CHAPTER 2

RESEARCH PARADIGMS ON EMOTION

Everybody knows what an emotion is, until asked to give a definition
Fehr & Russell, 1984, p. 464

When trying to mark out the boundaries of phenomena covered by emotional development, we have to answer the question raised by Mascolo and Griffin (1998b) in the title of their book: *What develops in emotional development?* Despite all the differences in the existing theoretical approaches, there seems to be a general consensus that emotions possess two aspects: a *form* and a *function*. The form aspect focuses on which indicators can be used to identify an emotion. The function aspect focuses on which (adaptive) functions emotions serve for human activity in interaction with other functions such as perception, memory, or motivation. Furthermore, there should also be a general consensus that human development from birth onward is characterized by an interplay between nature and nurture, and is always embedded within a context that, unlike the natural context of animals, is a *product* of *culture*. Hence, we can define the following five dimensions of emotional development.

The quality of an emotion. It is clear that new kinds of emotions form during the course of human development. Adults have a number of emotions at their disposal that are not yet available to the infant. In Lazarus' list of emotions, these are shame, guilt, jealousy, envy, pride, relief, hope, and sympathy (Lazarus, 1991). These emotions first form during infancy and preschool age. Sroufe (1996) even goes so far as to assume that other emotions such as anger, fear, sadness, joy, and love also evolve only during the first year of life from initially unfocused "precursor emotions." A central issue is then which specific features characterize

the quality of a specific emotion. Are these features based on a particular form or a particular function in individual activity regulation?

The form of an emotion. An emotion manifests as an observable configuration of (peripheral) physiological changes, forms of expression, and forms of experience (Ekman, 1984; Izard & Malatesta, 1987; Meyer, Schützwohl, & Reisenzein, 1993, pp. 22–34; Scherer, 1990). The central issue is whether the form of an emotion changes during the course of development—and, if so, whether a change in form is also accompanied by a change in function.

The function of an emotion in individual activity regulation. To fathom the function of a psychological process, we need a structural model of the complete system in which it is embedded. This complete system is individual activity regulation. It is generally assumed that the function of an emotion is to signal the relation of a person's motives and significant concerns to his or her (social) environment and to influence subsequent actions in line with these motives (see Campos, Campos, & Barrett, 1989; Frijda, 1986). This leads to the issue of how far emotion-relevant relations between person and environment change over the course of development, or whether new relations and thereby new emotions emerge; and how far a change in emotion-relevant relations is also accompanied by a change in the emotion forms.

The relation of the function of emotion to other psychological functions in activity regulation. At each stage in development, the individual psychological functions form an interrelated system with an internal structure that should permit an adaptive regulation of actions. The question is how far do relations between the emotions and other functions change during the course of development? One could argue that this question has more to do with a theory of activity regulation than a theory of *emotional* development. However, current research on emotion is studying this topic intensively under the headings "emotion regulation" (see Cole, Martin, & Dennis, 2004; Denham; 1998; Friedlmeier, 1999a, 1999b; Underwood, 1997; Walden & Smith, 1997) and "levels of processing" (van Reekum & Scherer, 1997).

Cultural context. Emotions are based on appraisals that become increasingly mediated during the course of human development by symbol-based meaning systems that are, in turn, the product of cultural development (Averill & Nunley, 1992; Harré, 1986b; Mesquita, Scherer, & Frijda, 1997; Oatley, 1993; Ratner, 2000; Rubin, 1998). Cultural evaluations are conveyed in interaction with socialization partners that may lead to a culture-specific molding of emotions (Friedlmeier, 2005b). The issues are then which cultural features are particularly relevant for emotional development, how are these features imparted, and which consequences do these have for individual development? Within the cultural context, each individual actively shapes his or her development in interaction with his or her personal life contexts—and this leads to the formation of interindividual differences. Both the process of individualization and the role of the cultural context have to be taken into account as a dimension of emotional development.

The different theories on emotional development vary in how thoroughly they address these five dimensions. Theories addressing the qualities of emotions and their functions generally do not handle questions of emotion regulation—that is, questions dealing with the development of the within-system relations of activity regulation. Theories focusing on the universality of human emotions generally neglect the cultural context.

We shall now categorize the theories according to their metatheoretical premises on the "nature" of emotions. We shall sketch the basic principles in each approach and analyze what they contribute to our knowledge about the five dimensions of development given above. By examining the premises to be found in the emotion theories of developmental psychology, we can group them into four families of theories or emotion paradigms that have much in common with more general epistemological research paradigms (see Holodynski & Friedlmeier, 1999). These are:

1. the structuralist emotion paradigm,
2. the functionalist emotion paradigm,
3. the dynamic-systems emotion paradigm, and
4. the sociocultural emotion paradigm.

A similar classification can be found in Mascolo and Griffin (1998b). However, these authors focus on describing their own theories, whereas we present a critical analysis of the research paradigms based on the five dimensions that is designed to single out the most important aspects for an integrative theoretical approach.

We are well aware that the individual emotion theories do not fit our paradigmatic categories completely, and our discussion cannot give credit to the wealth of concrete research findings they have generated. Nonetheless, we believe that integrating these perspectives will produce a more comprehensive picture of emotional development than that provided by any of the existing parts viewed in isolation.

2.1. THE STRUCTURALIST PARADIGM: EMOTION AS A SPECIFIC PSYCHOLOGICAL STATE

The structuralist paradigm views emotion as a specific state of the organism representing a *reaction to an emotion-specific cause*. From this perspective, science first has to distinguish this state from other psychological states through clear and objectively measurable criteria, before going on to classify the discrete kinds of emotion such as joy, pride, or anger through necessary and sufficient criteria for assigning them to emotion-specific causes. In general, one can say that theories taking a structuralist perspective focus on the *form aspect of emotional processes* (see the discussions in Campos *et al.*, 1989; Lazarus, 1991, pp. 42–44; Sroufe, 1996, pp. 26–34).

2.1.1. Premises

One first premise in structuralist theories is that each emotion possesses an *objective* and a *subjective component* (see Figure 2.1). The former can be broken down further into an expressive and a bodily component (see Ekman, Friesen, & Ellsworth, 1972; Izard, 1977). Originally, James (1884) defined the bodily component exclusively in terms of visceral reactions. This was later expanded to cover vegetative arousal in the autonomic nervous system, and recent research even includes endocrinological processes as well (see Panksepp, 1998). These bodily processes are generally accessible to (peripheral) physiological measurement.

The current rapid expansion in the neuropsychological analysis of emotions reveals a search for their neurophysiological correlates (see Panksepp, 1998; Rolls, 1999). Because processes in the central nervous system (CNS) underlie all components of emotions, including processes of expression and feeling, we do not assign these CNS processes to the bodily component. We view the neurophysiological level of analysis as a separate systems level that can be distinguished from the psychological systems level, and we consider that neither can be reduced to the other (see Section 3.1.1).

Regarding the expressive component, facial feedback theory has led research to concentrate particularly on facial expressions (Izard, 1977; Tomkins, 1962). However, this component includes all nonverbal behavior such as body posture, motion, gestures, and tone of voice. Collier (1985) even adds eye behavior, personal space, and touch. Such expression is generally accessible to external observation.

The subjective component is composed of the subjective feeling, and is accessible only through introspection. Its assessment is generally restricted to the categorical judgments of individuals who are asked which emotion they are currently experiencing. Hence, from a structuralist perspective, it should be possible

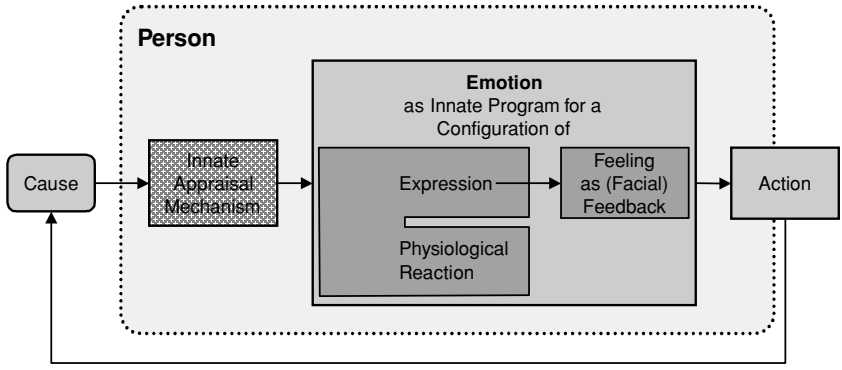

FIGURE 2.1. Emotion in the structuralist paradigm, for example, the differential emotions theory (Izard, 1977).

to describe each emotion through a specific configuration of expressive, bodily, and experiential indicators.

