Judgment Day
A Review of Aaron Ben-Ze'ev's *The Subtlety Of Emotions*

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ABSTRACT: This paper tries to cope with some crucial questions in the research on emotion, once more raised by Aaron Ben-Ze'ev's latest book. With reference to the obvious complexity of the topic, the author there circumvents any explicit theoretical commitment. Nevertheless, his arguments trend toward running along the lines of a sociologically based, cognitive theory of emotion. Although the book is -- especially in the second, analytical, part -- rich in description, I criticize the lack of an integrative theoretic approach. The book fosters a classical dualistic ontology which gets trapped within the problem of causation between mind and body (here: cognition and physiology).The folk psychological terminology used does not seem to be able to cope with emotions. I argue that folk psychological terms could eventually be replaced by automata theoretic metaphors as suggested by Oswald Wiener and propose the sketch of this model.

1. Introduction

The most puzzling fact about research on emotions in general seems to be that -- contrary to many other scientific endeavors -- theorizing about emotions obviously has to cope with missing consistent definitions. Indeed, plainly all relevant scholars including Aaron Ben-Ze'ev in his newest book and even dictionaries of cognitive science state that establishing a stringent emotional theory would only yield such definitions in the first place. What does that mean and why is this?

First of all, the proposition above seems to imply that in our times emotions are still and foremost a philosophic question, as philosophy, after all, primarily deals with the invention and clarification of concepts, i.e. it is a definitional task. The reasons for this also seem quite evident: (a) In thinking about the emotions one cannot circumvent the notorious mind-body problem, and (b) scientific theories of the emotions challenge even the deeply private "hard beliefs" of the scientists themselves. As far as (a) is concerned, emotions are a bodily thing and as theorizing is a matter of symbols and symbolic relations one has to consider the relation of embodiment and symbols. In other words, you need an (if not outspoken, then tacit) ontological commitment. This is the crucial point and the reason why no stringent or well-agreed theory of emotions has yet been established. And this is the point that Aaron Ben-Ze'ev in his latest book *The Subtlety of Emotions* has tried to omit silently. Although he contends that emotions are a bodily phenomenon, he puts his "focus" on the conceptual level of attitudes and dispositions. Yet, he does so on a psychological, folk phenomenological level. On the one hand, this enables him to give detailed folk psychological analyses of a range of emotions in the second part of the book. On the other hand, he fails to even sketch the outline of an emotional theory other than already existing cognitive theories of emotions such as Ortony et al. (1988), for instance.

Yes indeed, emotions are a subtle and ticklish topic. Ben-Ze'ev has taken on the sheer hopeless, yet necessary task of writing an up-to-date compendium of research and philosophy on emotions. Concentrating largely on psychological and some basic philosophical issues, he has succeeded in bringing together a most thoroughly elaborated list of references and combined it with his own insights. The outcome is a lengthy written textbook with a nice selection of livening up quotes. Nevertheless, after 632 small print pages a strange feeling of dissatisfaction has overwhelmed the reviewer. Let me try to explain why.

2. A Rather Implicit Theory

The main thesis put forward by the author is that emotions are first and above all generated by *judgments.* This puts him on the side of the so-called cognitive attribution theorists of emotion. In differentiating between *physiological aspects, cognition* and *evaluation* in the generation of emotions, he interestingly draws a distinction between the two latter, although evaluation is usually being taken as a subcategory of cognition. However, definitions of the latter two concepts which seem so crucial for the author's argument cannot be found in the book. Emotions, according to Ben Ze'ev, arise from

subjective evaluative judgments on the agent's situation, in other words, they generally emerge from cognitive, social constructions. "An emotion involves an ongoing activity in which we are constantly evaluating new information and acting accordingly." (p. 5). Contrary to James (1884), for instance, the causation is one-way from mind towards the body, that is, neurophysiological and visceral activity. The latter are explicitly not treated with in the book and, interestingly, the author also does not discuss the widely influential arousal-attribution theory of Schachter and Singer (1962).

Ben-Ze'ev goes on to argue that the background of all evaluative judgments is comparative, both in terms of social comparison and in comparison of one's present situation with earlier situations. Emotions arise when there is a change in the subjective conception of one's personal situation. Briefly, the typical emotional concern is described by referring to the following aspects: the comparative concern, the availability of an alternative, social comparison, and group membership (p. 18). Furthermore, the author states that the typical, yet not necessary emotion-triggering object is a human being or some other living creature. The four background variables together with the typical objects indicate that his primary concern is sociological. As sociological descriptions of situations do not seem to be sufficient, Ben-Ze'ev goes on to "clarify" the underlying cognitive mechanisms.

