Emotion and Action

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The Role of Emotions in the Explanation of Action

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1 Introduction

Classical belief-desire models of the explanation of action in philosophy do not explicitly make room for the specific contribution emotions can make to the explanation of actions. In the context of causal theories of action at least, belief-desire explanations are offered both as causal explanations of actions and as reason-giving explanations. One reason why such models do not seriously consider the role of emotions in the explanation of actions is that they see their task as that of explaining what makes actions rational, when they indeed are. Emotional actions are seen as paradigmatic examples of, if not downright irrational actions, at least arational actions, hence as falling outside the scope of the models. But this view of emotions and rationality as essentially antagonistic notions may itself be considered as stemming from an over-narrow conception of rationality. In this paper, I will indeed argue that the belief-desire model is inadequate as a model of 'hot' actions, but my argument will be based on the further contention that even as a model of the explanation of 'cold' actions, the classical belief-desire model is unsatisfactory.

The ultimate purpose of this paper is to explore the question whether and in what sense emotions might be said to provide reasons for actions or to rationalize them. Assuming, as the causal theory of action does, that

genuine reason-giving explanations are causal explanations or, for short, that reasons are causes, one preliminary step involves characterizing the kinds of causal contributions emotions can make to actions. This in turn requires that one have a picture of the causal structure of actions that is sufficiently detailed for one to see how emotions can impinge on the process of action production. I will therefore proceed as follows. First, I will explain why I take the belief-desire version of the causal theory of action to be inadequate or at least seriously incomplete even as a model of 'cold' actions. I will then offer an alternative, two-tiered, model of action explanation. In the second part of the paper, I will try to exploit this alternative model of action explanation in a tentative account of the modes of involvement of emotions in the explanation of action. In the last part of the paper, I will examine in what sense emotions can be said not just to explain actions, but also to rationalize them.

2   The belief/desire causal theory and its problems

Let me start with two remarks concerning the scope and limits of the present enquiry. First, the actions I am concerned with are physical actions, where physical actions can be characterized as actions that essentially involve the production of some motor output. Typically, these motor outputs are movements, but I mean to include in the category of physical actions actions such as standing to attention, where one is actively refraining from moving. By contrast, I will say nothing of what are called mental actions, such as searching in one's memory for the name of a person or performing some bit of reasoning.[1] Second, the model of action explanation that I will sketch in this section is a version of the causal theory of action. Stated in very general terms, the essential tenets common to the various versions of the causal theory are as follows: (1) what distinguishes actions from other kinds of happenings or behaviors is their being part of a specific kind of causal sequence of events; (2) intentional states are key-elements in this causal sequence; and (3) explanation of action is causal explanation. The first two claims are meant to answer the question: what is an action? The third claim offers an answer to the question: how are actions to be explained? I think the causal approach as characterized by these three claims

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[1] The reason for this exclusion is not that emotions have no impact on mental actions. On the contrary, it is well known that emotions have important effects on, for instance, one's attentional processes or reasoning processes. Yet, it is arguable that the structure of mental actions differs in important ways from the structure of physical actions. (See for instance, O'Shaughnessy (2000) for a detailed defense of this claim.) Since my proposal regarding the role of emotions in the explanation of actions exploits the structure characteristic of physical actions, it is therefore doubtful whether it would generalize to mental actions.

is fundamentally correct. It is beyond the scope of this paper to argue for the correctness of this approach[2], rather I will assume that it is correct and it will serve as the general framework for the discussion.

Although the various versions of the causal theory accept this general framework, they disagree on pretty much anything else. Thus, causal theories can take widely different forms depending on what they take the key elements in the causal sequence associated with actions to be and on which part of this causal sequence they identify as the action proper. For instance, based on what part of the causal sequence is identified with the action, one can distinguish among three broad types of causal theories. One possibility is to consider actions as causal processes or causings rather than just causes or effects and to identify them with, if not the entire causal sequence, at least a large chunk of it. On this view, actions are characterized, one may say, in terms of their intrinsic causal features, rather then relationally in terms of their causes or effects. On another view, what makes something an action is the type of effects it causes. Accordingly, proponents of this view will tend to identify an action with the earlier part of a causal sequence and to characterize actions in terms of their causal power to bring about certain effects. Conversely, one may hold that what distinguishes actions from other kinds of happenings is the nature of their causal antecedents. Actions will then be taken to be events with a distinctive (mental) cause. Proponents of this third approach will thus tend to identify actions with the later part of a causal sequence and to characterize them in terms of the nature of their antecedents (as effects of distinctive antecedents). This third type of causal theory was made popular notably by Davidson (1980: Essay 1) and Goldman (1970). When the name 'Causal theory of action' is used in its narrower sense it usually designates theories of this type.[3] My own preferred account combines features of the first and third approach. In this section I will contrast it with the classical version of the third causal approach (for reasons that will become clear shortly, I call the latter the belief/desire causal theory — BDCT for short). This will allow me both to motivate my alternative account by showing how it can overcome some of the shortcomings of the BDCT and to highlight its specific features.

According to the classical version of the Causal Theory of Action, what distinguishes actions from mere happenings is the nature of their causal antecedents. Genuine actions are events with a distinctive mental antecedent. The relevant causal antecedent is conceived as a complex of some of

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[2] For arguments in favor of the causal approach, see for instance Davidson 1980, Essay 1, Dretske 1991, Lennon 1990.

[3] For a more detailed typology of the various kinds of causal theories of action, see Brand (1984).

the subjects' beliefs and desires (hence the name BDCT). According to Davidson (1980: Essay 1), for instance, the causal antecedent of an action is a combination of a pro-attitude toward actions with a certain property P — such as bringing about a certain result or state of affairs — and a belief that a certain action A has that property. This analysis can be somewhat refined by further distinguishing between an orienting belief of the agent — a belief that he is in situation S — and an instrumental belief that action A in situation S has property P.

Several features of BDCT may be held responsible for the attraction it has exerted. First, it has, one may say, the advantage of killing two birds with one stone, by simultaneously offering an account of the nature of action and an account of the explanation of action. What distinguishes actions from non-actions is the fact that they have a distinctive antecedent, namely a belief-desire complex, but this belief-desire complex also provides a causal explanation of the action. Second, and relatedly, BDCT brings into line the justificatory and the explanatory role of reasons by insisting that in cases where reasons genuinely explain, the reason-providing intentional states cause the actions for which they provide reasons. The belief-desire complex is not just the causal antecedent of the action; it also provides the material for a reason-giving explanation of the action. The structure of such an explanation can be made readily apparent by presenting it as a form of practical reasoning, where the elements in the desire-belief complex provide the premises for the reasoning and where the action is its conclusion. Thus, BDCT fosters the hope of narrowing the gap between the normative realm of explanations by reasons and the natural realm of causal explanation.[4] Third, BDCT may be commended for its ontological parsimony. It does not postulate any special type of mental event such as willings, volitions, acts of will, settings of oneself to act, tryings, etc. and thus seems to avoid the charge of obscurantism that has been raised for theories hypothesizing such entities. According to BDCT, to say that somebody acted with a certain intention is just to say that his actions stood in the appropriate rela-

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[4] It should be noted that although Davidson is known as the most famous advocate of the view that reasons are causes, his is not the strongest version of this claim. According to his thesis of the anomalism of the mental, there can be no empirical causal laws employing intentional vocabulary. But since he also maintains that two events related as cause and effect must fall under a strict causal law, it follows that the causal laws required to support the singular causal links between reasons and actions must advert to non-intentional characteristics of these events. Most causal theorists, however, are willing to give a stronger reading to the claim that reasons are causes. They contend that when some of an agent's beliefs and desires can legitimately be said to explain why the agent acted in a certain way, it must be the case that certain aspects of the content of those states were causally relevant in explaining why the agent acted as he did. In other words, contrary to Davidson, they think that the causal laws needed to support the singular causal links between reasons and actions must employ intentional vocabulary.

tions to his desires and beliefs. No distinct state of intending is involved and thus, to paraphrase Davidson (1980, Essay 5: 88), no embarrassing entity is added to the world's furniture.

However, as a number of critics have pointed out BDCT is faced with several difficulties. These difficulties make it doubtful whether it is either necessary or sufficient for it to qualify as an action that an event have as an antecedent a belief/desire complex. I won't go through all of them but will only mention some that are of particular relevance to our purpose.

2.1 The problem of automatic or impulsive actions

First, as a number of philosophers (Brand 1984; Davis 1979; Searle 1983, Ginet, 1990) have remarked, it may be doubted whether being caused by a belief/desire complex is a necessary condition for an event to qualify as an action. Many actions, in particular automatic or habitual ones, do not seem to be preceded by any intention to perform them, at least if the intention (i.e. on the theory the belief-desire complex) is meant to be conscious or introspectively available. To borrow an example from Searle (1983), suppose I am sitting in a chair reflecting on a philosophical problem, and I suddenly get up and start pacing about the room; although my getting up and pacing about are actions of mine, in order to do them I do not need to form an intention to do them prior to doing them. Indeed, no antecedent desire or purpose I intended thereby to promote prompted me to do so. The act was unpremeditated and spontaneous. Similarly, a thoroughly drilled soldier may immediately and almost instantaneously click his heels when commanded to stand at attention. His action may be considered an almost reflex action that does not need to be preceded and caused by a desire to do so. Indeed, it may be the case that the soldier wants to start a mutiny and is yet unable to stop himself from clicking his heels when summoned by his commanding officer. In the same vein, although my typing the present sentence may have been preceded by an intention to do so, I did not have a distinct intention for each key I pressed. Actually, it may be presumed that my having such distinct intentions would have interfered with my performance.

2.2 The problem of causal deviance

Second, it may be claimed that being preceded and caused by a belief-desire complex is not a sufficient condition for an event to count as an action. This is the notorious problem of causal deviance or waywardness. Brand (1984) draws a useful distinction between two problems of causal waywardness, what he calls the problem of antecedential waywardness and the problem of consequential waywardness. The first problem concerns the connection between the antecedent mental events and the resultant behav-

ior; the second concerns the consequences of the activity once begun. The problem of antecedential waywardness is a problem about the definition of action and it is the one that poses the most direct threat to the causal theory. Two examples might give a feeling for what the problem is. The first one is taken from Davidson:

> A climber might want to rid himself of the weight and danger of holding another man on a rope, and he might know that by loosening his hold on the rope he could rid himself of the weight and danger. This belief and want might so unnerve him as to cause him to loosen his hold. Yet it might be the case that he never chose to loosen his hold, nor did he do it intentionally (1980, Essay 4: 79).