A second premise assumes a regular association between the subjective and the objective component, in that the subjective experience is based on the internal perception of the objective component (see Figure 2.1). The James–Lange theory (Lange & James, 1922/1967) sees this as the subjective perception of visceral changes; the theory of Schachter (Schachter, 1964; Schachter & Singer, 1962) takes vegetative arousal as a necessary condition; and facial feedback theory requires the proprioceptive perception of specific patterns of facial expression (Izard, 1977; Tomkins, 1962) (see Figure 2.1).

More recent definitions of the structure aspect of emotions treat such premises more cautiously, and only talk about a (degree of) synchronization of the subsystems involved that interact during an emotion episode (see Scherer, 1990, 2001).

2.1.2. Empirical Findings

The history of research reveals major doubts regarding both premises. First, it has not yet been possible to find any empirical confirmation that the presence of certain patterns of expression and/or body processes is either *necessary* or in itself *sufficient* for an unequivocal diagnosis of a discrete emotion (Camras, 1992; Ortony & Turner, 1990; Reisenzein, 2000; Russell, 1994). Certainly, some empirical studies have managed to assign prototypical configurations of experiential, expressive, and bodily processes to specific emotions with an above-random frequency (Ekman, 1994; Izard, 1994). Others, however, have shown that these configurations are not the rule in the everyday emotion episodes of adults or even children, and that the same kinds of emotion may also be exhibited through completely different configurations (Camras, 1992; Demos, 1982a, 1982b; Fridlund, 1994).

Second, extensive research has shown that even the association assumed between subjective feeling and objective expressive or bodily processes is not as strong as that assumed theoretically. Persons have been found to report experiencing feelings even when emotion-specific signs could not be observed simultaneously in expression or physical state (see, for summaries, Bermond & Frijda, 1987; Fridlund, 1994). Furthermore, when expressive or vegetative signs were observed, persons' self-reports did not always confirm experiencing the appropriate subjective feeling (see, for summaries discussing facial feedback theory, Izard, 1994; Manstead, 1988; McIntosh, 1996; for the James–Lange theory and its modifications, Canon, 1929; Reisenzein, 1983).

2.1.3. Discussion

Basically, two conclusions can be drawn from the available findings: First, it seems that emotions can be displayed in a broad variety of forms. Emotion-related prototype research has compiled a number of indicators for the single emotions that,

although not arbitrary, exhibit high interindividual differences (cf. Fahrenberg, 1965; Frijda, Kuipers, & ter-Schure, 1989; Nieuwenhuyse, Offenberg, & Frijda, 1987; Rimé & Giovannini, 1986; Scherer & Tannenbaum, 1986; Scherer, Wallbott, & Summerfield, 1986; Shaver, Schwartz, Kirson, & O'Connor, 1987). This breadth seems to be specific to human beings, because the spectrum of observable forms of expression in animals, even our closest relatives the chimpanzees and bonobos, can be assigned relatively unequivocally to specific emotion qualities (see the descriptions in Bard, 1998; de Waal, 1996, 2000; van Hooff, 1972; van Lawick-Goodall, 1968).

Second, there seems to be no clear relation between the subjective and objective components of emotions. This leads to a lack of clarity regarding how far expressive and bodily processes are in any way necessary for emotional experience.

One consequence of this discussion has been to stop defining the postulated subjective and objective components and their associations as necessary and sufficient criteria, but as a set of prototypical criteria that do not all have to be met in practice. One such explicative definition of emotion comes from Schmidt-Atzert (1996, p. 21, translated):

> An emotion is a qualitatively more closely describable state that is accompanied by changes on one or more of the following levels: feeling, bodily state, and expression.

Obviously, such a definition makes the criteria increasingly arbitrary, as Fridlund (1994) points out, and it also fails to provide any orientation that could stimulate further research. This makes it necessary to ask whether the assumptions underlying the structuralist paradigm are inadequate because of their emphasis on the study of single emotions.

2.1.4. Conclusions for an Integrative Approach

In the following, we shall present one possible way of defining the potential relation between subjective and objective components of emotions that would enable it to account for the discrepant empirical findings. This simultaneously reaffirms the importance of the structuralist paradigm.

Up to now, scientific research on emotions has taken it for granted that they have to be analyzed from an observer perspective. However, for psychology, and particularly for research on emotion, it can be very informative to study them from the perspective of the actor. It is conceivable that the assumed synchronicity of experiential, expressive, and bodily processes might still be found in the actor-perspective, even when it is lacking for observers.

The expression of an emotion that can be perceived by others and the vegetative arousal assessed with corresponding measurement instruments can, in principle, also be perceived by the person concerned. This would involve proprioceptive feedback from the muscles and the corresponding interoceptive feedback processed

and stored in the somatosensory regions of the brain (Damasio, 1994; Vaitl, 1995). Some theorists in the field of emotions (Damasio, 1994; Gellhorn, 1964; Izard, 1977) consider these emotion-specific feedback patterns to be the "sensory stuff " constituting the subjective feeling of the emotions. Damasio (1994) has coined the term *somatic marker* for this.

This "sensory nature" of an emotion is important, because there has to be a difference between a situation in which a person only *knows* that he or she has experienced a certain emotion or would experience it because of situational cues, and a situation in which he or she actually *feels* the emotion. This difference does not consist in knowledge, in thoughts over the reason for the emotion, but in the perception of internal signals that seem to be typical for the corresponding emotion and give it its specific sensory nature: aches in the pit of the stomach, a clutching in the throat, a light and airy feeling of delight, a shiver down the spine, or butterflies in the tummy. We view this specific sensory nature as an essential criterion for defining subjective feeling.

The next important question is whether this internal feedback *always* has to occur (i.e., at every stage of development) on the basis of real-life bodily and/or expressive processes, or whether it can involve internal mental representations that may occur without such a bodily feedback loop. Research on pain and psychosomatics provides enough indications that phantom sensations are perceived subjectively as *real* physical processes (Melzack, 1989).

Transferred to the feeling experience, one could ask whether it is possible for a person to report experiencing the corresponding emotion when given an emotion-specific cause, even when it is impossible to either observe a corresponding expression or measure a corresponding bodily reaction. The person, in contrast, feels an emotion-specific expression and also considers himself or herself to be physiologically aroused. For this person, a sign of anger may be to curse under one's breath rather than out loud, to feel a frown that is invisible from the outside, or to feel an inner tension that cannot be assessed with peripheral physiological measurements.

Damasio (1994) called this form of feeling "as-if feelings." Izard (1977) also admitted that such micromomentary expressive movements might be possible (see, also, Church, 1982), and Holodynski (1997) has talked about mental expression signs.

From the perspective of the actor, such mental expression signs seem to generate a pattern of experience that is comparable to actually exhibited emotions. However, this would mean that the synchronicity of bodily and expressive processes could still exist in subjective feeling even when feeling and expression are dissociated from the observer perspective. If this is true, then we can go back and start looking for necessary or at least sufficient forms of an emotion again—with the difference being that we are now dealing with subjectively perceived rather than objective forms. In Section 3.1.4, we shall consider under what circumstances this might be possible. In Section 3.1.3, we shall also take a critical look at those experiments

claiming to have rejected the presumed convergence between expression and experience or between vegetative arousal and feeling, and in Section 4.5, we shall present some of our own research on this topic.

However, the purported independence between objective and subjective forms of emotions found in the history of research has disrupted the search for necessary and sufficient *forms* of an emotion, and led to the adoption of another criterion for defining an emotion that is more unequivocal. This step has been taken within the framework of the functionalist paradigm.

2.2. THE FUNCTIONALIST PARADIGM: EMOTION AS A PSYCHOLOGICAL FUNCTION

The difficulties in finding any clear confirmation of the assumptions in the structuralist model led scientific analysis to range even further afield. The analysis of emotions as a specific psychological state was expanded through the analysis of their *function*.

Although emotion theories with a functionalist orientation already existed in the 1960s and 1970s (e.g., Arnold, 1960; Lazarus, 1966; Leont'ev, 1978), they became popular only in the 1980s. This is documented by a clear change in the definitions of emotion (see Campos *et al.*, 1989). In emotion research within developmental psychology, this change is marked particularly by the work of Campos (Campos & Barrett, 1984) and Sroufe (1979). In general psychology, the major representative of this new perspective is Frijda (1986) with his book *The Emotions*.

2.2.1. Premises

A functionalist research paradigm no longer defines a discrete emotion as a configuration of emotion forms, but in terms of the *function it adopts within the system of individual activity regulation* (Frijda, 1986; Lazarus, 1991). This extends the level of analysis, because an emotion can no longer be defined through an elementaristic inspection of an isolated psychological function. It makes it necessary to analyze the individual's activity regulation within his or her environment. The function of an emotion is revealed only through such a system analysis.