The basic cognitive assumptions to be found are (a) that the basic mental dimensions of emotions are intentionality and subjective feeling, (b) that there has to be a cognitive "component" of emotions which carries the necessary descriptive information on the object, (c) that deliberative and schematic evaluations are involved, (d) that there is a motivational "component," and (e) that the feeling "component" can be divided into pleasurable and painful feelings. The link between the cognitive component and the others is contingent, as the same "cognitive content" can give rise to different emotions depending upon the situation the agent is in.

On phenomenological consideration, the generative variables listed above are not enough to fully describe the idea of emotion. Here, the author tries to specify emotional states by means of the variables stability, intensity, partiality, and brevity.

All these variables above enable the author to classify affective phenomena into emotions and moods, the latter less intense, without specified object (less partial), more stable, and longer. Another discrimination is between emotions and sentiments, the latter lasting longer, being more stable, and more dispositional, as expressed in the example of anger (emotion) versus hostility (sentiment). Even more on the dispositional side are the affective traits which represent tendencies to act in a specific affective manner and which can last a lifetime.

From the beginning of the book, the author makes clear that not only the classification of the emotions but also the relations among them are "fuzzy." Pertaining to Eleanor Rosch's prototype theory, he believes that the latter may be suitable for describing both emotional phenomena and categories. Although all emotions can be described as a kind of liking or disliking of something on a general level, a cognitive theory has to refer to "contents",

that is a taxonomy that involves more specific dispositions of agents in the generation of emotions. Therefore, Ben-Ze'ev adopts Ortony et al.'s (1988) emotional classification that differentiates emotional evaluation into three subgroups of concerns: the fortune of the agent, actions of agents, and the agent as a whole (p.94). With the help of this generalization, he manages to conceive of a classification scheme that grounds the emotions in relations between agents or the relation of the agent towards himself or herself. This classification yields pairs that somehow oppose each other, but for reasons of interrelational complexity do not represent exactly diametrical opposites. This is also for plainly linguistic reasons, because there are more differentiated categories for negative emotional categories, as the author observes (p. 99).

From the point of the amount of cognition involved in the generation of particular emotions, Ben-Ze'ev discerns between a schematic evaluation mechanism and a deliberative evaluation mechanism. The notion of "schema" is used here in an informal sense (e.g., Neisser, 1976) as involving "spontaneous responses depending on a more tacit and elementary evaluative system" (p. 58). Contrariwise, deliberative evaluations involve "slow and conscious processes, which are largely under voluntary control." (p. 57). It would seem, then, that more "primitive" emotions such as impulses connected to immediate survival and procreation (e.g. sexual desire) or aesthetic emotions are more schematic and hence more difficult to analyze. Anyway, emotions are -- according to the author -- never generated by either of the two processes alone but always by specifically varying portions of them.

An interesting point is made, when the author considers the recently flourishing notion of "emotional intelligence." Recurring on Spinoza's *Ethics* (Spinoza, 1677/2000), he links emotional knowledge, which is the triggering of situation-specific "appropriate" action by immediate emotional responses, to expert knowledge which others have described as "intuitive" and "embodied" (Dreyfus, 1992; Merleau-Ponty, 1962; Raab and Frodeman, 2002). In this sense, being emotionally intelligent is like being skilled in driving a car, for instance, suggesting that emotional intelligence can be learned and evolves during a lifetime. How this learning and evolution is achieved, however, remains in the dark. Ben Ze'ev neither makes a case for an underlying physiological nor for a psychological mechanism but rather withdraws to statements of resignation.

On several occasions we'll hear the author emphasize that emotions are a complex topic. To clarify at least his general evaluation hypothesis, he tries to describe the various interactions between different emotions (or rather, emotional categories) and imaginations as well as factors, which determine the intensity of the former. The second part of the book, entitled "Analyzing Emotions" lays out some detailed descriptions of these interrelations, focussing on the concepts of envy, jealousy, pity, compassion, being happy for someone else, pleasure-in-others'-misfortune, anger, hate, disgust, contempt, romantic love, sexual desire, happiness and sadness, hope, fear, pride, regret, guilt, embarrassment, pridefulness, and shame.