The second example I borrow from Davis:

> Suppose I want and intend to get down on my knees to propose marriage. Contemplating my plan, I am so overcome with emotion that I suddenly feel weak and sink to my knees. Here, my sinking to my knees was not an action even though it was caused by my desire and intention to get down to my knees (Davis, 1994: 113).

As these two examples illustrate, not every causal relation between seemingly appropriate mental antecedents and resultant events qualifies the latter as actions. The challenge then is to specify the causal connection that must hold between the antecedent mental event and the resultant behavior for the latter to qualify as an action.

2.3 The problem of causal inertness

A third objection to the belief/desire version of the causal theory is that it does not account for the commitment to action that seems characteristic of intending to *A* as opposed to merely desiring that one *A*s. One may have beliefs and desires that would rationalize acting in a certain way and yet this belief/desire complex may fail to cause one to act in that way. As Davidson (1980, Essay 4) puts it: 'It might happen as simply as that: the agent wants f, and he believes that x-ing is the best way to bring about f, and yet he fails to put these two things together; the practical reasoning that would lead him to conclude that x is worth doing may simply fail to occur' (p. 77). He then further remarks that: 'There is no more reason to suppose that a person who has reasons for acting will always act on them than there is to suppose that a person who has beliefs which entail a certain conclusion will draw the conclusion' (p. 77). Thus mere belief/desire complexes exhibit a form of causal inertness that appears at odds with the commitment to action feature of intentions. Davidson himself (1980, Essay 5) saw that this feature of intendings created a problem for the simple belief/desire model. This realization led him to give up on his earlier claim that talk of intention was never talk of a state or event separate from the intended ac-

tion or the reason that prompted the action. Yet, it may be added, Davidson remained adamant that recognizing the existence of intentions as separate states was not tantamount to positing some 'mysterious act of the will or special attitude or episode of willing' (1980, Essay 5: 87). Instead he argued that we could see intention as a special kind of evaluation of conduct. According to him, although both desires to act and intentions are evaluative judgements, they are different kinds of judgements. Desires to act are what he calls *prima facie* judgments, judgements that actions of a certain kind are desirable insofar as they have a certain attribute. As such, *prima facie* judgements are not directly associated with actions, for it is not reasonable to perform an action on the sole ground that it has some desirable feature. By contrast, an intention to act is what Davidson calls an 'all-out' judgement, an unconditional judgement — made in the light of what is believed about the future course of affairs — that a certain action is desirable. In making an 'all-out' judgment as opposed to a *prima facie* judgment, we settle on a course of action. Intentions are thus associated with actions in a way that mere desires are not.

By acknowledging the existence of intentions as separate states, Davidson makes a fair attempt at coming to grip with the commitment-to-action feature that appears to be characteristic of intentions as opposed to mere desires. By analyzing intentions as a special kind of evaluative judgments, 'all-out' judgments, he avoids having to postulate a *sui-generis* kind of mental entity. Intentions, together with other pro-attitudes, are deemed to belong to the general class of evaluative judgments. Yet, it may be thought that despite its merits, Davidson's revised position fails to capture the full import of the commitment-to-action-feature of intentions.

As argued by Bratman (1987), two dimensions of this commitment should be distinguished. The first dimension, what he calls the volitional dimension, can be characterized by saying that 'Intentions are, whereas ordinary desires are not, conduct-*controlling* pro-attitudes. Ordinary desires, in contrast, are merely *potential influencers* of action' (1987: 16). There is yet, according to Bratman, a second dimension of commitment, what he calls the reasoning-centered dimension of commitment. What is at stake here is the role played by intentions in the period between their initial formation and their eventual execution. First, intentions have what Bratman calls a characteristic stability or inertia: once we have formed an intention to *A*, we will not normally continue to deliberate whether to *A* or not; we will see the matter as settled and continue so to intend until the time of action. Second, during this period between the formation of an intention and action, we will frequently reason from such an intention to further intentions, reasoning from instance from intended ends to intended means or preliminary steps. And third, this intention will constrain the other inten-

tions we may form. For instance, if I intend to go see a movie tonight, I cannot consistently intend to go to the concert at the same time.

One may think that Davidson's analysis of intention as 'all-out' judgment is meant to capture the volitional dimension of commitment and that it may perhaps as well account for the stability of intentions once formed. Yet the other aspects of the reasoning-centered dimension of commitment seem to fall beyond its scope. As Bratman suggests, rather than attempting to give reductive analyses of intentions, it may be more illuminating to take seriously the idea that intentions are distinctive states of mind and that they should be characterized in terms of their own complex network of dispositions and functional roles.

2.4 The problem of failed actions

Finally, BDCT is faced with the problem of failed actions. The failure of an action can not always be traced back to the falsity of some belief figuring in the motivating complex for the action as it is conceived of by BDCT. This point has been raised by Israel, Perry and Tutiya (1993) and by Dokic (1999). Israel, Perry and Tutiya, call it the problem of the false movement. The problem is that the truth of the beliefs figuring in the belief-desire complex does not guarantee that the bodily movement made by the agent is appropriate. For instance, in a game of tennis, I might intend to play a winning point by hitting a cross-court forehand while my opponent is on the other side. My orienting belief that my opponent is on the other side of the court and my instrumental belief that hitting a cross-court forehand would constitute a winning point in this situation may both be true and yet I may fail to win the point because I make the wrong movement and send the ball in the net instead. As a consequence, the motivating complex as conceived of in the BDCT can only rationalize what Dokic calls an attempt (where the notion of an attempt covers both failed and successful attempts) and what Israel, Perry and Tutiya call a volition.

What these difficulties illustrate is that BDCT is adequate neither as a theory of the nature of actions nor as a general model of action explanation. The existence of automatic, routine, and impulsive actions suggests that being caused by a belief/desire complex is not a necessary condition for an event to qualify as an action. The problem of causal deviance shows that having a belief-desire complex as a causal antecedent is not sufficient for something to qualify as an action. The problem of causal inertness shows that one's having a belief-desire complex that constitutes an appropriate reason for Aing does not ensure that one As or tries to A. Although the acknowledgment of intentions as a *sui generis* kind of states can do something toward alleviating these problems, even a belief-desire-cum-intention model remains confronted with the problem of failed actions. What is ex-

plained and rationalized by a belief-desire complex is at best an attempt to perform an action of a certain type. The truth of the beliefs in this motivating complex is not sufficient to ensure that the attempt is successful.

3   A two-tiered version of the causal theory of action

3.1 Two levels of action explanation and causation

In order to solve these problems, some philosophers (Bach, 1978; Brand, 1984; Searle, 1983) have proposed dual models of action explanation. They acknowledge the existence of intentions as separate states and, moreover, they introduce a distinction between two types of psychological causes of action, prior intentions vs. intentions-in-action in Searle's terminology, prospective vs. immediate intentions in Brand's, intentions vs. executive representations in Bach's. The introduction of a second level of intention or representation is motivated by the idea that a theory of action should say something not just about how an action is started but also how it gets carried out.

Intentions-in-action or executive representations are meant to fill the explanatory gap in classical models of the explanation of action between the truth of one's beliefs and the success of the attempted action. They are posited to explain how exactly an action is being performed. An action can in principle be performed in different ways, but it has to be performed in a specific way not generally fully determined at the outset. Intentions-in-action or executive representations involved in the performance of an action are thus conceived as fine-grained representations relevant not only to what kind of action is performed but to how exactly it is carried out. As the label 'intention-in-action' clearly implies, these representations are not future-directed, they are representations for action here and now. Furthermore, they do not simply trigger the action, they play a continuing causal role in shaping it, guiding and monitoring it until completion.

According to these dual models of action explanation, all actions, whether preceded or not by prior intentions, require executive representations for their initiation and execution. Indeed, what makes simple, routine or impulsive actions actions despite the presumed absence of a prior intention is the involvement of executive representations. Conversely, what makes instances of causal deviance non-actions despite the presence of prior intentions is the absence of appropriate executive representations. Finally, when the difference between failed and successful actions performed in similar circumstances with a similar motivating complex cannot be explained as due to the falsity of some belief in this motivating complex,

it is to be accounted for in terms of differences in the executive representations determining how they are being carried out.[5]

3.2 Vindicating executive representations

There has traditionally been an asymmetry in the philosophical treatment of the input vs. the output side of cognitive systems. Whereas perceptual states and processes are treated as falling within the scope of psychological or mental states and processes, motor representations and processes are typically conceived of as outside the realm of the mental and as a falling within the sole province of physiology. So much so that the phrase 'executive representation' sounds bizarre to philosophical ears and is often considered as at best a metaphorical way of speaking. Yet, as Israel, Perry and Tutiya argue, the temptation to think that cognitions need not concern movements should be resisted, for, as they say, 'this would amount to mental causation at a distance. There would be a gap between the motivating cognitions and the act they cause' (1993: 529). As they insist, it is at the level of movement that the connections between act and motivating cognitions have to be made. Which movements will constitute the intended action depend on the circumstances. Thus, 'If [the agent's] cognitions do not reflect considerations that would favor one movement over another, they do not render the fact that he made one movement rather than another intelligible' (1993: 529-30). What I call executive representations are meant to be these cognitions that fill the gap between the motivating cognitions and the act they cause and that render intelligible the fact that the agent performs one movement rather than another.

Resistance to the idea of executive *representations*, where these representations are taken to be mental representations and thus the term 'representation' is not taken as merely metaphorical has several sources. First, the traditional asymmetry in the philosophical treatment of the input vs. output side of cognition may be linked to the difference in phenomenological saliency between perceptual and executive states. The phenomenology of perception has a saliency that the phenomenology of action usually lacks. Whereas perceptual representations often capture our attention and occupy

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[5] Actually, we should distinguish three categories of failed actions. First, there are actions whose failure can be traced back to the falsity of some belief in the motivating complex of the agent as conceived of by BDCT. Second, there are actions whose failure results from the agent's making the wrong movements despite having true beliefs. Third, there are actions whose failure is due to the circumstances being abnormal in a way the agent could not be reasonably expected to have anticipated. If, for instance, there is an earthquake at the exact moment when I was reaching for a glass of water, this resulting in my missing the glass, it seems highly implausible to trace back the failure to either false beliefs of mine or a lack of know-how in matters of reaching movements. It is failed actions in the second category executive representations may help explain.

center-stage in the field of consciousness, the representations that guide our actions are often peripheral. Yet, actions are not without a phenomenology. When we attend to what we are doing and how, the representations that guide our actions become phenomenologically salient. If, for instance, I am trying to reach for a glass in front of me, a number or representations will guide my attempt: I represent the position of the glass, its situation relative to me, the possible trajectories toward the target, the amount of force needed for my arm to move all the way to the target, and so on. If I attend to what I am doing, these representations will become salient and take center-stage in the field of consciousness. So if accessibility to consciousness is to be considered as a criterion for something to qualify as a mental representation, executive representations pass the test.