How can we sketch this system of activity regulation? Persons are viewed as beings who, at any given point in time, possess a series of different concerns, motives, and personal goals that they try to satisfy or achieve in interaction with the environment. "The term *concern* refers to major goals and motives, likes and dislikes, and norms and values" (Frijda, Ortony, Sonnemans, & Clore, 1992, p. 67). For example, persons can purchase food in order to satisfy their need to eat; they can seek contact with significant others in order to satisfy their need for attachment; or they can strive to become a famous actor or actress in order to satisfy their need for success. In the activity regulation system, psychological processes such

as perception, cognition, memory, emotion, and motivation are linked together to form a functional unity in which the emotions acquire two particular functions.

Appraisal. The flow of external and internal stimuli reaching the person in the form of (real or imagined) objects, persons, and events is evaluated continuously to see how far it promotes, impedes, or harms the satisfaction of individual motives and major concerns (Frijda, 1986). These appraisals trigger the "actual" emotion. Anger, for example, contains, according to Malatesta and Wilson (1988), the appraisal that the attainment of an important goal (motive) is being blocked.

Action readiness. The action readiness triggered by the appraisal should modify the relationship to the environment in a way that promotes one's motives. This can take either the form of a perceived readiness to do or stop doing something specific or that of an expression designed to influence a communication partner in line with personal motives. For example, a threatening gesture can ensue, when the source is another person who should be induced to stop blocking the goal (see Malatesta & Wilson, 1988). Action readiness can also take the form of a peripheral reaction in the autonomous nervous system (ANS) to ready the body to initiate processes of action and expression. Anger shifts the action readiness in the direction of overcoming the source of the goal blockage. Action readiness, in turn, leads to the selection of appropriate behavior designed to satisfy motives under the given context conditions. In human beings, these behavior are goal-directed actions that can be selected voluntarily. They are learned during ontogenesis and form systems of flexibly combinable actions.

Hence, the kind of emotion that emerges depends on what significance the individual assigns to the current event. This leads to a specific relational meaning (Lazarus, 1991), and triggers a corresponding action readiness (Frijda, 1986) (see Figure 2.2).

As a result, a *specific configuration of motive-related appraisal processes* is a necessary criterion for a functionalist definition of an emotion. This notion has triggered discussions on whether appraisal processes should be conceived as a prior condition or as a genuine component of an emotion. In either case, the connections between the pattern of appraisal and the kind of emotion are assumed to be regular (see Lazarus, 1991). The number of different kinds of emotion that can be distinguished thereby depends on the number of discriminable appraisal patterns.

2.2.2. Empirical Findings

Research on emotion theories in general psychology has focused primarily on how these appraisal patterns are constructed and how they should be classified. This is conceived differently from theory to theory (Frijda, 1986; Lazarus, 1991; Leventhal & Scherer, 1987; Ortony, Clore, & Collins, 1988; Roseman, 1991; Scherer, 1993; see, for overviews, Roseman & Smith, 2001; Scherer, 1988). However, these classification attempts contain no statements on the ontogenetic development of these appraisal patterns.

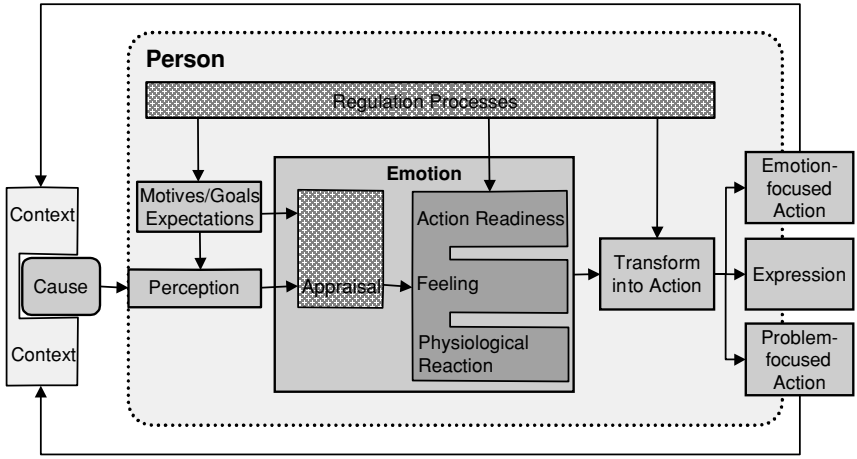

FIGURE 2.2. Emotion in the functionalist paradigm.

Most theories oriented toward developmental psychology have concentrated on the development of the appraisal patterns for individual emotions, for example, appraisal development in pride and shame (Barrett, 1998; Mascolo & Harkins, 1998; Stipek, 1995; Tangney & Fischer, 1995), in self-evaluative emotions (Geppert & Heckhausen, 1990), or in anger (Mascolo & Griffin, 1998a). Comprehensive developmental models of appraisal patterns have been presented by Sroufe (1979, 1996) and Campos and Barrett (1984).

2.2.3. Discussion

Despite the elegance and clarity of this functionalist definition of emotion, it raises one major new problem, namely, how to differentiate between knowledge and appraisal (see Lazurus, 1991, pp. 144–149). The functionalist approach to emotions is criticized as being too cognitive, and that it blurs the distinction between a "cold cognition" and a "hot emotion."

Human beings are unique in their ability to represent the world symbolically (including the self and its relationship to the world). As a result, we do not just go through life "feeling" and "acting," but also, and above all, "knowing." Moreover, this knowledge about how things function in general and in particular and what they mean is essential if an act is to be performed appropriately. For example, an adult generally knows what emotions signify, that, for example, the death of a loved one triggers mourning because of irrevocable loss. However, is the knowledge-based recall of the relational meaning of an emotion already an appraisal process? Supporters of a functionalist perspective would say that knowledge

becomes an emotion-triggering appraisal only when an event attains personal significance.

Let us imagine a situation in which a person's aunt has died. She reports how she had loved her aunt like a mother and that her death was a painful loss. This verbalizes the appraisal that should be decisive to trigger mourning. Can we then conclude beyond doubt that the emotion of mourning is induced at the moment of her verbal statement? This would have to be so, because the death of *her beloved* aunt really does mean an irrevocable loss.

One would certainly agree if the person were to cry or exhibit other expressive or bodily signs of mourning. One would certainly not agree if she were to make her verbal statement without simultaneously *feeling* or *exhibiting* mourning, for example, when reporting this information to her employer. One would then say, in line with Lazarus (1991, p. 144), that this is a "cold cognition" and not a "hot emotion."

This clarifies that the form in which the appraisal of an event occurs does not seem to be arbitrary. This is also reflected in the functionalist definition of emotion in which the motive-related appraisal process is necessary but not sufficient. It needs to be augmented with the appraisal-triggered action readiness in the form of experiential, expressive, or bodily processes. The decisive issue, however, is which indicators should be used to read off such an action readiness. To experience mourning, for example, is it enough to feel low drive or the impulse to shed tears, even when no expressive or bodily processes can be observed at the same time?

The question regarding the sufficient conditions for an emotion is also a personal concern. When can one be certain that one actually feels an emotion and does not just believe that one is feeling it? This is not just a theoretical issue; it also has practical consequences. Persons may mistake appraisals for knowledge and vice versa in their daily activities. They may believe incorrectly that they are experiencing emotions or, vice versa, they may have inappropriate or no knowledge of actual emotions and be unable to integrate them adequately into their own *conscious* action regulation. This can have disastrous personal consequences that may even lead to mental disturbances. Nowadays, a complete branch of professionals deal with these consequences.

A more precise analysis of the functionalist definition of emotion brings us back to where our argument started: It is obviously not enough to define emotions as two functions for an individual's activity regulation in his or her environment; namely (1) as appraisal (of the events in the environment in order to pursue personal motives) and (2) as action readiness (to prepare to modify the person–environment relationship in order to pursue personal motives).

As plausible as these two functions may seem, they do not overcome the old problem confronting a structuralist definition of emotions. Whether an emotion actually is experienced or is only something that one is aware of does not just depend on the appraisal of the situation. It also depends on the form in which

action readiness is present: whether as a feeling, a perceivable expression, and/or a bodily process. Lazarus (1991, p. 59) assumes, for example, that peripheral physiological processes are a necessary condition, even if they are only very weak. This implies that the functionalist definition of emotion also possesses a form aspect, thus confronting it with the same old unresolved problem as before: Are there invariant ties between feeling, expression, and bodily reactions that are necessary and sufficient for a specific kind of emotion? Can, as in our example, a person experience mourning without an observer being able to perceive signs of expression and measure peripheral physiological reactions? Indeed, is the search for a scientifically precise definition of emotions simply going round and round in circles?