3. The Examples

Based on the attribution theory sketched above, Ben-Ze'ev analyzes these emotions by a differential conceptual analysis. Which social situation generates which emotion with what cognitive, evaluative, imaginative, and motivational "reasoning" involved? Each and every of the emotional categories mentioned above is systematically described by general cases of their instantiation and comments on the semantic borderline, and the relationships to other emotions, intensity variables, and their "moral" value.

Since the author suggests that the most common emotions are concerned with interpersonal relationships, the grouping into chapters is based on comparisons of agents with other agents or the reflexive relationship of the agent with himself or herself. Therefore, the chapter entitled "When You Are Bad, I Am Mad", for instance, brings together the categories of anger, hate, disgust, and contempt in a comparative manner. The only reference to the subjective "feeling" of emotions is made in the chapter on romantic love and sexual desire, entitled "The Sweetest Emotions."

In principle, the analyses presented in the book sketch the surface mechanics of the generation of emotions within the normal western social context. They are an attempt of providing explanations on the basis of internalized representations of social situations (schemata) referring to folk psychological notions such as self-esteem, imagination etc. Because of the richness and length of Ben Ze'ev's elaboration, I will very briefly try to duplicate "arbitrarily" chosen examples, romantic love and sexual desire.

In contrast to sexual desire, of which the basic evaluative pattern consists of the "appealingness" of other agents, romantic love comprises both "appealingness" and "praiseworthiness." The author goes on to contrast "enduring love", which is not so much an emotion but a long-term attitude towards another person with all his or her physical and psychological traits, with romantic love that is fueled more by appealingness than praiseworthiness. Therefore, sexual desire is more important a factor in romantic love than in enduring love. As one will easily notice, appealingness arises rather spontaneously, whereas praiseworthiness as a rational, linguistic argument implies a "more cognitive" evaluation of the beloved. Love is, so to say, defined as not having a describable cause, as one usually does not want to be "loved" for reasons of social consensus such as "beauty", "money" or the like, but for one's "deeper" and fuzzier traits such as kindness, humor, or wisdom. Here one of the major contradictions in the author's argumentation becomes fairly clear. Although being a social constructionist of emotion, he misses the point that romantic love is obviously built upon a somewhat "religious" consensus, that the lovers are "made for each other", not in a sober sense of matching personality traits but as a stroke of fate. He continues by stating that appealingness and praiseworthiness are not independent either, as there is much evidence that judgments of attractiveness influence judgments of intelligence, sociality and morality. Hence, "attractive people are socially assigned more praiseworthy personality attributes than are unattractive people." (p. 409)

Regardless of the deep metaphysical connotation of romantic love rooted in the dialectics of the Enlightenment, the author quite laconically relates desirabilty of "beloved" persons to mere social comparison. This is corroborated by results of studies, which seem to show that men who are "discovered" having sex with "unattractive" women instead of "trophy wives" suffer social humiliation by losing status and prestige within their reference group. This leads on to considerations on sexual desire which is, again, not entirely independent of romantic love. Although not completely absent, praiseworthiness seems to play little role in the generation of sexual desire. "The intentional capacities involved in sexual desire are more primitive than those involved in romantic love." (p. 411). This sounds like a more sophisticated argument for the commonsensical and hardly deniable stance that sexual desire represents an animalistic feature of human agents.

What are the characteristics of the relation between lovers? "In love, we wish to know the beloved and be known by the beloved, to form a unique and intimate relationship with the beloved, to improve the beloved's situation, and so on." (p. 415). Since the most prominent feature of romantic love is the exclusivity of its object (high value of the variable "partiality"), we tend to care for the beloved most, to "intrude" his or her thoughts in order to form a unity. According to Ben-Ze'ev, love does paradoxically not imply a general concern for the beloved's happiness and well-being, which is exemplified in the fact that lovers often hurt each other. This is interpreted by the author as a "warning signal" to change something in the relationship.

Ben-Ze'ev states that, in contrast to sexual desire which seems to imply an intrinsically replaceable and nonexclusive object, romantic love is based on the non-replacability of the beloved, although this cannot be accepted from a pragmatic perspective. Drawing on anthropological research and evolutionary theory, the author invokes brain chemistry which suggests that romantic love expires after about four years, the time "primitive" couples stayed together to rear one child through infancy (p. 423). In modern society, this seems to be the time when "enduring love" must start which is less intense and more connected to commitment.