One possible objection here is that even if one acknowledges that actions have a phenomenology and that what an agent becomes conscious of when attending to what he is doing are representations, the representations thus made available to the agent are not executive representations, whatever that may mean, but species of perceptual representations, both exteroceptive and interoceptive. For instance, it may be said that in the example given above the agent has a visual representation of the glass and both visual and kinesthetic representations of the movements of his arm. Thus, the phenomenology of action would reduce to nothing more than some species of perceptual phenomenology. One important problem with this alternative account is that it can not explain the intuitive difference between the phenomenology of passive movement and the phenomenology of action. Suppose an agent is facing a glass of water and his arm is passively moved toward the glass. If as this account holds, the phenomenology of action reduces to some species of perceptual phenomenology, the phenomenological experience of the agent subjected to the passive movement should not be differ from the experience of the agent when he is actively reaching for the glass. Yet, we know that the two experiences feel different. One thing that seems to be part of the experience of acting but not of passive movement is a sensation of effort, a subjective feeling that one is trying (in a sense neutral between succeeding and failing) to do something. That this particular feeling does not reduce to some kind of perceptual and in particular kinesthetic feeling is shown by experiments with completely, or partially, paralyzed patients (Gandevia 1982; Jeannerod 1994; Scheerer 1987), where the patients are unable to move yet experience a sensation of effort when they are try to, say, raise their hand. Later in this section, I shall argue that even the 'perceptual' representations that form part of the experience of acting have characteristics that distinguish them from the representations involved in the phenomenology of perception.

Before I do, let me mention another possible source for the philosophical skepticism regarding the existence of executive representations. What the precise characteristics of a movement are is something very difficult to articulate. If asked to explain what kind of movement you would make in order to reach for the glass in front of you, your only way of answering the request might be to say something like 'doing like this', while showing the movement in question. As Dokic (1999) notes, in most cases we seem unable to offer in place of the demonstrative 'this', that designates a movement of a certain type, a purely discursive definition. There is a temptation to argue from the fact that we are typically unable to represent a kind of movement in fully discursive fashion to the conclusion that executive representations, that are supposed to represent not just a type of movement but a specific movement in a very detailed way, are plainly impossible. They are impossible because we don't have the representational means for doing what they are supposed to do. The best way to meet this objection would of course be to provide a positive account of executive representations. I will shortly offer a brief sketch of what such an account could look like. But to prepare the ground, let me start with some remarks regarding this objection. First, one implicit premise in the reasoning leading to the conclusion that executive representations are not to be had seems to be that representable means conceptually representable in fully discursive fashion. But there are reasons to doubt that conceptual representations are the only game in town. In the philosophy of perception, the idea that there exist non-conceptual perceptual representations has been steadily gaining ground in the last two decades and it has been forcefully argued that such non-conceptual perceptual representations were needed to account for the phenomenology of perception and in particular for the fine-grainedness of perceptual experience (Evans, 1982, Peacocke, 1992, Crane, 1992). Thus, if one motivation for the conclusion that executive representations are impossible is that we don't have the conceptual means to represent bodily movements in all their fine-grainedness, an alternative to the rejection of executive representations is to consider that they have non-conceptual content.

Note that in fact there are reasons to think that if there are executive representations, then they cannot be conceptual, even if we don't limit ourselves to descriptive concepts but appeal as well to demonstrative concepts. For suppose one were a conceptualist but were not adverse to the idea of executive representations. Given that representations of movements cannot be fully discursive, the only route open for the conceptualist willing to countenance executive representations would be to say that these representations have as constituents demonstrative concepts of movements. But the problem this conceptualist would confront would be to avoid circularity. By hypothesis, an executive representation must cause a movement if the

movement is to qualify as an action. Let M be a movement, for M to count as an action it must be caused by an executive representation of M. According to the conceptualist, this representation will involve a concept of M and this concept will have to be a demonstrative concept. Here is where the circularity lurks. On the one hand, for an agent to be said to possess a demonstrative concept of a movement, he must be able to demonstrate the movement in question, in other words, to execute it. But on the other hand, for one to be able to perform the movement, one must have an executive representation of it, and according to the conceptualist this representation has to be conceptual and to contain a demonstrative concept of M. Hence, the circularity with this account: being capable of executing M is a pre-condition of possessing a demonstrative concept of M, but possessing a demonstrative concept of M is a precondition on being able to perform M. Note that the suggestion that the deictic component of the demonstrative concept need not designate a movement of the agent himself will not help the conceptualist. If one could indeed always acquire an appropriate concept of a movement by simply watching someone else perform a movement, thus using 'like this' to designate the observed movement, the circularity would be avoided. But we must distinguish between observational concepts of movements and executable concepts of movements. If I am a spectator at an ice-skating competition, I may indeed form demonstrative concepts of the movements performed by the skaters based on my observation of them. But the concepts in question may well fail to be executable concepts, where an executable concept of a movement would be one that figures in an executive representation that can cause me to perform the movement in question. That I formed a concept of a certain movement by watching an ice-skater perform a triple-axel in no way guarantee that I will be able to perform this movement myself.

Suppose our conceptualist shares the general allergy to vicious circularity. He is now faced with the following choice. First, his attempt at construing executive representations as involving demonstrative concepts of movements having failed, he could renounce executive representations altogether and conclude that our capacity to perform movement is independent of our having executive representations of them. He would then fall prey to the criticism voiced by Israel, Perry and Tutiya. That is, he would be faced with a gap between the motivating cognitions and the act they cause: the fact that in order to perform an action an agent made a movement rather than another would remain unintelligible. Second, his failed attempt could lead him to reconsider his former position and accept that executive representations have non-conceptual content. My strong recommendation is that he choose the second option.

I have argued so far that that we need to posit executive representations, if we want to avoid the problem of causal deviance, to account for automatic or routine actions, and to render movements — that is what links act and motivating cognitions - intelligible. I have also argued that the traditional philosophical unwillingness to countenance executive representations is unwarranted. Actions have a phenomenology of their own that does not reduce to some species of perceptual phenomenology and executive representations are needed to account for the awareness we have of what we are doing. Second, neither the fact that we typically lack the conceptual means for fully discursive representations of movements, nor the fact that the content of executive representations could not without circularity essentially involve as constituents demonstrative concepts of movements, constitute arguments against the existence of executive representations. Rather, what these facts suggest is that the content of executive representations is nonconceptual.

3.3 Format and content of executive representations

Philosophical characterizations of what exactly executive representations consist of and of how they fulfil their role are usually rather tentative and less than fully specific. Yet, by combining philosophical analyses with neurophysiological work on motor representations, one can obtain a reasonably precise characterization of these representations. I will not go here into a detailed discussion of their format and content, I just want to point out features of these representations that are relevant for the discussion of emotions that is to come.[6]

These representations can be characterized in part negatively. First, unlike beliefs or prior intentions, they are not propositional attitudes. That is, their format is not propositional; their content is not conceptual; they do not explicitly represent the agent as such. Second, an agent can have executive representations without having any prior intentions or beliefs regarding what he is doing. Third, the having of executive representations is compatible with the absence of any conscious awareness of them on the part of the agent. Fourth, given their role in shaping the action, guiding and monitoring it until completion, these representations can not fully and inexorably determine at the outset the exact way an action is to performed. Work in the neuroscience of action helps us go beyond an essentially negative characterization. Here, I will briefly draw on Jeannerod's (1997) work on motor representations[7]. One important reason for at least a partial assimilation of

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[6] For a detailed discussion of the format and content of motor representations, see Pacherie (2000).

[7] Neuroscientists often make a more liberal use of the term 'representation' than philosophers are wont to do, thus making the philosophers wary that what the neuroscientists call

the philosopher's intentions in action or executive representations to the neurophysiologist's motor representations is that they are assigned the same function in their respective models, i. e., they are regarded as the proximal causes of actions and as playing a continuing causal role in shaping the action, guiding and monitoring it until completion.

Based on neurophysiological evidence, Jeannerod argues in favor of the following theses. First, he claims that actions are driven by an internal representation of a goal rather than directly by the external world. He warns us against an artificial separation between movement representations, assumed to pertain to a physiological approach, and action representations, assumed to pertain to a psychological approach. His claim is that there is no such dichotomy but rather a continuum. More precisely, there is a hierarchy of motor representations such that the goals and parameters of the actions coded for at the higher levels act as constraints on the lower levels of motor representations

Second, Jeannerod contends that the motor representations that drive the action have a specific content, involving two main aspects: a representation of the body in action as a generator of forces and a representation of a goal of action encoded in a 'pragmatic' mode, distinct from 'semantic' modes of representations. With respect to the first aspect, Jeannerod insists that the motor representation is a representation of the acting self that involves a representation of the body as a generator of acting forces, not just a representation of the effects of these forces on the external world. Experimental studies reviewed by Jeannerod (Decety *et al.* 1993; Gandevia 1982, 1987;

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representations really qualify as mental representations. The philosophers' worries are of two kinds. First, one may wonder whether these so-called representations are really *representations*, where for something to qualify as a representation it must have correctness conditions, be capable of misrepresenting, and exhibit some degree of intensionality. I will say something about this first worry later in this section. Second, one may wonder whether the neuroscientist's 'representations' qualify as *mental* representations. I won't launch here into a full-length discussion of the criteria for mental representations. Let me just offer one consideration that should allay this second worry. One very strong criterion of what can qualify as mental is the connection principle proposed by Searle (1992). According to this principle, no state qualifies as a mental state unless it is in principle accessible to consciousness. I personally think that this requirement is too strong. Although being accessible to consciousness may be taken as a sufficient condition for something to qualify as mental, I don't think this condition is necessary. I am willing to countenance mental states and mental representations that are essentially subpersonal. The point though is that is that Jeannerod's motor representations, although usually non-conscious, are in principle accessible to consciousness at least in part. Motor images are motor representations that have reached consciousness. The hedge I introduced — accessible to consciousness at least in part — reflects Jeannerod's idea that motor representations form a hierarchy, such that the aspects of an action encoded at higher levels of motor representations will be more easily accessible to consciousness than aspects encoded at lower levels. Executive representations therefore satisfy the connection principle and qualify as mental.