2.2.4. Conclusions for an Integrative Approach

We have already sketched one possible way out of this dilemma when discussing the structuralist paradigm. We considered that subjective feeling might also take the form of what we called mental signs of an emotion. We wish to extend our stance to cover the developmental perspective here and clarify some consequences for empirical research.

There can be no doubt that emotions fulfill the *function* in the activity regulation system of appraising external and internal stimuli in line with motives and modifying the relation between the person and his or her environment accordingly. However, how does an individual notice that he or she is experiencing an emotion, and what does he or she use to evaluate external events in terms of personal motives? This focuses our attention once again on the emotion forms. The decisive criterion for the induction of an emotion is that the person's emotional *feeling* must contain a *necessary* and *sufficient* configuration of emotion-specific expressive and bodily reactions. A person feels an emotion only when specific expressive and bodily signs appear. Therefore, we claim that there also has to be a unity of experiential, expressive, and physical *sensations* even when neither expression can be observed by outsiders nor bodily reactions can be measured in the physiological periphery.

But what is the form of this unity of experiential, expressive, and bodily reactions? We assume that this form changes during ontogenesis. Mental expression signs and somatic markers (Damasio, 1994) emerge and are stored in memory. As a result, the subjective experience of expressive and bodily reactions can take two different forms.

First, the subjective experience of expressive and bodily processes comes about through the introspective perception of the *real* interoceptive and proprioceptive feedback from the body triggered by appraisal processes. These expressive and bodily processes can be assessed through external observation and peripheral physiological measurements.

Second, the subjective experience of expressive and bodily processes emerges when the introspective perception of interoceptive and proprioceptive feedback *stored by the CNS* is triggered by appraisal processes. These are the mental emotion signs.

What both forms of experience have in common is the subjective sensations of emotion-specific expressive and bodily reactions, their focus on the cause, and the involuntariness with which they enter experience. Their experience is not an outcome of a purposeful effort. However, it is possible to put oneself into emotion inducing situations purposefully or to imagine those situations in such a way that the emotion signs will be triggered involuntarily.

Such a claim is not just a "theoretical trick" designed to save the structuralist definition of necessary and sufficient forms of emotion. It seems to provide a realistic solution and fulfill an adaptive purpose from developmental psychological perspectives. The problem is as follows: Must the expressive and bodily processes that one associates with emotions *always* be present in an objectively measurable form in order to fulfill their action readiness function? Or do action readiness functions exist in forms that are accessible only to the person's experience and not to an external observer?* Can these fulfill this function completely and maybe even more efficiently? This makes it necessary to abandon the accepted notion that the emotion forms have an exclusively *instrumental* function for action readiness (e.g., to activate the body so that it is ready to flee from danger). Instead, one has to consider the idea that emotion forms might also have an exclusively *semiotic* function, a sign function (e.g., to only signal danger without activating preparation for flight). It is only when emotion forms are exclusively used as a *sign for the person herself or himself* that persons can feel bodily and expressive signs in their subjective feeling that are inaccessible to an observer.

This is because signs, unlike instrumental acts, can drop their material form without impairing their intrapersonal function for regulating actions. For example, one can regulate one's own actions by using audible speech; one can, however, also use inner speech. Audible and inner speech are of different material form. We shall discuss this relation in more detail in Section 3.1.4.

Such a potential solution leads to new questions in the analysis of ontogenesis. How do emotion forms develop in the form of signs? Under which conditions are they used as signs for other persons, and when are they used as signs for the self? Regarding the latter, do they actually turn into mental emotion signs? Obviously this is not the starting point of development in neonates, but a later state of development that is more characteristic of adults.

*However, it should be noted that the subjective forms are always tied to measurable cerebral processes. By expressive and bodily reactions, we mean processes that can be measured through external observation of the expression and through peripheral physiological recordings. It is such processes that are addressed in the structuralist definitions and not their physiological correlates in the brain.

2.2.5. Differentiation of Levels of Emotional Processing and Emotion Regulation

Within the framework of the functionalist paradigm, two further important findings are significant for the issue addressed above in particular but also for emotional development in general: the differentiation of levels of processing and the analysis of emotion regulation.

Levels of processing. Leventhal and Scherer (1987) have pointed out that the individual action system does not just develop horizontally by separating into distinct emotions and states of action readiness. It also develops vertically by constructing a hierarchy of levels of processing (see Table 2.1).

For Leventhal and Scherer (1987), the sensorimotor level is the lowest and most basic level of processing. The first appraisal processes are based on mostly innate pattern recognitions and reflexes that specialize in processing specific patterns of stimuli. For example, a substance leaving a bitter taste in the mouth triggers a spitting out reaction. A second, hierarchically superior level of processing forms on this basis during ontogenesis, namely, the schematic level. On this level, the specific relation between stimulus and subject is appraised in relation to motives, and adaptive states of action readiness are triggered. These appraisal patterns are the product of the individual learning biography and can be conceived as abstract representations of learned reactions to specific patterns of stimuli (Leventhal & Scherer, 1987). In other words, this is the level on which learning through classic and operant conditioning is particularly effective. However, even this second level does not suffice to provide a complete reflection of the emotional process. A further level of processing develops successively from the schematic level, and

TABLE 2.1. Levels of Processing for Appraisals[a]

	Novelty	Pleasantness	Goal/Need conduciveness	Coping potential	Norm/self-compatibility
Conceptual level	Expectations: cause/effect, probability	Recalled, anticipated, or derived positive–negative estimates	Conscious goals, plans	Problem-solving ability	Self-ideal, moral evaluation
Schematic level	Familiarity; schema matching	Learned preferences/aversions	Acquired needs, motives	Body schema	Self/social schemata
Sensorimotor level	Sudden, intense stimulation	Innate preferences/aversions	Basic needs	Available energy	(Empathic adaptation?)

[a] Adapted from Leventhal and Scherer (1987, p. 17).

this third level is concept-based (conceptual level). It contains propositionally organized knowledge structures concerning emotions as well as mechanisms and procedures for intentionally applying this knowledge in order to influence and regulate one's emotions. Hence, a complete description of the emotional process has to take account of the sensorimotor, schematic, and concept-based levels of processing and their complex interactions. The degree to which each of these levels is differentiated is the outcome of ontogenesis.

Emotion regulation. Leventhal and Scherer (1987) have concentrated on specifying the appraisal processes on the different levels in their three-level model. Up to now, there has been no differentiated analysis of the coping actions that follow the emotional action readiness. It has simply been assumed that an emotion initiates an appropriate coping action, and the performance of this action modifies the relation between the person and the environment to suit his or her motives.

Lazarus and Folkman (1984) have worked out a basic differentiation of coping actions. A coping action can be directed toward the context and can modify it in line with motives. For example, being angry about poor service in a restaurant can lead to a complaint in the hope that this will improve service. However, a coping action can also be directed toward one's own emotion and modify the appraisal process. Being angry about poor service would then be given a new interpretation considering the need to take account of the probability that the waiter had had a very hard day. Such a reinterpretation would transform anger into sympathy and, thereby, change the quality of the emotion without bringing about any changes in situational conditions. Lazarus and Folkman (1984) call the former type of coping problem-focused and the latter emotion-focused.

The observation that the coping action can also exert an influence on the emotion itself—what Lazarus and Folkman (1984) call *reappraisal*—means that emotions do not just regulate the actions of the individual but also, vice versa, the actions of the individual can regulate emotions. This possibility of feedback between coping action and emotion underlines the interdependent character of emotions and actions (Campos, Barrett, Lamb, Goldsmith, & Stenberg, 1983). Emotion regulation covers all processes involved in the production, maintenance, and modulation of emotional episodes (Bridges & Grolnick, 1995). Developmental psychology started to study this aspect intensively in the 1990s under the heading "development of emotion regulation" (see Bridges & Grolnick, 1995; Campos et al., 1989; Garber & Dodge, 1991; Thompson, 1990, 1994).

The use of regulation strategies can lead to the emergence of a new quality of action regulation during the course of development. The individual is no longer obliged to just go along with his or her emotions and their accompanying states of action readiness, but can *exert an active influence on the impact of his or her own emotions* and *organize them into a hierarchy*. For example, one can also persist in performing an action leading to one's goal even when this action triggers the emotion boredom. It is precisely this ability to organize one's emotions into a

hierarchy as a function of the context and one's own motives that discriminates childish reactions from adult ones. An elementary schoolchild may well have the same emotions as a preschool child, but the ability to organize his or her emotions into a hierarchy gives the former a more mature and flexible action regulation.