Since the basic factor underlying emotional intensity is situational change, it is not surprising that sexual desire seems to decrease in intensity over time with the same partner. Given the fact, that romantic love is -- according to Ben Ze'ev -- strongly connected to sexual desire, the intensity of enduring love is smaller. In the line of this reasoning, the author explains the abundance of extramarital sex affairs, which do not necessarily harm the love relationship directly, but does so more often by other usually accompanying dispositions such as lying, illoyalty etc.

Summing up, the second part of the book presents thoroughly investigated analyses of socially determined *emotional categories* in terms of the situation that leads to their attribution. In avoiding oversimplifications, the author manages to give a well understandable account of the instantiation of various emotional categories. However, he again refrains from conceptual generalizations which makes it hard to figure out a theory behind his accounts that is deeper than common sense.

4. Some Comments

Although very thoroughly researched and supplied with an excellent bibliography, I believe that the book has two shortcomings on the formal level. First, with no consistent theory at hand and by trying to incorporate all conceptual and philosophical ambiguities (without discussing the philosophical roots of the conceptual problems in detail), the author fails to keep the reader focused. On numerous occasions he leaves his cautious attempts of analysis by withdrawing to the stance that each and every theory available may be right to a certain degree. Hence, although the well placed introductions and summaries pick up the thread every time the reader has lost it, a general argumentative line is hard to distill. The style of the text is quite clear but lengthy in nature. Secondly, a complex topic like this would definitely need a more handy layout, more figures, tables or even loosening up comics than the merely two found in the book.

Even if in part II Ben Ze'ev manages to shed some light on a multitude of consensual emotional categories, he makes the general topic of affective phenomena even more confusing with regard to theory. His refusal to explicitly commit himself to one of the already existing theories by rejecting certain aspects of each, yet adopting some portion for his own ad hoc argumentative purposes, leaves the reader standing in the rain. At each point of reading one has to ask oneself whether the aspects chosen is a scientific or rather a pragmatically therapeutic one. With regard to the scope of the book, one may assume that it is supposed to be used in the classroom. This, however, cannot be recommended, because the lack of an explicit stance forces the reader to interpret each portion of the text on his or her own, which seems somewhat counterproductive for a textbook. Readers interested in cognitive theories of emotions are better off with the shorter and more concise Ortony et al. (1988).

Naturally, Ben-Ze'ev does not imply that all evaluations which trigger emotions necessarily take place within the reach of our awareness as indicated by his distinction between deliberative and "schematic" (intuitive) evaluations. Although the value of the notion of schema is widely accepted in psychology in general, a consensus on its definition, let alone on its formalization, is still lacking. How are schemata implemented in our bodies and how do they relate to the visceral aspects of emotion? Instead of dealing with this obviously central question, the authors contents himself with fluffy statements, such as: "Physiological factors are crucial in dealing with simple feelings, and intentional components in dealing with emotions." (p. 91).

As other theoreticians of emotion, it seems that the author conceives of cognition as temporally prior to physiological reactions. This one-way causality is the opposite of James' (1884), which is therefore rejected in the book (p. 75). The evaluative background (context) of emotional judgments is not considered cognitive which let the reader assume that Ben-Ze'ev equates "cognition" with "thinking we are aware of." Although the search for a definition of the latter has fueled much debate on "mental images", "inner speech" and so on, the concept has not more than heuristic value in the context of this book.

The author's dualistic and judgmental conception of emotions also forces him to take a rather strange stance on moods and "affective disorders" that are abundant in modern society, e.g. depression, anxiety. Lacking a clear "intentional object" in the classical interpretation of the notion following Brentano, Husserl, and more recently Searle, Ben-Ze'ev replicates the commonsensical idea that these phenomena are seen rather as causes, and not reasons for specific behaviors. Lacking a cognitivist explanation for moods and "disorders", he does not hesitate to leave them to the physiologist (or rather the physiological pathologist), thereby providing good arguments for our Prozac society (p. 89 ff.). This leads me further to consider other subliminally ideological aspects of this work.