Gandevia and McCloskey, 1977; McCloskey *et al.* 1983) suggest that the amount of force needed to produce the desired motor effect is encoded in this component of the representation. Moreover, experiments with completely, or partially, paralyzed patients (Gandevia 1982; Jeannerod 1994; Scheerer 1987) suggest that the programming of force has a subjective correlate — the sensation of effort. Empirical evidence also suggests that the central representation of action encodes certain parameters of movement execution dictated by kinematic rules (Decety and Michel 1989; Georgopoulos and Massey 1987; Georgopoulos *et al.* 1989; Viviani and McCollum 1983) and biomechanical constraints (Rosenbaum *et al.* 1990; Rosenbaum and Jorgensen 1992; Shiffrar and Freyd 1990).

The second essential aspect of a motor representation is a representation of the goal of action. According to Jeannerod, this representation includes a representation of both the external object toward which it is directed, and the final state of the organism when that object has been reached. In simple, object-oriented actions (i. e., when objects are goals for actions), the visual attributes of those objects are represented in a specific, 'pragmatic' mode used for the selection of appropriate movements and distinct from other modes of representation used for other aspects of object-oriented behavior (categorization, recognition, etc.).[8] Jeannerod suggests that a motor representation of a goal object includes both a visuo-spatial component pertaining to its spatial location and an object-centered component determining how to deal with it. He also suggests that the function of those representations 'falls between' a sensory function (extracting from the environment attributes of objects or situations relevant to a given action) and a motor one (encoding certain aspects of that action). Pragmatic representations involve a rapid transformation of sensory input into motor commands. Object attributes are represented to the extent that they trigger specific motor patterns. Pragmatic representations thus specify how to deal with the object. In other words, in a pragmatic representation, object attributes are treated in a causally indexical way (Campbell, 1993, 1994)[9], or to use a different termi-

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[8] Jeannerod (1977) distinguishes between two visual processing systems, what he calls the "what" system that derives semantic representations used for identification, categorization and recognition tasks and what he calls the "how" system that derives 'pragmatic' representations encoding information about objects used for visually guided action. Milner and Goodale (1993) proposed a general distinction between two visual processing systems very similar to Jeannerod's, though different in detail. Their account was further elaborated in Milner and Goodale (1995) and Milner (1997).

[9] It should be noted that Campbell discusses causal indexicality at the level of linguistic predicates, whereas the format of Jeannerod's representations is sensory-motor and independent of capacities for verbalization. Campbell points out that many notions are causally significant insofar as judgements made using them have some significance for the ways in which the world will behave, and for how it would behave in various possible circumstances. A subclass of

nology as 'affordances' (Gibson 1979)[10], activating predetermined motor patterns.

If one accepts that this characterization of the content of motor representations also applies to the content of intentions in action, what lessons can we draw concerning the specific features of this content? Although for expository purposes I distinguished between two aspects of the content of motor representations, it would be mistaken to assume that they correspond to two separate components of the content. Rather, motor representations as conceived of by Jeannerod should be viewed as relational models, with the body and the goal functioning as the terms of the relation. What the motor representation represents are neither states of the body *per se* nor states of the environment *per se*, but rather dynamic relations between body and goal. To use a different formulation, we could say that the goal is given under a specific mode of presentation, it is represented in terms of the motor patterns that it affords to the agent. Another important aspect of motor representations is their dynamical character. Given their essential role in the guiding and monitoring of the action as long as it unfolds, they cannot be completely and irrevocably specified at the onset of action. Rather, they must involve an interplay of anticipations and adjustments in response to sensory feedback.

We can now make better sense of the features that are characteristic of executive representations. First, motor representations code simultaneously for things that are coded separately in the belief/desire model. In the belief/desire model, the psychological antecedent of an action includes both

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those notions has the further characteristic that grasp of their causal significance consists in one's practical grasp of their immediate implications for one's own actions. Notions in this subclass are what Campbell calls causally indexical notions. Predicates such as 'is a weight I can easily lift', 'is too hot for me to handle' or 'is within my reach' are offered by Campbell as examples of causally indexical predicates. He notes, however, that although these examples make use of the first person and use notions of weight and temperature, use of indexical terms need not depend upon self-consciousness or grasp of non-indexical notions. Unstructured uses of, say, 'is heavy', 'is hot' or 'is within reach' may be taken as more primitive examples of causally indexical terms insofar as they have immediate implications for the subject's actions. What I want to suggest here is that the notion of causal indexicality has application not just at the level of linguistic predicates or concepts but also at the level of nonconceptual content.

[10] Gibson's theory of affordances is taken by many as controversial. We should distinguish, however, between two different aspects in Gibson's theory. When I say that Jeannerod's pragmatic representations are akin to Gibson's affordances, what I am interested in is Gibson's notion of an affordance as a property of an object determined jointly by the physical attributes of the objects and by the sensory and motor capacities of an organism. What is controversial in Gibson's theory is his idea that affordances are directly perceived, that the nervous system somehow resonates to them and that here is no need for computation and information processing to detect those invariants. Jeannerod most certainly doesn't share this latter view and neither do I.

conative and cognitive elements, namely, on the conative side, a desire that a certain result R obtain, and on the cognitive side, an orienting belief that one is in situation S and an instrumental belief that in S action A brings about R. Situation, goal and means are thus represented separately. There is no such dissociation at the level of executive representations. The situation is coded in terms of a goal it affords and the goal itself is coded in terms of the means — i.e. the motor commands —towards its achievement. Cognitive and conative elements are thus inextricably intertwined. One consequence of this intertwining is that the classical distinction between states with a mind to word direction of fit and states with a world to mind direction of fit gets blurred at the level of executive representations. An executive representation represents a situation as affording a certain goal, and it does so by representing the motoric means by which the goal is to be achieved. For instance, it represents an object as reachable by representing how the reaching is to be effected. The representation may be said to be correct if (1) the object is within reach and (2) the motoric means prescribed will allow one to reach it. It is incorrect if either the object is out of reach or, although it is within reach, the movement is not the correct one. One may want to say that the first condition involves a mind to world direction of fit — a motor representation is correct if it represents a situation as affording an action it actually affords, incorrect otherwise — and that the second condition involves a world to mind direction of fit. — it is correct if the movements represented bring about a change in the world such that the intended result obtains, incorrect otherwise. Yet, the distinction remains somewhat artificial, for the two conditions I distinguished might as well be described as just one, namely 'reachable by such motoric means'. More generally, it may be suggested that although Searle's distinction between mind to world and world to mind directions of fit is useful as a way of contrasting beliefs and desires, its application to executive representations is not fully perspicuous.

A second important characteristic of executive representations is their implicit egocentricity. One important commonality between Jeannerod's talk of pragmatic representations, Campbell's talk of causal indexicality and Gibson's notion of affordances is that idea that the properties an objet is represented as having are jointly determined by the physical attributes of the object and the causal capacities of the agent. This is the sense in which executive representations can be said to be egocentric. Furthermore, this egocentriciy is implicit insofar as the relativity of the affordances or pragmatic properties to the capacities of the agent is not explicitly represented at the level of executive representations, it remains unarticulated. Although a representation of an objet as, say, graspable depends on a causally indexical relation of the agent to the object in question, the relation is not explicitly

represented. Rather, it is collapsed, so to speak, into a monadic property. The object is represented as having the property of graspability; the agent himself is not explicitly represented.

3.4 Relations between levels

I distinguished earlier between two levels of causation and explanation of action: the level of prior intentions and the level of motor or executive representations. Let me now say something about how they are related. Insofar as all physical actions involve the production of bodily movements[11], they all involve corresponding motor representations that trigger and control the movements. Motor representations exploit the motor affordances present in the agent's environment. But of course, except perhaps in very impoverished settings, the environment will present not just one but many affordances for action. Yet, we do not respond to all the solicitations for action that the environment provides. How are the affordances that one will act upon selected?

One motivation for distinguishing between two levels of causation of action is that the selection might be the result of different processes. In cases where a prior intention governs the behavior of the agent, its content will determine which aspects of a situation are attended to, which among the available action schemata will be selected and in what order. This influence can be quite specific as when the prior intention is an intention to act according to a very definite plan. It can also be more indirect as when, for instance, the prior intention is simply to drive to the supermarket. Many sub-actions will have to be performed, accelerating, changing gears, making turns, applying the brakes when approaching red lights, and so on. These sub-actions don't need to be represented at the level of the prior intention, what the prior intention does here is simply to raise the level of activation of the schemata concerned with driving and to make more salient the aspects of the situation that are relevant to driving. There are yet other actions that don't seem to depend directly or indirectly on the presence of prior intentions. Routine or automatic actions are of this kind. While writing this paper, I was on several occasions taking sips from the coffee mug on my desk. Yet, this action did not involve a prior intention to do so, nor was it the case, I think, that the motor affordances provided by the coffee mug were made more salient by my prior intention to write the paper. After all, coffee drinking is not a regular part of my paper writing ritual. Rather, it was probably the conjunction of the visual perception of the mug, together

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[11] Once again, physical actions such as standing still constitute an apparent objection. Yet, when one is actively refraining from moving, one produces certain muscular contractions. Thus, despite the absence of overt movements, the counterpart covert muscular contractions are present.

with a state of thirst, even if not consciously registered, that triggered the relevant action schema. In routine or automatic actions, the activation of action schemas is under the dependence of the environmental circumstances together with various other factors, such as the activation of related schemata, inhibition of rival schemata, automatic registering of bodily conditions, etc.

4   Emotions and the generation of actions

4.1 Action readiness and the emotional process

I have tried to argue so far that we need a distinction between two kinds or levels of causation and explanation of action, one, in terms of executive or motor representations, mandatory for all physical actions, the other, in terms of belief/desire rationality, having special application to deliberate actions. This model was arrived at on the basis of philosophical considerations and, as we have seen, can be somewhat fleshed out by incorporating insights from work in the neuroscience of action. What I would like to propose now is that this distinction is also relevant to understanding the several modes of implication of emotions in the explanation of action.

In the literature on emotions, emotions are often described as spurs to action or as motivational forces behind actions. Although the role emotions play in the motivation of action is probably not their only contribution to the explanation of action[12], it is certainly one central dimension of the involvement of emotions in actions. This is indeed the dimension on which I shall concentrate.[13] I will use Frijda's (1986) theory of emotions as a

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[12] Another possible mode of implication of emotions in the explanation of action is through the physiological changes that an emotion generates. These physiological changes might themselves be relevant to explaining certain features of action execution — why it is, for instance, that I open this box *with shaking hands*.