Although the existence of such regulation strategies is undisputed, developmental psychology still has to clarify which regulation strategies enable such a reorganization of activity regulation, and which mechanisms lead to their emergence in ontogenesis. The literature on the development of emotion regulation reveals a series of classification attempts. For example, Thompson (1990) distinguishes seven classes of strategies: directing attention, arousal and inhibition processes in the CNS, (re)interpretation of emotional causes, interpretation and influencing of internal arousal processes, access to external coping resources, anticipated selection of contexts, and selection of response alternatives. Bridges and Grolnick (1995) distinguish four classes of strategies: attention regulation, self-calming strategies, interactive regulation strategies, and symbolic or verbal strategies. There is now a lot of research on the age at which children generally learn and apply these strategies, and this has shown that there is a wide range of interindividual differences (see Denham, 1998; Eisenberg & Fabes, 1992; Friedlmeier, 1999a; Murphy, Eisenberg, Fabes, Shepard, & Guthrie, 1999).

2.2.6. Conclusions for an Integrative Approach

The separation into distinct levels of emotional processing and the inclusion of emotion regulation as a component of emotional development provide important foundations for a theory of emotional development that also contains and can conceptualize qualitative change. At the same time, however, we think that the concepts presented so far require some modification:

1. Leventhal and Scherer's levels-of-processing model (Leventhal & Scherer, 1987) does not introduce the symbolic processes that permit the acquisition of cultural systems of meaning till the concept-based level. However, there are some indications that this symbolic mediation is already effective on the schematic level. At the onset of language acquisition, perceived objects and contents are not just given names but also a culturally produced meaning tied to each name. This categorical meaning then structures and schematizes perception and the interpretation of what is perceived, and this also prestructures the appraisal processes. Emotion theories with a coconstructivist orientation deal precisely with this point (see Harré, 1986b; Lewis & Michalson, 1982).
2. The potentials for regulation resulting from such a hierarchical organization of the individual activity system should also be specified further. The concept-based level does not just contain declarative knowledge but also,

and in particular, procedural knowledge on how to intervene in the emotional process. This procedural knowledge also contains symbol-mediated regulation strategies. It can be applied purposefully to influence emotions in line with conscious goal intentions and thus to optimize action regulation. These aspects are currently being discussed under the heading "emotional intelligence" (see Saarni, 1999; Salovey & Sluyter, 1997).

3. We consider a classification of regulation strategies that pays more attention to their functionality for action regulation and their emergence in ontogenesis to be more appropriate than the ones discussed. We shall address this more closely in Section 3.4.4.
4. To explain the fourth critical issue, we shall have to provide more background information: Functionalist theories share the notion that new kinds of emotion and new forms of emotion regulation develop during ontogenesis. A number of theories have been presented that try to describe the process of development by which emotions emerge and become distinct (e.g., Bertenthal, Campos, & Kermoian, 1994; Campos *et al.*, 1996; Sroufe, 1996). They assume development to be a continuous process; that is, new kinds of later emotions emerge from earlier ones. This must make it possible to find transitions in the course of development during which something new forms on the basis of previous structures and processes. It is precisely these transitions that a developmental theory should be able to model.

A closer inspection of findings from functionalist research reveals that what it actually is doing is describing developmental stages and their sequence in ontogenesis. In part, it is also specifying preconditions for when a new developmental stage can be reached, and reporting a general learning mechanism for how this transition occurs (e.g., Bertenthal *et al.*, 1994; Campos *et al.*, 1996; Sroufe, 1996).

However, there is a blank space here. There is a lack of models able to describe the *process* of change from one quality into another, that is, to describe exactly what happens in the transition from one stage to the next. How can the new emerge from the old if the new does not exist already?

A second blank space in functionalist theories is associated with the lack of models of the development process. Existing research describes stages of development and concentrates particularly on that which all children located at the corresponding stage have in common. The theories describe the general case, whereas the single case, the individual idiosyncrasy, is viewed as an unimportant variation of the general. However, the general always manifests in an individual idiosyncrasy; everybody has his or her own personal biography that makes him or her a unique personality. Sufficient attention has not been paid to this process of individualization in ontogenesis.

Both blank spaces, first, modeling the transitions between stages of development and, second, the individualization problem regarding the relation between

general developmental steps and their individual manifestation, are a particular focus of attention in the dynamic-systems emotion paradigm. Its metatheoretical principles seem to make it an ideal candidate for filling in these blank spaces.

2.3. THE DYNAMIC-SYSTEMS PARADIGM: EMOTION AS AN EVOLVING SYSTEM

The dynamic-systems paradigm is an interdisciplinary approach to explaining how systems develop (Haken, 1977; Kauffman, 1993; Prigogine & Stengers, 1984). The assumption is that a coherent system structure evolves out of the, in part, random but, above all, recursive interplay between numerous system parts, and that this self-organizing process leads to the emergence of further, more complex structures during the course of development.

This paradigm does not come from psychology, but from the study of the dynamics of complex systems in the natural sciences. Examples are the emergence of chaotic weather sequences in meteorology, turbulent currents in physics, or living systems in biology. However, this paradigm should be applicable to all dynamic systems. In principle, it was only a question of time before it was also transferred to the system of emotions. An emotion can also be described as a dynamic system involving the interaction of a multitude of components that produces new orders during the course of its development (see Lewis & Granic, 2000).

2.3.1. Premises

Lewis (2000) has summarized the general principles of self-organization as follows.

On a microscopic or lower order level, systems consist of many single parts in a state of interaction. That is, the output of one part is the input of the other and vice versa. This sets off reciprocal processes of amplification and attenuation. The outcome of these innumerable recursive interactions is the emergence of an order on the macroscopic or higher order systems level. This, in turn, has repercussions for the lower order level by channeling the interactions of the parts in a way that maintains this order (coupling). This self-organizing order is called simply "self-organization."

The product of this circular causality between lower order and higher order levels is a stable system state known as the attractor. The order on the higher level is self-stabilizing. If the system is disturbed by outside perturbations, it returns more or less rapidly to the attractor state through the coupling of the system parts. Living systems generally have many coexisting attractors and are characterized by multistability.

Self-organizing systems become more ordered as time goes by, and this orderliness emerges spontaneously, that is, without any programming or instruction. The orderliness is restricted to a small number of stable states. As a result, the system repeatedly crosses thresholds of instability on the path from one orderly pattern to the next. This means that self-organizing systems tend to jump abruptly into new orderly patterns rather than changing in a gradual or linear manner. These jumps, known as phase transitions, occur when the system breaks down, when the sensitivity to perturbations increases, and when new patterns of organization rapidly self-amplify.

Self-organizing systems become increasingly deterministic. The many degrees of freedom they start with reduce continuously as they become more specific during the course of development. The outcome of a growth process constrains the conditions for further growth. Lewis (2000, p. 40) calls these "cascading constraints," because every node in a converging order restricts the options available to the next state, and later changes have to be compatible with the existing underlying orderliness.

Self-organizing systems are more sensitive to perturbations at early stages of development compared with later stages. This axiom is known as the "sensitive dependence on initial conditions" (Lewis, 2000, p. 39).

Self-organizing systems become increasingly complex. Their increasing orderliness permits a more intricate arrangement of interacting parts and processes.

Nowadays, there are a number of psychological emotion theories based on a dynamic-systems perspective. The first overview can be found in Lewis and Granic's book (Lewis & Granic, 2000). This covers approaches oriented toward general psychology focusing on the microgenesis of an emotional episode as well as approaches oriented toward developmental psychology focusing on the ontogenetic construction of new emotion structures. Although they share the same metatheoretical principles, the different theories diverge strongly in the way they conceptualize an emotion system.

Lewis and Douglas (1998) take a basic emotion approach extended by a dynamic-systems perspective. They view emotions as modular, innate systems that (1) are characterized by a specific kind of feeling, (2) are physiologically and phenomenologically similar across individuals and cultures, (3) are triggered by specific causes linked to the goals of the organism, and (4) elicit a specific class of responses and facilitate cognitive activities that support these responses. Emotion and cognition are viewed as separate modular systems that enter into continuous self-organizing interactions in ontogenesis. Emotions promote the coupling of conceptual elements, in particular, their integration into larger units possessing a semantic meaning. These unending self-organization processes lead to the formation of stable, meaningful patterns for interpreting situational facts, so-called emotional interpretations, which then become attractors. Support for the theoretical assumptions underlying this emotion–cognition coupling comes from analogies to

neurophysiological findings (Damasio, 1994; Freeman, 1995; Harkness & Tucker, 2000; Schore, 1997).