Although there is no doubt that the basic function of all affective phenomena is the selective "filtering" of specific situational aspects in order to spare time for bodily action and that emotions are generally rooted in phylogenetic development, the issue of human emotions gets far more complicated. As social mechanisms, emotions do not only regulate action dispositions of the individual but also control the overall behavior of the social group (Harre, 1986). The major tool for social regulation is usually referred to as "morality" which is expressed as consensual evaluations of what should be done and what not. One could say that the instantiation of many of our emotions (not their existence!) is controlled via "ideas". Affective regulation also depends on socioeconomic design, so to say. Hence, political issues cannot be left out when we talk -- like Ben-Ze'ev does -- chiefly about interpersonal emotional categories. Although Ben-Ze'ev does stress this claim, however implicitly, he does not enter the topic in detail. The omission of acknowledging ideological (i.e. morally *normative*) aspects of the emotion categories discussed drowns his analyses in rather traditional bourgeois arguments of the West.

In the section on envy (chapter 10), for instance, the author argues that "the claim to equality is merely a desire to improve our personal situation and thus does not appear when inequality favors us." (p. 316). He believes that egalitarian societies such as the kibbutz, for instance, do not eliminate but foster an increase of envy in the individuals. Mainly, this results from the fact that the comparative concern of envy is based on comparisons within the reference group of the individual which tends to be similar to the social group in egalitarian societies. If the "social gap" between two individuals, expressed by symbolic variables such as income difference, is too large, envy does not arise. Therefore, Ben-Ze'ev argues, the background and the opportunities of each group member are more or less similar, which makes them responsible for their own social status. Greater responsibility for one's own situation typically intensifies emotions, hence the author predicts that egalitarian societies would have an increase of envy. "When social and economic gaps are large, the chances of rage, hate, frustration, and several types of violent reactions are greater. When these gaps are narrow, a reduction in these attitudes usually follows, together with an intensification of envy." (p. 321). Here again, a thorough argument yields a somewhat ambiguous conclusion, because envy is obviously strongly related to rage, hate, frustration, and violent behavior.

In rejecting the claim that the function of all emotions is motivational, i.e. that emotions control actions and thoughts, Ben-Ze'ev invokes two examples, aesthetic emotions on the

one hand and temporally backward-looking emotions on the other. While the second objection can be ruled out quite easily by adopting the author's own view that many emotions involve imagination and that imagination allows to suspend time's arrow, thereby putting the agent in a position "as if" she could control her past emotions another way, the first objection is worth considering. Quite similar to moods with respect to a rather vague emotional object and unclear evaluative criteria, aesthetic emotions indeed pose a problem to the motivational grounding of affects in general. Elsewhere, I put forward and defend the working hypothesis that such emotions of "being touched" in certain landscapes (the "Romantic sublime") is based on an evolutionary old substrate, the autonomic triggering of which is overruled by top-down modulation. The latter is specific to "free" societies which -- due to their economic wealth -- allow a larger number of individuals to experience this originally negative physiological reaction as "aesthetic."

5. Circumventing the Mind-Body Impasse in Emotion Theory by Turing Machines

As already mentioned I sense two fundamental problems at the heart of Ben Ze'ev's enormous effort of trying to put the various emotion "theories" at hand into a unified picture: (a) with regard to theory he gets trapped into the traditional mind-body or, here, cognition-physiology impasse, and (b) with regard to terminology the framework of folk psychology keeps him from being able to dig deeper. The author rightly contrasts "thought" and "emotion" -- as possibly to be observed phenomena -- with the underlying "schemata" which produce and control this thought and emotion. It is certainly right that the latter are -- as mechanisms -- not accessible to direct introspection, but instead of picking up the task of clarifying these relations, Ben-Ze'ev seems to give in.

In the following I will briefly sketch the general premises of a universal mechanistic model for the interplay "cognition" and "emotion" which I believe of being capable of circumventing the ontological mind-body impasse. By doing so, I will draw on more than thirty years of research of Oswald Wiener (e.g., Wiener, 1995; Wiener, 1996; Wiener, 2002). Note that Ben-Ze'ev does not in principle rule out the idea of computational models for emotions, when computation is understood as the simple transition of one state to another, that is, computation without meaning or content attached to those states (p. 59 f.). Yet, he does not touch on this crucial topic in the further course of the text.