[13] Although I distinguished in the introduction between 'cold' and 'hot' actions, this distinction cannot be a sharp one; rather, it appears to be a matter of degree. Recent work on emotions, especially in neuroscience, suggests that emotion is an integral part of reasoning and decision-making processes and thus pervades all cognitive processes, including those involved in practical reasoning and the formation of intentions. This is, for instance, one central claim in Damasio's theory of somatic markers (Damasio, 1994). Thus, the presence or absence of an emotional component can not be offered as a valid criterion underlying our intuitive distinction between cold and hot actions. Rather, the distinction seems to be a matter of degree. If we admit that emotions play a role in all actions, one tentative way of drawing the distinction between cold and hot actions would be to say that the emotional signals that affect reasoning and decision-making in cold actions operate below the level of consciousness and do not give rise to emotional experience, whereas hot actions involve some form of emotional experience. (I will say more in section 3.3 about emotional experience and the forms it can take.) Second, and relatedly, we can also use as a criterion of emotional actions the fact that emotions take

framework for the discussion to follow. This theory of emotions is centered on action readiness. The diagram in figure 1 recapitulates Frijda's conception of the emotion process (1986: 454). Frijda takes action readiness change to be the major feature of emotion and indeed its defining feature. Changes in action readiness are themselves conceived as resulting from a process of stimulus appraisal. Note that 'stimulus' is used as a shorthand to refer to the 'situational antecedents of emotions', where these antecedents include not just sensory stimuli in the narrow sense, but more often events and situations whether real or imagined. The evaluation process in turn includes three steps. First, the relevance of the stimulus to the various concerns of the individual is appraised. Here, concerns are defined as dispositions to desire occurrence or non-occurrence of given kinds of situations, characterizing the motivational potential of an individual. Second, if the stimulus is deemed relevant to the subject's concerns, the stimulus situation is further appraised in terms of what the subject can or cannot do about it. As a third step, the urgency, difficulty and seriousness of the situation are computed in terms of previous information. As a result of this three-step evaluation, action readiness changes are generated. Modes of action readiness include but are not restricted to action tendencies. As pointed out by Frijda, apathy, disinterest, excitement, confusion, behavioral interruption, and inhibition all represent modes of readiness, unreadiness included, for relational action.

In what follows, I will focus on emotions whose modes of action readiness are typically action tendencies, understood as states or readiness to execute a given kind of action. I shall focus therefore on the right-hand bottom part of the emotion process diagram proposed by Frijda. My aim will be to characterize the ways in which actions are generated in response to emotions and to distinguish three different modes of generation of actions. In other words, what I want to do is examine how the activation of a certain action tendency results in the performance of a particular action token. We should start by giving a more precise characterization of action

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control precedence, where control precedence, as defined by Frijda (1986), refers to the fact that the mode of action readiness generated by the emotion is placed at the top of the priority list and tends to interrupt other ongoing programs and actions and to preempt the information processing facilities. This is to be contrasted with the role of emotional signals in cold actions, where these signals contribute to the decision process but do not take control of it. As we shall see, the impulsive and semi-deliberate actions I will discuss satisfy both criteria for emotional actions: the agent undergoes emotional experience and the emotion takes control precedence. I admit that it is more contentious that what I call fully deliberate emotional actions are emotional actions in the same sense. They satisfy the first criterion, presence of emotional experience, but not the second, control precedence.
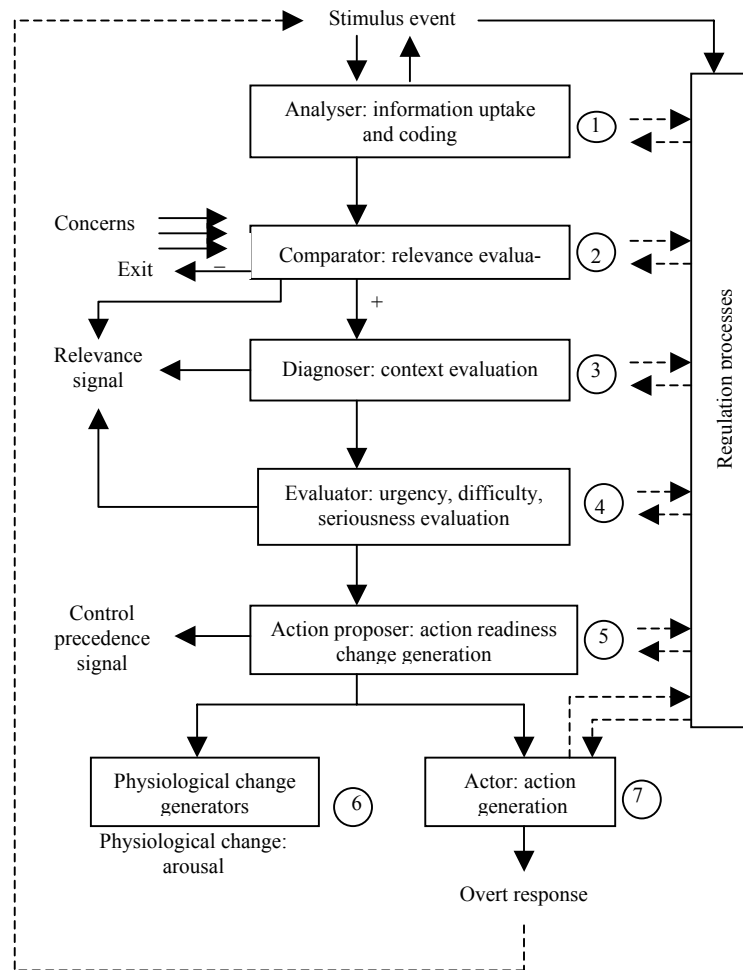
Figure 1. The emotion process diagram proposed by N. Frijda.

tendencies. I just said, following Frijda, that they are states of readiness to execute a given kind of action. What is meant here by a kind of action? Frijda suggests that a 'kind of action' be defined by the end-result aimed at or achieved. However, the examples he gives make it clear that the notion of end-result aimed at is pretty general. The intended end-result is conceived as relational, as the establishment, maintenance or disruption of a certain relationship with the environment. The intent of the action tendency associated with anger, for instance, is defined quite broadly as the removal of obstruction. Thus, actions such as attacking, spitting, insulting, turning one's back, or slandering might be considered as actions of the same kind insofar as they might promote the attainment of this result. There is therefore a long way to go in explaining how these rather general action tendencies will in the end give rise to a specific action, such as punching someone in the nose or sending an anonymous denunciation letter to the police. It is clear that various aspects of the situation as well as various regulatory processes will play a role in narrowing down the options. The question then is how? In what follows, I want to argue that some emotional actions are best construed on the model of automatic or routine actions, others on the model of deliberate or semi-deliberate actions. I shall further contend that these modes of implication of emotions in action will involve different representational formats and forms of emotional experience.

There is one last distinction I should make to avoid possible misunderstanding. There are two stages in the emotional process where the agent's goals and plans are involved. Although, my concern is mainly with the second stage, the late stage of action selection, it is also important to consider the first stage in that it provides the setting for the emotional process. Recall that in Frijda's model, one early stage in the emotional process is the appraisal of the stimulus event with respect to the subject's concerns. It is important to note that very similar stimulus events might be appraised differently depending on what concerns are in the foreground at the time of evaluation. The current goals and plans of the agent in turn largely determine what concerns are in the foreground. My discovering that the computer won't work will generate anger if my intention was to start writing now this paper that is already overdue. The same discovery might be received with malicious joy if my goal was to test whether the virus I have been programming has the devastating effects I was hoping for. Thus, the context set by the goals an agent is currently pursuing can be crucial in determining the emotional response to a stimulus event. Although one aspect of the evaluation of the rationality of an emotional action will concern how performing this action relates to the antecedent goals of the agent, what I want to consider first is how the immediate goal of an emotional action is

set, that is, how an action tendency leads to the execution of a particular action.

4.2 Impulsive actions

One paradigmatic category of emotional actions, indeed what people most spontaneously think of as emotional actions, are impulsive actions, such as punching someone in a bar brawl, running away in fright, hugging one's fellow supporters in joy at the victory of one's football team, and so on. Here it seems that the first object or feature of the environment affording an action that fits the kind of action defined by the action tendency of the emotion is the one acted upon. In anger, the first strikable object noticed gets struck, the nose of the opponent gets punched, the uncooperative can opener gets thrown away[14], the vending machine that took your money but refused to deliver the goods gets kicked. In fright, one takes the first route away from the place of danger or one hides in the first hiding place discovered, and so on. One central characteristic of impulsive actions is their shortsightedness. They are done without regard for their consequences other than the immediate result aimed at, their appropriateness with respect to furtherance of the goals and plans that provided the setting for the appraisal of the situation in the first place is not considered. The can opener was first intended as a means to open the can and it is in that context that its uncooperativeness gave rise to anger and made me see it as an obstacle instead. By throwing it away in frustration I remove the obstacle, but at the same time I loose sight of my initial intention. The way the obstacle gets removed brings me no closer to opening the can.

Impulsive actions share a number of features with routine or automatic actions. The shortsightedness or lack of cognitive integration just mentioned is one of them. I leave my office with the intention to buy light bulbs on the way home, but routine takes control and I arrive home empty-handed. The reasons for this lack of integration are probably different though. As, Frijda puts it, action tendencies associated with emotions clamor for attention and for execution, they have the feature of control precedence. By contrast, routine is not particularly vociferous. Routine actions do not ask for control precedence, they take charge when prior intentions and plans are not attended to with sufficient force or when the agent has no specific intentions or plans. When I left my office, I was tired, I had other things in mind and I forgot about my intention to buy light bulbs. Another feature routine and impulsive actions have in common is their present-directedness. Routine or automatic actions are under the direct control of motor representations without the benefit of a second level of control by

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[14] I borrow this example from Hursthouse (1991).

prior intentions. As I mentioned earlier, the motor representations underlying routine or automatic action are representations for action here and now, they are not representations of future states of affairs. Similarly, in impulsive action the result aimed at is one that should obtain now. A third, related, feature they have in common is their distinctive representational format. I pointed out earlier two characteristics of motor representations. One, what I called implicit egocentricity, is that although the pragmatic properties the target object is represented as having are relative to the capacities of the agent, the relations between agent and target are not explicitly represented. These relational properties are collapsed into monadic, causally indexical, properties of the object. The other is that means and goal are not coded separately, once again there is a collapse and the goal gets represented in terms of means towards its achievement. The same appears to be true of impulsive actions and indeed there seems to be a direct relationship between the way the motor representations underlying impulsive actions are structured and the way emotional experience itself in its irreflexive form is structured. The notion of irreflexive emotional experience, as construed by Frijda is not that of a 'subjective' state but of a mode of appearance of the situation. Irreflexive experience is conscious experience but it is not conscious of itself. As Frijda puts it with remarkable clarity:

> Emotional experience is 'objective', in the sense that it grasps and asserts objects with given properties. Irreflexive emotional experience also, by its very nature, is 'projective': The properties are out there. These properties contain the relationship to the subject: Emotional experience is perception of horrible objects, insupportable people, oppressive events. They contain the relation implicitly: the "to me" or "for me" dissolves into the property (1986: 188).