This approach offers an explanation for two questions that cannot be assessed adequately with a structuralist approach of basic emotions and even go beyond the functionalist approach:

1. How do personality-specific patterns of emotional reactions develop?
2. How do cumulations of single emotional experiences impact on further development?

Lewis (2000) distinguishes three timescales of emotional self-organization: First, the microgenetic development of an emotion episode takes seconds and minutes. Second, the mesogenetic course of moods lasts for several hours or days. Moods arise because certain attractors are amplified whereas others are attenuated. One possible cause for this may be the failure to transform an emotion into action. Then, the state persists, even though the person may well be unaware of it. This is also supported by neurophysiological findings (Freeman, 1995). The third timescale, the macrogenetic development of the personality, proceeds over longer periods of time (months and years) and is characterized by the crystallization of certain attractors as a result of recurring emotional experiences and also, above all, recurring moods (Harkness & Tucker, 2000). Although the dynamic interaction between goals, plans, and emotional interpretations makes emotional development hard to predict, certain phases can be ascertained, as Lewis and Douglas (1998) have demonstrated for the example of defending the self from negative emotional states.

In their component systems approach, Mascolo, Harkins, and Harakal (2000) conceptualize emotional development in an even more overt model than that of Lewis (see Figure 2.3). Their theory makes three basic assumptions:

1. Emotional states, which refer to a complete emotional episode, and emotional experiences, which refer to the phenomenal aspects of an emotional state, are composed of multiple component processes. They consider these to include appraisals as motive-relevant interpretations; affect-producing systems such as the CNS, the ANS, and bodily reactions that generate the feeling tone; and the overt action system composed of involuntary facial and vocal reactions as well as voluntary actions.
2. Emotional experiences develop through the mutual regulation of the component systems over time and within specific social contexts.
3. Component systems are context-sensitive; that is, they do not just adjust themselves to each other but also to the continuous changes in social context.

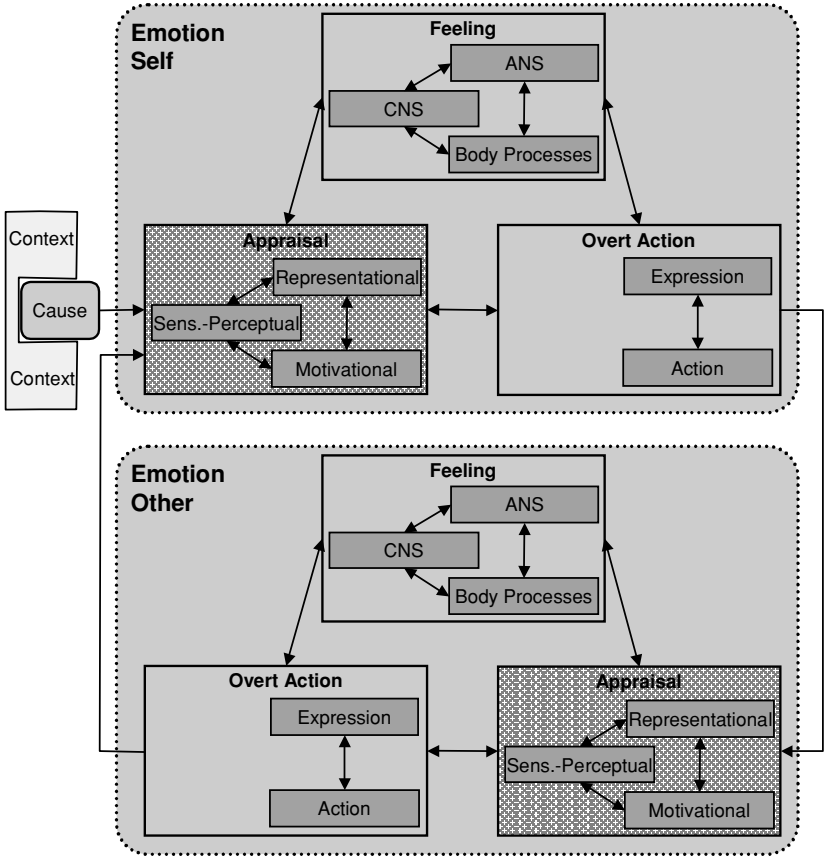

FIGURE 2.3. Dynamic systems model of emotion of Mascolo *et al*. (2000).

> As such, emotional experiences *self-organize* . . . into a series of more or less stable patterns or attractors that yield a large number of minor variations. (Mascolo *et al.*, 2000, p. 127, italics added)

This is why there is no single plan for the organization of any class of emotions, and no single component is primarily responsible for the genesis and production of an emotion.

Fogel, Nwokah, Dedo *et al.* (1992) propose a similarly overt developmental model. Unlike Mascolo *et al.* (2000), they focus more strongly on the social context, and therefore also talk about a social process theory of emotion: "Emotions are . . . socially constructed, dynamically created out of the interaction between contextual variables and component synergies, without the benefit of a central executive control agent" (Dickson *et al.*, 1998, p. 256). They focus particularly

on emotional development within the caregiver–child dyad during the first year of life.

2.3.2. Empirical Findings

The dynamic-systems perspective focuses on modeling transitions. These can be the microgenetic course of an emotion episode or the ontogenetic emergence of new kinds of emotion. The latter would require the repeated study of single systems such as one caregiver–child dyad across many measurement times in order to show that there are some phases with a very stable structure in which external perturbations return repeatedly to established attractors and other phases in which such perturbations lead to chaotic reactions in the system. During the latter, the system shifts into phase transition, and it is then necessary to show how a new structure stabilizes out of this chaotic behavior. This perspective requires new methods such as time-series designs using nonlinear data analysis techniques.

A number of empirical studies on the development of emotions are now available: for example, on the regulation of emotions between mother and neonate during a separation episode (Lewis & Douglas, 1998), on the development of anger (Mascolo & Griffin, 1998a), on the development of pride (Mascolo & Harkins, 1998), and on the development of smiling in the first year of life (Dickson *et al.*, 1998). However, these studies used mostly linear statistical methods, although these methods do not allow to test the proposed nonlinear individual courses.

2.3.3. Discussion

The focus of a dynamic-systems perspective is on describing and explaining how new system structures may emerge from existing ones. On a metatheoretical level, it provides a conceptual tool that can describe the emergence of new system structures and properties as well as the individualization of the system over the course of its development. However, it is only just beginning to be applied to emotional development. Basically, two aspects require further comment.

Only a terminological reformulation of known concepts? Initially, the application of dynamic-systems concepts to describe emotional development is only a reformulation of known facts, as Lewis and Douglas (1998, p. 162) themselves admit. The psychological terminology applied by, for example, Lewis (2000) basically comes from existing theories with only marginal reformulations. All that is new is the replacement of psychological terminology with the metatheoretical terminology of the dynamic-systems paradigm. Emotions as stable configurations of emotion forms are labeled attractors, just like the attractors identified in meteorology

(high- and low-pressure areas); transitions between developmental stages are called phase transitions. However, simply replacing subject-specific terms with more general metatheoretical terms does not provide us with an explanation of the psychological facts.

Lack of empirical confirmation. The suitability of the dynamic-systems perspective cannot be confirmed on a purely theoretical level. Empirical proof is needed. This would require microgenetic or ontogenetic time-series designs using nonlinear data analysis techniques and/or computer simulations. However, up to now, there has been hardly any research using such complex methods (see Eid, 2001; Lewis & Douglas, 1998; Wehrle & Scherer, 2001). Any empirical confirmation of the self-organizing nature of a system would require a continuous, fine-graded observation of a system's course of development over a longer period of time. Such data then have to show that the system structure moves continuously toward stable attractors under certain framing conditions, but it acquires chaotic features under others. However, when the framing conditions change again, these chaotic features should stabilize into new attractors.

Without empirical support, the principle of self-organization becomes a *deus ex machina*: It is unable to model the course of the process precisely—either empirically or with the help of computer simulations. Instead, it points to the complex and innumerable interactions of the system parts and proposes some form of miraculous self-organization. This "black box" then somehow produces exactly that order that one wishes to explain. However, what exactly is the "control parameter" that Dickson *et al.* (1998) consider to be responsible for the emergence of different forms of smiling in the neonate? How precisely do the different forms of anger emerge that Mascolo and Griffin (1998a) differentiate with their cluster analysis of a child's forms of anger? How exactly do longer lasting moods emerge, according to Lewis (2000), from a recursive sequence of single emotion episodes? What exactly is the control parameter or are the control parameters in the formation of new kinds of emotion? At present, dynamic-systems approaches have conceived only discriminable stages of development in single emotions. However, other approaches have managed to advance just as far without applying dynamic-systems terminology (see Barrett & Campos, 1987; Campos *et al.*, 1996; Sroufe, 1996). We are still waiting for researchers to perform the part that is actually new, namely, the modeling of transitions.