By and large, Wiener's project aims at ruling out folk psychological terms by replacing them with concepts of automata theory. The basic building block of his psychology is that the above mentioned central notion of "schema" can be formalized as *special purpose Turing machine* (henceforth: TM). From an ontological perspective this clue has one great advantage: a special purpose TM is *both* a concept *and* to be implemented as a material object (i.e. a computer program), a fact which yields a fundamental ontological equivalence of "cognition" and "physiological mechanisms" on the level of mechanistic explanation. The main advantage of this trick is not only the bold circumvention of the

notorious ontological discussion (the so-called "hard problem of consciousness") but -- more importantly -- a very pragmatic explanatory one: It can be proven that for each and every TM which *accepts* as input a specific string or a specific set of strings there exists an effective procedure which -- with the program of TM as input -- computes a TM' which *generates* the same string or set of strings as output. With regard to our problem this implies that "emotion modules" can communicate and control "cognitive schemata" and vice versa, which not least matches our everyday intuition that affective states we happen to be in control our thoughts and vice versa.

From developmental observations on children the aforementioned two primitive emotions defined as having as modules a positive or negative action disposition are defined as pre-models. Pre-models are hard-wired, whereas models -- which may or may not include pre-models as modules -- are learned during one's lifetime. Only models can run in detached mode, i.e. they can generate their output on an "internal screen." Only then we say: "the organism 'thinks'." Pre-models cannot print onto the screen which can be easily intuited by the simple observation that we cannot remember emotions directly but only reproduce the situation an emotion was felt in, and then some similar, yet usually less intense emotion may occur.

Also in accordance with our intuitions we can state that not *all* models we have are ready to accept input all the time. We thus name the currently running model *activated,* the potentially to be activated models in the "running environment" of the activated model *actualized,* and all other models "out of use". With reference to Piaget (1967) I emphasize that all schemata "want to be fed," so when an agent gets into a new situation all actualized models will try to accept (i.e. "interpret") the sensory (body-external and somatosensory) strings generated by the situation. The emotion categories Ben-Ze'ev uses in part II of his book are labels of specific models. So when an autonomic positive or negative primitive emotion is generated as output, all actualized models of emotions will try to accept as input. Only in ambivalent situations, i.e. if and only if more than one of these emotion models is suited to accept the autonomic signal, the emotion will be printed ("broadcasted") onto the screen. In everyday words, only then we "feel" an emotion. With regard to Ben-Ze'ev, one has to say that emotions only get attributed, if they reach the screen which necessarily occurs after the fact. Only then, they are hence registered and attributed by the human agent: She or he will then "give them a name". This model, hence, can be viewed as a more formalized version of the arousal-attribution theory of Schachter and Singer (1962).

Since this is a functionalist approach, as affective phenomena are seen mainly as motivational. For this purpose, Wiener (2002) introduces the notion of "pressure towards an end." With regard to what is happening on the screen (and is hence first-person empirical, so to speak), one could think of the function of the "emotion module" as evolutionarily pre-modeled part of the heterarchy of TMs of the running environment that "chooses" certain modules ("aspects") of other machines to become focal on the screen in order to save time of action. The "pressure towards an end" thus operates on models which are nothing but more complex modulations of evolutionarily hard-wired survival mechanisms.

Fully aware that this very raw sketch of a theory can at most hint towards the explanatory strength of Wiener's model (Wiener, 1995; 1996), I believe it sufficient to attempt consistent re-definitions of affective phenomena without getting lost in the bewilderment of folk theories of emotions as exemplified in Aaron Ben Ze'ev's *Sublety of Emotions.*. The fully formulated model is to be published soon.

6. Conclusion

Drawing mainly on traditional cognitive theories of emotions, Aaron Ben-Ze'ev's *The Subtlety of Emotions* is a largely descriptive book that concentrates on the (definitely) socially constructed instantiation of emotions. Especially the second part of the text is rich in -- unfortunately merely folk psychological -- description and represents a very thorough investigation of the social generation of a multitude of emotional concepts. According to the author, those concepts are always connected to the "evaluation" of specific social situations of the emotional agent. On the theoretical level, the text lacks a unifying conceptual framework, not to mention a theory in a strict sense. In this essay, I have tried to shed some light on the fundamental conceptual difficulties of attribution theories of emotion. I sense their fundamental flaw in not being able to reconcile the mentalistic notions of psychology ("cognition", "perception" and the like) with materialistic ideas of physiology (e.g. "bodily arousal"). The sketch of a terminologically alternative model based on the stringent terminology of automata theory in the formulation of the Turing machine was suggested. The model suggested could be a starting point for coping with the fundamental theoretical problems Aaron Ben-Ze'ev's book points to.

Acknowledgments

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