Insofar as action tendency is taken as the defining feature of emotions, the properties of horribleness, danger, oppressiveness, etc, attributed to a situation or its focus are also injunctions to act. Seeing an object as dangerous is equivalent to seeing it as to be fled from, seeing something as disgusting is seeing as to be rejected. The transition from an emotional perception to an executive representation of an action can be direct. What I mean is that there is no need for intermediate reflexive states, no need for the agent to first become consciously aware of his emotional state and to consciously formulate a plan for dealing with the situation.[15] The agent re-

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[15] In his essay on emotions, Sartre remarks that when a subject becomes angry after a failed attempt at an action, it is not necessary that some reflexive awareness come in between the failed attempt and the anger. As he puts it: "Il peut y avoir passage continu de la conscience irréfléchie "monde-agi" (action) à la conscience irréfléchie "monde odieux" (colère). La seconde est une transformation de l'autre." (1938/1995: 39) What I am saying here is that the same can be true of the move from an emotion to an action it triggers.

mains focussed on the world. It is the same object or situation that is perceived as horrible, oppressive, or dangerous and that is to be acted upon. As Fridja puts it, "Panicky flight is directed not toward a place of safety; but away from the place of danger" (1986: 81). The transition is from the bear being frightening to the bear as to be fled away from, not from the bear being frightening, to my becoming conscious that I am frightened by the bear to my consciously deciding that I should fly to my fleeing. The emotion triggered by a situation or object sets a certain action tendency and pragmatic processing of the situation or object determines how this action tendency is to be realized.

This is not to say that impulsive actions do not leave room for at least minimal forms of reasoning. For instance, when I am desperately trying to flee the bear, I may see a crack between two rocks and reason that the bear is too big to follow me through that crack. Nor is it the case that impulsive actions cannot be subject to regulation and inhibition processes. I may be very angry against a person, yet stop short at stabbing him or her despite the immediate availability of a sharp knife. Rather, my point is that whatever reasoning takes place, it is reasoning prompted by the present situation and remaining within its bounds. Similarly, whatever regulation processes take place, these do not depend on reasoning about the future consequences of my present actions. What stops me from stabbing the person I am angry at is not the thought that I might end up in prison for aggravated assault or murder. My breeding may be such that stabbing someone is not even an option I consider or that my considering it leads to its immediate rejection.

The lack of cognitive integration of impulsive actions can be seen as a consequence of the existence of this direct route between emotions and action and of the persisting focus on the present situation it involves. Thus, my throwing away the uncooperative can opener aims at removing the obstacle rather than achieving my initial goal, opening the can. Similarly, by slipping though the crack to escape the bear, I may well trap myself for good. Finally, one last common feature of impulsive and routine or automatic actions is a sense of passivity, of being overcome by one's impulse in one case, of behaving like an automate in the other, without the action being experienced as voluntary.

4.3 Modes and forms of emotional experience

I want to contrast impulsive actions with two other kinds of emotional actions that differ from impulsive actions in that they make room for prior intentions and require some form of reflexive consciousness. I call them semi-deliberate and fully deliberate emotional actions, respectively. But, in order to characterize them, I must first introduce two important distinctions proposed by Frijda (1986, chapter 4) in his discussion of emotional experi-

ence. The first distinction is among modes of emotional awareness. In his essay on emotions, Sartre (1938) distinguished between irreflexive and reflexive consciousness of emotions. Frijda, who borrows this distinction from Sartre, further suggests that we should keep separate two components in the notion of reflexive consciousness: experience with conscious representation of the self as experiencer and occurrence in experience of the self in its relation to intended objects. He illustrates his meaning by means of the following example:

> 'I want to smash him in the face' may be read, or felt, as 'I have the experience of wanting to…', or as 'I am ready for the desired situation of him being slapped in the face,' as a promise yet unfulfilled. The first we will call true reflexiveness, the second self-awareness. (1986: 191)

Frijda's chosen illustration may not as illuminating as one could wish. I will try to convey the way in which I understand the distinction by drawing a parallel with three kinds of awareness with respect to a perceptual situation. We can distinguish among (1) my being (perceptually) aware of a chair to the left, (2) my being aware that a chair is to my left and (3) my being aware that I am in a (perceptual) state whose content includes the chair being to the (or my) left. In (1) what is represented and what I am aware of is the position of an object in the perceptual field. The mode of presentation of the object, the chair, is monadic rather than explicitly relational: the chair is represented as to the left not to the left of me. The egocentric reference frame in terms of which the content of my perception is structured insures that the chair represented as to the left is actually to my left, but the relation itself is not explicitly represented, it remains implicit in that it is simply presupposed by the reference frame used to structure perception. In (2) what is explicitly represented and therefore what I am aware of is the spatial relation between the chair and me: the chair is to the left of *me*. Finally in (3), what I am aware of is neither an external object, nor a relation between this object and myself, but a mental state of mine, where this form of awareness involves my representing that I am in a state representing that so and so. What I want to suggest is that the first situation corresponds to the mode of experience Frijda calls irreflexive experience, the second to what he calls self-awareness, that is, occurrence in experience of the self in its relation to intended objects, and the third to true reflexiveness. That the two components are indeed separate is shown by the possibility of 'double dissociations'. I can be represent that the chair is to my left without representing that I am in a state that represents that the chair is to my left. Conversely, true reflexiveness need not involve a representation that I am in a state that represents that *I am related* in such or such a way to some object. I can, for instance, be reflexively aware that I am in a perceptual state

with the content that the chair is to the left, where the state I am aware of does not explicitly represent my spatial relation to the chair.

Besides this distinction among *modes* of emotional experiences, Frijda introduces another important, and orthogonal, distinction among *forms* of emotional experience. Emotional experience, according to Frijda, can take three major forms: awareness of situational meaning structure, awareness of autonomic arousal, and awareness of action readiness. Emotion can be awareness of situations as relevant, urgent, and meaningful with respect to dealing with it. It can be awareness of action readiness, readiness with respect to changing or maintaining relationships with the environment. Emotion can be awareness of one's breathing, heartbeat, trembling or muscle tenseness. Emotional experience in its most prototypical form is a complex of the forms of awareness, with hedonic quality involved in each. Yet, Frijda suggest that of these components of emotional experience, action tendency may be the most criterial attribute for identifying an experience as emotional. In what follows, I shall focus on this component of emotional experience. I shall contend that what is typical of the first kind of emotional actions now to be considered, semi-deliberate actions, is experience of action tendency in the mode of 'self-awareness', but not of 'true reflexiveness; for the second class, fully deliberate actions, to be discussed later, both self-awareness and true-reflexiveness will be seen to be necessary.

4.4 Semi-deliberate emotional actions

Let me introduce the class of semi-deliberate emotional actions I have in mind through an example. If somebody infuriates me, say by bragging about how he got a promotion over me by cheating and slandering me, I may react impulsively and, say, slap him in the face for his impudence. Alternatively, I may form the intention to get even and use the machinery of practical reasoning to devise a plan for attaining this goal. What is typical of semi-deliberate emotional actions is that the situation in which the emotion arises either does not afford ways of satisfying the action tendency associated with it or does not afford actions compatible with the norms of behavior or rules of conduct or propriety one has internalized. It may be for instance that slapping the impudent bastard in the face is not an option for me because of my having internalized conservative rules of conduct that make violent behavior improper for a woman, or it might be that I sense that he is provoking me and that by loosing my temper publicly I would be playing his game.

When the situation in which the emotion arises does not immediately afford ways of satisfying the action tendency generated by the emotion, the action tendency gets converted into a conscious intention to pursue a certain goal. This involves a change in representational format. Recall that one aspect of

the contrast discussed earlier between prior intentions and executive representations is that the former but not the latter are propositional attitudes, that is they have propositional content of the form "I do X" — I get even, say — where the agent is explicitly represented. I stressed earlier the commonalities between the format of irreflexive emotional experience and the format of the motor representations underlying the impulsive actions triggered by the emotion. The emotional experience is of some object or situation as horrible or dangerous or disgusting, and similarly the motor representation is of the object or situation as to be stricken, to be fled from or to be rejected. In impulsive actions, the transition is, so to speak, from *Dangerous (X)* to *To-be-fled (X)*, where the agent is fully immersed in the present situation and the choice of action is limited to those actions that the situation immediately affords.

Semi-deliberate emotional actions presuppose a capacity for a partial detachment from the present situation. The emotional experience and the action tendency that arise are determined by the present situation. Yet, the way the action tendency gets realized may be through means that are not directly available in the present situation. The plans I form to exact revenge from my rival may involve indirect means not suggested by the present situation. Since the immediate situation S does not afford an action that would satisfy the kind of end E set by the action tendency, what I must do is to think of another situation S' where this end could be satisfied and to think of a way to effect a transition from S to S'. Thus, what I do in semi-deliberate emotional actions is exploit my stock of instrumental beliefs in order to form a plan of action, a plan whose components may include, for instance, that doing A in S' would bring about a result of kind E and that doing B would be a way of moving from S to S'.

Semi-deliberate emotional actions differ from impulsive actions in two important ways. First, in impulsive action one is immersed in a given situation. The situation in which the emotion arises is also the situation in which the action tendency it sets is acted upon. By contrast, in semi-deliberate emotional actions, the situation in which the emotion arises and the situation in which the action-tendency it sets can find a realization are usually different and means-end reasoning is necessary to move from the initial situation to a situation where the action tendency can find expression. Second, as I argued earlier, the emotional experience in impulsive action is typically irreflexive in mode. The subject remains focussed on the world and the irreflexive awareness of, say, the bear as dangerous gets converted into an executive representation of the bear as to be fled through the crack in the rocks. In contrast, semi-deliberate emotional actions typically involve emotional self-awareness in the sense defined by Frijda. In their case, the situation in which an emotion arises and an action tendency is generated

affords no action that would satisfy the action-tendency, the subject becomes aware of his action tendency as such not of an executive representation of some emotionally appropriate action.

Note that the two features of detachment and self-awareness are in principle distinct. Detachment from the present situation and reasoning on how to effect transitions between situations do not necessarily require that one explicitly represents one's relations to these situations. Yet, it may well be that in semi-deliberate action, these two features are closely connected. First, the fact that the situation in which the emotion arises does not afford appropriate action is responsible both for the need of detachment and for the emergence of emotional self-awareness, that is the emergence of a conscious experience of myself as ready for a certain desired end. And second, the content of this emotional experience is what sets the goal I am planning for. I am not just planning on how to bring about a situation where my disloyal rival is humiliated in turn, I am planning on how to bring about a situation where my own readiness to have him be humiliated can find expression. It is not enough that he be humiliated, I want to be the one responsible for the humiliation.