2.3.4. Conclusions for an Integrative Approach

Dynamic-systems approaches assume that emotional development is based on the dynamic interplay of a number of system components ranging from internal mental processes to the interaction with the social context. This is the basis for an individualization of emotional responses in ontogenesis. Processes of

habituation or of crystallization based on recurring experiences are considered to be particularly crucial. Nonetheless, it is questionable whether a theory of emotional development requires such a detailed specification of components and their complex interactions.

We consider that two major aspects need to be analyzed more precisely in the dynamic-systems approaches:

1. Prior approaches have offered only vague definitions of the control parameters under which the system should change. Each person contributes a species-specific developmental potential for a differentiated emotionality. However, the formation of new kinds of emotion does not occur by itself, but only under certain framing conditions. At times, the self-organization approach seems to forget this (but see Lewis & Granic, 1999). Applied to emotional development, we have to ask:
   (a) What exactly is (or are) the control parameter(s) in the formation of new kinds of emotion?
   (b) What forms must these control parameters take if a new kind of emotion is to emerge? For example, how does pride over a success emerge from joy at an outcome, or shame over a failure emerge from disappointment or anger over an unsuccessful effect?
   (c) Which preconditions are necessary for any change at all to occur in the control parameters; that is, what are the framing conditions of the system?
2. The previous approaches have defined the potentials of the system of the "human being" only insufficiently. The developmental components attributed to the human system already exist in primates. However, it is not every system that produces new orders out of itself. It has to have the species-specific developmental potential to do this. There is increasing consensus that emotions should be attributed to mammals as well—particularly our closest relatives the chimpanzees and bonobos. Moreover, they should also be attributed to all the above-mentioned components such as appraisal processes and action readiness in the form of experience, expression, and physiological response patterns (Bard, 1998; Suomi, 1984). However, chimpanzees and bonobos possess a far more restricted inventory of emotions than do human beings, and these also express themselves in highly stable, species-specific emotion forms (see de Waal, 1996, 2000; van Lawick-Goodall, 1968). This does not seem to be the case in human beings. How can we explain this major difference? One would certainly talk about the human capacity for symbolic representation, but how far can precisely this difference bring about such large differences? Our answer is to broaden the perspective yet again—this time, to cover humans as culture-producing beings.

2.4. THE SOCIOCULTURAL PARADIGM: EMOTION AS A COCONSTRUCTED PSYCHOLOGICAL FUNCTION

The paradigms described so far view emotions from a predominantly intrapsychological perspective. The structuralist paradigm focuses on internal processes that do not go beyond the individual's physical borders. The functionalist paradigm broadens the unit of analysis to include the function of emotions in a person's action regulation, but also restricts itself primarily to the actions of the single person. Nonetheless, it has to be said that some functionalist approaches in developmental psychology do view the social context, in particular, the caregiver–child interaction in early childhood, as a major proximal feature of development (Saarni, Mumme, & Campos, 1998; Sroufe, 1996). The dynamic-systems perspective does include the proximal social context (see Mascolo *et al.*, 2000), but the emphasis on self-organization often pushes this precondition into the background. However, its understanding of "social context" does not provide a framework for studying the distal conditions that make the human activity system seem so unique. This calls for a broader outlook that includes a "socio*cultural* context," and views persons as culture-producing beings.

2.4.1. Premises

The integration of the social and cultural context into the analysis of emotions is the domain of the sociocultural paradigm. It construes both emotions and their forms of regulation within the context of interpersonal interaction (Gordon, 1989; Harré, 1986a; Lewis & Michalson, 1983; Saarni, 1999). This is why it is sometimes called the coconstructivist paradigm (see Figure 2.4). However, why is it necessary to broaden the perspective yet again?

The human genetic endowment also includes an ability that was unavailable at prior stages of evolution: the ability to produce culture, to rearrange nature to fit one's goals, and to do this with artifacts like tools and signs developed by human beings themselves and handed down from generation to generation as a cultural inheritance. Human culture has thus evolved into a second external "memory store" that is not genetic but "inherited" through learning (Cole, 1996; Leontiev, 1981; Valsiner, 2003; Vygotsky, 1931/1997; see also Lorenz, 1977).

This memory store does not just contain technical artifacts and procedures for dealing with the natural world, but also social artifacts and procedures that regulate human interaction through a system of norms and values (Matsumoto, 2000). These cultural meaning systems also include experiences regarding the significance and effectiveness of single emotion forms, emotion functions, and coping actions, as well as rules regarding their context-specific appropriateness. These rules refer not only to the regulation of interpersonal relations but also to intrapersonal action regulation. On the one hand, these cultural meaning systems

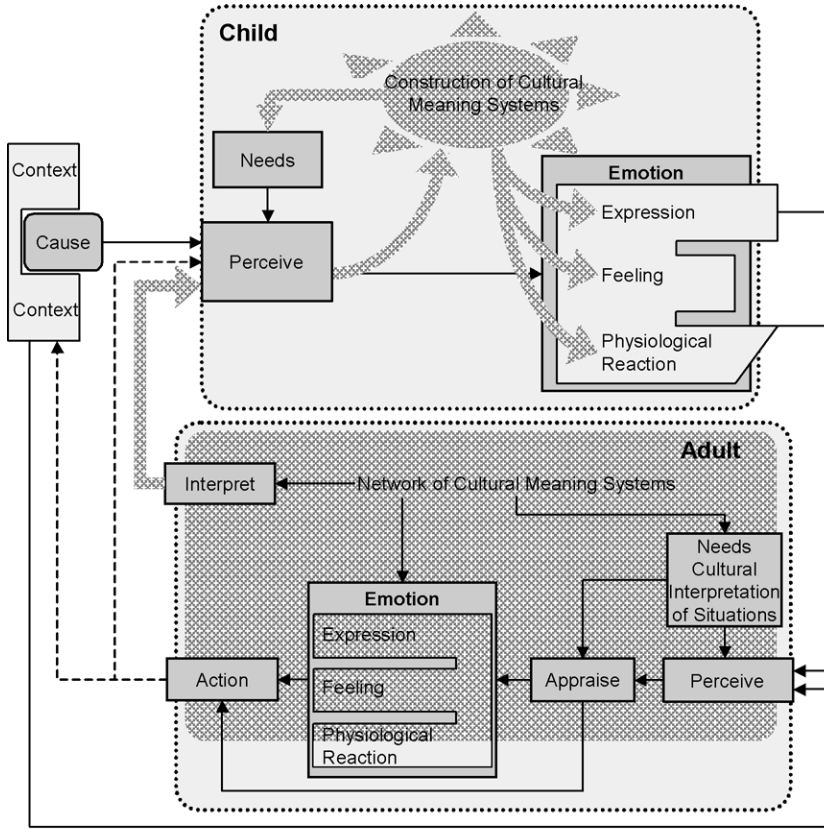

FIGURE 2.4. The sociocultural emotion paradigm.

exist as daily emotional practice in the form of mimetically coded systems of meaning as found in, for example, conventions and religious or spiritual practices (Donald, 1993; Raeithel, 1994; see Section 3.3), and recently also in (pseudo) scientific mental health practices. On the other hand, they exist as verbally coded knowledge in the form of everyday sayings, myths, moral imperatives, or recently also in (pseudo)scientific lifestyle guides. These systems of meaning are more or less accurate reconstructions of experienced emotional practice. They help individuals to reflect on their emotions—to recognize causes, effects, and consequences—and thereby intervene voluntarily in their own emotional action regulation.

These external resources of human development also open up a new dimension for emotional development: the *cultural* dimension. From this perspective, the cultural context no longer just seems to be a condition to which the "natural"

functions and forms of emotions adapt themselves. It is far more the case that culture also provides scripts and patterns of meaning regarding which emotions have to be discriminated on the basis of which forms of expression, and which means of regulation are available and appropriate. These are passed on and accumulated from generation to generation. The cultural context is the distal condition that permits individual variety and variability in the forms and functions of emotions and provides a qualitatively new kind of emotion regulation, namely, a symbol-mediated one that each child first has to integrate into his or her personal system of meaning.

This results in a perspective that may initially seem paradoxical: Something so deeply personal and intrapsychological as emotions has a cultural origin. In human beings, we are confronted with the phenomenon that the *evolved* forms and functions of emotions and the mechanisms for regulating them do not have their origins in the biological inheritance of the individual from which they evolve through maturation, but in the cultural heritage, in the verbally and mimetically handed down systems of meaning that each individual has to take and transform into something personal and intrapsychological.

