12. But the mood-altering properties of these stimuli may become ineffective when we are depressed. For example, consider William Styron's account of his depression "My . . . beloved home for thirty years, took on for me . . . an almost palpable quality of ominousness" (quoted in Frijda 1993, 384).
13. The proportion is $\phi = (1 + \sqrt{5})/2 = 1.618\ldots$, which is the solution of the quadratic equation $\phi^2 - \phi - 1 = 0$ (Kappraff 1991, §1.6, 1.7, and ch. 3).
14. Bever (1987, p. 317) calls this "the 'goldilocks' theory of aesthetic experience—what humans like must not be too intense, not too weak, but *juuuuuust* right" (317).
15. The Pleistocene epoch was a geochronological period that began about 1.6 million years ago and ended about 10,000 years ago, consisting of a succession of glacial and interglacial climatic periods. By the mid-Pleistocene, *Homo sapiens* had evolved in Africa.
16. But even Meyer does not flesh out his argument about emotion.
17. I am grateful to my colleague, Charles L. Fry Jr., for bringing this anecdote to my attention.
18. I do not present it as such because its scope is narrower than my view of the pleasures of the mind, as becomes clear from the following summary.

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