Actions in this category can still be called emotional insofar as the intention originates from the action tendency triggered by the emotion. They also share with impulsive actions a form of shortsightedness, although perhaps not quite as severe. In philosophical models of action, the formation of an intention to perform an action of a certain type is construed as the outcome of a deliberative process. But means-end reasoning is only part of this process. Deliberation is not just a matter of deciding on what the best way is to obtain a certain desired end, it is also a process of deciding what end should be pursued given one's various goals and concerns and what the situation allows. What our second category of emotional actions shares with fully deliberate actions is only the means-end part of the deliberative process. There is no deliberation about what kind of goal should be pursued; this aspect of the action is under the control of the emotion. These emotional actions are shortsighted in the sense that their cognitive integration is only partial. True, instrumental beliefs are taken into consideration in devising a plan how to achieve the end pursued. But what is not considered is how this end fits with my motivational set considered as a whole, how pursuing it might impede or perhaps advance the satisfaction of other goals. In my eagerness to get even with the bastard who stole this promotion from me, I might loose sight of other important concerns, let my love life go to pieces, get estranged from my friends, let bitterness color all my thoughts. These are the reasons why these actions may only be called semi-deliberate.

4.5 Fully deliberate emotional actions

Let me now turn to a third and last category of emotional actions, the fully deliberate ones. Actually, one might object to my calling these actions emotional actions insofar in that they are not really under the control of emotions but rather make an instrumental use of them. To the extent that these actions nevertheless exploit the motivational potential of emotions, I will stick to this label. What I have in mind are cases where my becoming aware of an emotion and the action tendency it generates gives me some control over it and allows me to exploit and possibly redirect its action potential. My becoming aware that I don't want to deliver a speech in front of a large audience might lead me to invent elaborate excuses for not doing it, but my becoming aware of my feeling of unease at the thought of delivering this speech might lead to different results. By becoming aware of my fear, I might be able to start reflecting on why I feel this way, on how this feeling might interfere with the satisfaction of other desires, on how it might be exploited and redirected for a better overall satisfaction of my desires. For instance, I can realize that I am afraid of public embarrassment, that I fear that the audience will be disappointed by my speech and judge me harshly. This might help me transform the action potential associated with the fear, say make me work very hard on my speech instead of inventing excuses to free myself of this commitment. Emotional actions in this last sense, then, are action that depend on what Elster (1999) calls 'technologies of emotional planning'. Other cases include use of imagination or memory to elicit emotions whose motivational potential will then be exploited in the service of further goals. For instance, one will rehearse the memories of all the wrongs one suffered to get angry and thus muster the courage to go confront one's boss. Still another possibility is to use emotions to commit oneself to a course of action, as when someone announces publicly that he stops smoking starting now, knowing that by so doing he ensures that he will meet with disapproval if he relapses and thus making it harder to relapse.

What all these strategies have in common is that they presuppose the capacity for truly reflexive emotional awareness, awareness by the subject of himself as feeling an emotion. I distinguished earlier between two aspects of deliberation, one concerned with means-end reasoning, the other with rational choice of ends. We have seen that in the second category of emotional actions we considered, the deliberation process was truncated. Means-end reasoning takes place, but the end is not chosen but set by the emotion, through a transformation of the action tendency into an intention. Thus, in the second category of emotional actions, the role the emotion plays in the deliberation process is that of setting the end to be pursued.

Emotional actions in the third category are different in several ways. They also depend on a deliberation process, but a full-fledged one, not just means-ends reasoning. The role played by emotions in this deliberation process is not that of setting the intention. Rather emotions can figure either as possible means to be considered, in particular means to commit oneself to a particular course of action, or they can figure on a par with desires, as potential ends the satisfaction of which has to be considered in the process of choice. For it to be possible that emotions play either of these two roles in the deliberation process, the agent must be capable of emotional true-reflexiveness. For one to be able to make instrumental use of emotions, to plan to use memory or imagination to elicit an emotion of a certain kind, one must be able in the first place to encode situations as situations eliciting in oneself an emotion of a given kind. For one to be able to weigh and compare the demands made by emotions and those made by other desires, the emotions must be at least partially disengaged from and appear not as intentions but as desires. This disengagement is in turn made possible by the truly reflexive experience of the emotion.

5   From explanation to rationalization

Until now my aim has been to try to distinguish categories of emotional actions on the basis of the mode of involvement of the emotions in the causal explanation of the action. But recall that philosophical models of the explanation of action are not just concerned with how actions are caused, they are also concerned with how they are rationalized. The question I want to consider is this last part of the paper is how and it what sense emotions might be said to provide reasons for action or to rationalize them. These questions will receive different answers depending on what category of emotional actions one considers. They will also receive different answers depending on what notions of rationality and justification are at stake.

5.1 Justification and adaptedness

First, one might want to construe rationality as functional usefulness and to argue that emotional processes are rational insofar as they are functionally useful. The idea then is that having emotions and acting on them is generally adaptive, in the sense, say, that this promotes the survival of the gene pool. Now, convincing arguments that emotions have general adaptiveness might be easier or more difficult to articulate depending on the kind of emotion one considers. For instance, it might be more straightforward to argue for the adaptiveness of fear than for the adaptiveness of grief or envy[16].

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[16] For a discussion of the scope and limits of psychoevolutionary approaches to emotions, see Griffiths (1997).

Arguments might also differ in form depending on what category of emotional actions is at stake. Arguments for the adaptiveness of impulsive actions will insist on the usefulness of fast reactions. One might argue, for instance, that the automatic triggering of a reaction of flight by the emotion of fear has special adaptive value insofar as time might be of the essence in escaping danger. Arguments for the adaptiveness of semi-deliberate or deliberate actions will insist that the greater cognitive cost of means-end reasoning or deliberation generally is balanced by the greater efficiency of the actions thus generated.

Now, even if one can offer convincing arguments that emotion-generated actions are generally adaptive, this general adaptiveness will not automatically guarantee that each and every emotional episode is adaptive. If we consider particular episodes of emotion instead of emotional mechanisms, the question of the rationality of an emotion divides into two subquestions. Following Greenspan (1988), I will call them the question of backward-looking justification and the question of forward-looking justification. The question of backward-looking justification is the question whether an emotion is justified by the situation in which it arises. The question of forward-looking justification is the question whether the emotion generates an action that is useful in promoting some end of the subject. We might also say that that backward-looking justification is concerned with the appropriateness of the particular emotional episode and forward-looking justification is concerned with its adaptiveness. We should also note, following Greenspan, that appropriateness and adaptiveness can come apart. An emotion can be inappropriate and yet adaptive. For instance, I might react with suspicion toward a character, just because I have a general prejudice against men who wear dotted ties, this suspicion is not justified in the backward looking sense, yet it might be adaptive, if, say, the character in question happens to be a crook. Conversely, an emotion can be appropriate and not adaptive. The situation that makes me furious might indeed be infuriating, yet my rage might lead me to act stupidly. That the computer that is just back from the repair shop doesn't work is indeed a good reason for anger, but my smashing it in a rage won't improve matters. Although they can come apart, appropriateness and adaptiveness have more than accidental links. The end an emotional action aims at is determined by the emotional assessment of a situation. If this assessment is incorrect, the pursuit of this end, however it is done, won't be justified (except by chance, as in the suspicion case). So we might want to say that for an emotion not just to causally explain an action but also to rationalize it, it must be the case that: (1) the emotion is appropriate, that is, that the emotional assessment of the situation is correct, and (2) the action generated by the emotion is indeed adaptive, that is helps promote the end of the agent.

One further question concerns the way adaptiveness itself is assessed. Should adaptiveness be assessed only relative to the immediate end brought to the fore by the emotional evaluation of the situation or should we assess adaptiveness relative to a larger range of goals the subject is pursuing? The two methods of assessment will often yield conflicting results. I have insisted earlier on the shortsightedness of impulsive and semi-deliberate actions, where the emotion focuses attention on some immediate end and prevents the subject from considering how his action might impede or perhaps advance the pursuit of other goals. It seems that it is only when adaptiveness is assessed with respect to the immediate end at stake that impulsive or semi-deliberate actions can be said to be rationalized or justified by the emotions that generate them. By contrast, deliberate emotional actions might be assessed positively both with respect to their specific adaptiveness to the immediate end at stake and to their global adaptiveness with respect to a more comprehensive set of ends.

5.2 Internal vs. external justifications

Finally, there is yet another important dimension to justification. One great divide in philosophical discussions of rationality and justification is between proponents of internalism and defenders of externalism.[17] Obviously, I can't offer a detailed characterization of this debate, but, to put it shortly, we can say that the main bone of contention concerns the status of the principle of transparency. This principle states that something cannot be a reason for a subject's belief or action, unless it is transparent to the subject, unless that is the subject has access to the reason in question and acknowledges it as his reason or one of his reasons for his belief or action. Internalists accept the principle of transparency, while externalists reject it. Clearly, the adaptiveness requirement discussed earlier and the transparency requirement are independent. An emotion can be a reason in the sense that it is adaptive without being transparent and, vice-versa, an emotion can be transparent to a subject as a reason for his action without being adaptive.

So our last question will be: can emotional actions be said to be rationalized or justified by the emotions that generate them, when me take justification in the internalist sense, that is when we incorporate the transparency requirement? Here the easiest case is probably that of deliberate emotional action. We have seen earlier that what all the strategies of emotional planning have in common is that they presuppose the capacity

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[17] For a clear presentation of the internalist/externalist debate, see for instance Pollock and Cruz (1999). Foundationalist and coherentist theories of knowledge typically incorporate an internalist conception of justification. By contrast, reliabilist theories are paradigmatically externalist. Among contemporary representatives of internalism are Lehrer (1990), Bonjour (1985) and Pollock and Cruz (1999), while Goldman (1986) and Dretske (1981) are representatives of externalist theories of justification.

ning have in common is that they presuppose the capacity for truly reflexive emotional awareness, awareness by the subject of himself as feeling an emotion. This seems to guarantee that the principle of transparency is satisfied. For instance, in one of the examples given above, it is my recognizing my fear of embarrassment as what explains my reluctance to give a speech that makes possible strategic manipulation, and I know that this fear is my reason or one of my reasons for working so hard on this speech. On the other hand, neither impulsive actions nor semi-deliberate actions require truly reflexive emotional awareness. This does not mean that fully reflexive emotional awareness is incompatible with either kind of emotional actions, but this means that it plays no causal role in bringing about these actions.