2.4.2. Empirical Findings

Averill and Nunley (1992) have used culture-historical studies to illustrate how constitutive rules that have social origins and functions determine what persons understand by emotions such as "love" or "anger" and, subsequently, let guide their actions. These are accompanied by rules about which causes of emotions, forms of expression, and coping actions are culturally appropriate—rules that may change with the social context. The authors illustrate this by plotting the sociohistorical development of the constitutive rules of romantic love from the Middle Ages to the present day.

A great number of further studies present detailed descriptions of how culture-specific patterns of emotion can be distinguished even in daily social life (see Briggs, 1970; Lutz, 1986). They can be interpreted appropriately only when the specific cultural meaning context is taken into account. It then becomes possible to make correspondingly meaningful predictions of individual action (see Harré, 1986a; Harré & Parrott, 1996; Ratner, 2000; Trommsdorff & Friedlmeier, 1999).

Coping actions are not linked or determined automatically by the induced emotion, but by the more complex social and cultural context that gives rise to the emotion. Various studies have shown culture-specific preferences for different coping actions as a function of, for example, cultural variations in self-concept (e.g., Frijda, Markam, Sato, & Wiers, 1995; Kitayama & Markus, 1994).

An important issue here is how culture can impact on emotional development. Social anxiety (shyness) provides a good example of this: Longitudinal studies in the United States confirm that social anxiety at preschool age is related to

behavioral inhibition—a biologically determined characteristic—and shows a high intraindividual stability across the years at school measured in terms of low social contacts, low self-assertion, and a negative self-image (Kagan, Reznick, & Snidman, 1987). An analogue study in China with behaviorally inhibited children who went on to become socially anxious revealed a completely different pattern of development (Chen, Rubin, & Li, 1995). These children developed a positive self-image, had numerous social contacts, and also gave positive ratings on their relationships to others.

These marked differences can only be explained through reference to the sociocultural context. Whereas western childrearers (parents, teachers) respond negatively to anxious behavior and view social anxiety as a problem because of the high value placed on self-confidence and self-assertion, Chinese childrearers rate shy behavior positively because it has no negative effect on the peer group and it makes children easier to manage as a group. Childrearers even encourage shyness and view it as a sign of competence because such children are achievement-oriented and academically successful. As a result, these children also gain recognition from their peers. These findings are an example of how one and the same emotional aspect in early childhood can take a completely different path of development as a function of the sociocultural context.

This calls for the formulation of theories in cultural psychology stating which emotion functions and forms along with which coping actions are available to the members of a culture, and whether they are assigned a positive or negative social value.

Such an endeavor focuses attention on how these socially and culturally mediated patterns of emotion are inculcated in the process of socialization. Transmission from person to person is possible only when communicable signs are used. Generally, research has focused on language here and the rules, myths, and theories expressed in it along with the structures of meaning that language creates through narratives. The handed-down narratives that transmit a content, an observation, and a response seem to play a crucial role in this (Harré, 1986a; Harré & Parrott, 1996; Heelas, 1986; Wierzbicka, 1999).

2.4.3. Discussion

When trying to confirm the cultural relativity of emotions, research taking a coconstructivist orientation concentrated initially on documenting the emotion-related idiosyncrasies of different cultures. The aim was to demonstrate that the emotion-related universals assumed in structuralist research are untenable by proving that each interpretation of an emotion has culture-specific meanings that are not present in other cultures (see, e.g., Goddard, 1997, on the term *surprise* in English; Morsbach & Tyler, 1986, on the term *amae* in Japanese; Wierzbicka, 1998, on the term *Angst* in German). At times, this radical context dependence went so far as to reject all general regularity and accept only a cultural relativism.

However, just because the emotional development of the individual occurs in a social and cultural context does not mean that it is no longer possible to derive generalizations. As already stressed in the analysis of the properties of dynamic systems, it is impossible to describe the concrete and unique outcome of development in general categories, because dynamic systems become increasingly individualized through their interaction with their life contexts. However, what can be described in general statements is the underlying *developmental mechanisms* that enable a child to transform the culture-specific expressions and idiosyncrasies of each emotion into personal emotions and coping actions, and, in this way, develop his or her individuality.

Culture-relativist approaches generally limit themselves to viewing *language* and the systems of meaning conveyed by language as marking and articulating the emergence of cultural differences. For example, Wierzbicka (1999) has tried to show that English-language emotion terms such as anxiety, anger, or joy—which are so self-explanatory for western emotion researchers—do not describe universal emotion states but vary across cultures. They cannot be translated directly into other languages: Sometimes, comparable terms are lacking; sometimes, they have other, additional connotations. Emotional universals can be ascertained only by developing a semantic metacode (known as Natural Semantic Metalanguage, NSM) whose signified meaning can be found in all languages. Then, one can examine which emotional appraisal patterns can be expressed with such a universal metacode. These patterns, according to Wierzbicka (1999), are then truly universal.

As obvious as it may seem to assume different language-based meaning systems to be the cause for cultural differences to emerge, there are two inherent difficulties with such an assumption: Verbal systems of meaning have to have something that they are applied to—something that must be there for them to describe in the first place. Furthermore, the regulation processes that supposedly channel undesired emotions and amplify desired ones have to be applied to something undesired or something desired that is not itself a cultural product. These are the emotion forms that a person displays (see also Lyon, 1995). The question is: What is the status of these emotion forms?

The second difficulty relates to the first: Attributions of meaning can only begin to be conveyed verbally when children start to acquire language in the second year of life. What happens during the first year of life? What about the emotion forms displayed then? It is impossible for them to be formed through verbal mediation processes.

2.4.4. Conclusions for an Integrative Approach

According to the sociocultural perspective, emotions are not exclusively person-specific experiences but *also* are mainly shaped by sociocultural conditions. In the process of enculturation, persons transform the emotion and regulation patterns

given in their culture into something personal. Although a number of cross-cultural studies have demonstrated the cultural variation in emotional reactions, feelings, and so forth, they have also revealed cross-cultural universals (see, for summaries, Matsumoto, 2001; Mesquita *et al.*, 1997; Mesquita & Frijda, 1992; Ratner, 1999). Emotions do not just have the function of an "inner" adaptation, that is, an adjustment between context and person in line with current motives and concerns. They also call for an "external" adaptation. There are culture-specific expectations regarding how, when, and where emotions are experienced, expressed, and regulated. In the extreme case, this may lead the external appraisal of a person's emotional response to be viewed as functional in one cultural context but dysfunctional in another—as the example of social anxiety shows (Chen *et al.*, 1995).

Most studies on the relation between culture and emotion have focused on adults and neglected the developmental aspect of cultural differences (Matsumoto, 2000; Mesquita *et al.*, 1997; see also Friedlmeier, 2005a, 2005b; Friedlmeier & Trommsdorff, 2002). There is still no complete analysis of the *mechanisms* through which emotions can adopt culture-specific forms and functions.

In this book, we want to propose a model that is based on the following ideas: Within a given sociocultural context, meaning given to an emotion is reflected in its verbal label. But meaning also already adheres to the preverbal *expression forms* of an emotion—independent from its verbally defined meaning. As a result, emotion forms (particularly emotional expression) already function as mediators between social and biological life (see Lyon, 1994, 1995), and do this as an autonomous mimetic meaning system that permits a cultural transmission before and alongside any verbally mediated transmission. Donald (1993) calls this "mimetic culture" (see also Raeithel, 1994). This transmission starts at birth, because expressive reactions serve as communication signs in the interaction between caregiver and child from the first day onward.

We have to ask how these reciprocal transmissions function. The sociocultural paradigm has also focused on only one direction, namely, on how individuals acquire the rules of their culture, and paid little attention to the opposite direction, namely, how individuals modify existing rules through their actions and are even able to implement new ones. The latter question is particularly significant for open societies in which rules change rapidly.

When determining developmental mechanisms, the sociocultural perspective focuses on the mediation of cultural patterns and thereby the role of socialization and childrearing. When searching for developmental mechanisms, one major aspect is to analyze the interaction between children and their socialization partners. This has to take account of the fact that they exert a mutual influence on each other, or to use Fogel's term, a coregulation (Fogel, 1993). This would suggest that it is worth going back to contextualist theories when addressing these issues, because they include the social context as an essential feature of development. Examples

of this can be found in the work of Sroufe (1996) or Campos *et al.* (1996) (see also Saarni *et al.*, 1998).

Now that we have subjected the central paradigms of emotion research to a critical analysis, we can go on to integrate the main conclusions into the integrative approach of our own model. The internalization model of emotional development is the subject of the next chapter.