Does this prevent emotions from being reasons for these actions in the sense the internalist intends? First, note that we might never become aware of the emotion that led us to act in a certain way. In such cases, the emotions won't qualify as reasons according to the internalist criteria. But what about cases where we become aware of the emotion that triggered the impulsive action or the semi-deliberate one? Would we say in such cases that the emotion justify the action in the appropriate internalist sense? Here the answer depends on how the requirement of transparency and the requirement of causal efficacy of reasons are linked in the internalist picture. If the requirement of causal efficacy is conceived as independent of the transparency requirement rather than dependent on it, if, that is, it is not required that the emotion be causally efficacious in bringing about the action in virtue of its transparency to the agent, then impulsive or semi-deliberate actions might be said to rationalize or justify actions in the internalist sense. For instance, it may be the case, that at the moment of acting I was not aware that I was acting out of anger, but that I later realized that anger had made me act in that way. In that case, my anger is causally efficacious in bringing about my action and it is, at least a posteriori, transparent to me that I acted out of anger, but the causal efficacy of my anger is independent of my awareness of its causal role. According to such a reading, the internalist point is simply a point about personal justification. The internalist claim would merely be that although an action can be justified by an emotion in the sense that the emotion generated by the emotion is adaptive, at the personal level the subject has justification for his action only if he is aware of the emotion that was the reason for the action. But the internalist might want to make a stronger point when he endorses the transparency requirement. His claim may be that for an emotion to be a reason and thus to rationalize an action it must be the case that the emotion be causally efficacious in bringing about the action in virtue of its transparency to the agent. In other words the emotion has to be acknowledged as a reason for the action prior to the execution of the action and the action has to be exe-

cuted because of this acknowledgement. On such a construal, impulsive or semi-deliberate actions do not qualify as rational or justified, and the emotions that cause them do not rationalize them. But then, we may wonder why we should accept such internalist requirements and whether such requirements are not expressions of the over-narrow conception of rationality we saw that the classical belief-desire models of action explanation were burdened with.

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References

Bach, K. 1978. A Representational Theory of Action. *Philosophical Studies* 34, 361-379.

Bonjour, L. 1985. *The Structure of Empirical Knowledge*. Cambridge, MA: Harvard University Press.

Brand, M. 1984. *Intending and Acting*. Cambridge, MA: MIT Press.

Bratman, M. E. 1987. *Intention, Plans, and Practical Reason*. Cambridge, MA: Cambridge University Press.

Campbell, J. 1993. The Role of Physical Objects in Spatial Thinking. *Spatial Representation*, eds. N. Eilan, R. McCarthy, and B. Brewer, 65-95. Oxford: Blackwell.

Campbell, J. 1994. *Past, Space and Self*. Cambridge, MA: MIT Press.

Crane, T. 1992. The Non-Conceptual Content of Experience. *The Contents of Experience*, ed. T. Crane, 136-157. Cambridge: Cambridge University Press.

Damasio, A. R. 1994. *Descartes's Error: Emotion, Reason and the Human Brain*. New-York: Putnam.

Davidson, D. 1963. Actions, Reasons, and Causes. *Journal of Philosophy* 60, 685-700. (Reprinted in Davidson 1980, 3-19.)

Davidson, D. 1973 Freedom to Act. *Essays on Freedom of Action*, ed. T. Honderich, 137-56. London: Routledge and Kegan Paul. (Reprinted in Davidson 1980, 63-81.)

Davidson, D. 1978. Intending. *Philosophy of History and Action*, ed. Y. Yovel, 41-60. Dordrecht, Holland: D. Reidel. (Reprinted in Davidson 1980, 83-102.)

Davidson, D. 1980. *Essays on Actions and Events*. Oxford: Oxford University Press.

Davis, L. H. 1979. *Theory of action*. Prentice-Hall, Englewood Cliffs.

Davis, L. H. (1994) Action. *A Companion to the Philosophy of Mind*, ed. S. Guttenplan, 111-117. Oxford: Blackwell.

Decety, J., Jeannerod, M., Durozard, D, and Baverel, G. 1993: Central Activation of Autonomic Effectors during Mental Simulation of Motor Actions. *Journal of Physiology* 461: 549-563.

Decety, J., and Michel, F. 1989. Comparative Analysis of Actual and Mental Movement Times in Two Graphic Tasks. *Brain and Cognition* 11: 87-97.

Dokic, J. 1999. L'Action Située et le Principe de Ramsey. *La Logique des Situations. Nouveaux Regards sur l'Écologie des Activités Sociales,* (Raisons Pratiques 10), eds. M. de Fornel and L. Quéré, 131-155. Paris: Éditions de l'Ecole des Hautes Etudes en Sciences Sociales.

Dretske, F. 1981. *Knowledge and the Flow of Information*. Cambridge, MA: MIT Press.

Dretske, F. 1991. Reasons and Causes. *Philosophical Perspectives, 3: Philosophy of Mind and Action Theory*, ed. J. Tomberlin, 1-16. Atascadero, CA: Ridgeview.

Elster, J. 1999. *Strong Feelings*. Cambridge, MA: MIT Press.

Evans, G. 1982. *The Varieties of Reference*. Oxford: Clarendon Press.

Frijda, N. 1986. *The Emotions*. Cambridge: Cambridge University Press.

Gandevia, S. C. 1982: The Perception of Motor Commands of Effort during Muscular Paralysis. *Brain* 105: 151-159.

Gandevia, S. C. 1987. Roles for Perceived Voluntary Commands in Motor Control. *Trends in Neuroscience* 10: 81-85.

Gandevia, S. C., and McCloskey, D. I. 1977. Changes in Motor Commands, as Shown by Changes in Perceived Heaviness, during Partial Curarization and Peripheral Anaesthesia in Man. *Journal of Physiology* 272: 673-689.

Georgopoulos, A. P., and Massey, J. T. 1987. Cognitive Spatial-Motor Processes. *Experimental Brain Research* 65: 361-70.

Georgopoulos, A. P., Crutcher, M. D., and Schwartz, A. B. 1989. Cognitive Spatial Motor Processes: 3. Motor Cortical Prediction of Movement Direction during an Instructed Delay Period. *Experimental Brain Research* 75: 183-194.

Gibson, J. J. 1979. *The Ecological Approach to Visual Perception*. Boston: Houghton-Mifflin.

Ginet, C. 1990. *On Action*. Cambridge: Cambridge University Press.

Goldman, A. 1970. *A Theory of Human Action*. Englewood Cliffs, NJ: Prentice-Hall.

Goldman, A. 1986. *Epistemology and Cognition*. Cambridge, MA: Harvard University Press.

Greenspan, P. 1988. *Emotions and Reasons*. New-York: Routledge.

Griffiths, P. E. 1997. *What Emotions Really Are*. Chicago: University of Chicago Press.

Hursthouse, R. 1991. Arational Actions. The Journal of Philosophy 88: 57-68.

Israel, D., Perry, J. & Tutiya, S. 1993. Executions, Motivations and Accomplishments. *The Philosophical Review* 102: 515-540.

Jeannerod, M. 1994. A Theory of Representation-Driven Actions. *The Perceived Self: Ecological and Interpersonal Sources of Self-Knowledge*, ed. U. Neisser. Cambridge: Cambridge University Press.

Jeannerod, M. 1997. *The Cognitive Neuroscience of Action*. Oxford: Blackwell.

Lehrer, K. 1990. *Theory of Knowledge*. Boulder: Westview.

Lennon, K. 1990. *Explaining Human Action*. London: Duckworth.

McCloskey, D. I., Colebatch, J. G., Potter, E. K., and Burke, D. 1983. Judgements about Onset of Rapid Voluntary Movements in Man. *Journal of Neurophysiology* 49: 851-63.

Milner, A. D. 1997: Vision without knowledge. *Philosophical Transactions of the Royal Society of London. Biological Sciences* 352: 1249-1256.

Milner, A. D. and Goodale, M. A. 1993. Visual Pathways to Perception and Action. *Progress in Brain Research*, eds. T. P Hicks, S. Molotchnikoff, and T. Ono, 317-337. Amsterdam: Elsevier.

Milner, A. D., and Goodale, M. A. 1995. *The Visual Brain in Action*. Oxford: Oxford University Press.

Norman, D. A., and Shallice, T. 1986. Attention to Action: Willed and Automatic Control of Behavior. *Consciousness and Self Regulation: Advances in Research and Theory*, eds. R. J. Davidson, G. E. Schwartz, and D. Shapiro, 1-18. New-York: Plenum Press.

O'Shaughnessy, B. 2000. *Consciousness and the World*. Oxford: Oxford University Press.

Pacherie, E. 2000. The Content of Intentions. *Mind and Language* 15: 400-432.

Peacocke, C. 1992. *A Study of Concepts*. Cambridge, MA: MIT Press.

Pollock, J. L. and Cruz, J. 1999. *Contemporary Theories of Knowledge*. Lanham: Rowman & Littlefield.

Rosenbaum, D. A., Marchak, F., Barnes, H. J., Vaughan, J., Slotta, J. D., and Jorgensen, M. J. 1990. Constraints for Action Selection. Overhand versus Underhand Grips. *Attention and Performance XIII: Motor representation and Control*, ed. M. Jeannerod, 321-42. Hillsdale, NJ: Lawrence Erlbaum.

Rosenbaum, D. A., and Jorgensen, M. J. 1992. Planning Macroscopic Aspects of Manual Control. *Human Movement Science* 11: 61-69.

Sartre, J.-P. 1938/1995. *Esquisse d'une Théorie Phénoménologique des Émotions*. Paris: Hermann.

Scheerer, E. 1987. Muscle Sense and Innervation Feelings. A Chapter in the History of Perception and Action. *Perspectives on Perception and Action*, eds. H. Heuer and A. F. Sanders, 171-194. Hillsdale, N.-J.: Lawrence Erlbaum.

Searle, J. 1983. *Intentionality*. Cambridge: Cambridge University Press.

Searle, J. 1992. *The Rediscovery of the Mind*. Cambridge, MA: MIT Press.

Shallice, T. 1988. *From Neuropsychology to Mental Structure*. Cambridge: Cambridge University Press.

Shiffrar, M., and Freyd, J. J. 1990. Apparent Motion of the Human Body. *Psychological Science* 1: 257-64.

Viviani, P., and McCollum, G. 1983. The Relation between Linear Extent and Velocity in Drawing Movements. *Neuroscience* 10: 211-18.