

Epistemic emotions

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“I could have stopped there. I could have chosen ignorance, but I did what you would have done – what you’ve already done, if you’ve read this far. I chose knowledge instead.

Most of us will. We’ll choose knowledge no matter what, we’ll maim ourselves in the process, we’ll stick our hands in the flames for it if necessary. Curiosity is not our only motive: love or grief or despair or hatred is what drives us on.”

Margaret Atwood *The Blind Assassin*

Emotions serve vital functions in human psychology. If we could not fear and hope we would not make plans, if we could not love we would not make deep long-lasting social bonds. What about thinking: do we need emotions for that? Most readers of this **chapter** will have heard of the neurological evidence, highlighted in Damasio’s work, that people with damage to areas of the brain associated with emotions often have diminished capacities to exercise some kinds of judgement (see Damasio1994). So it is not implausible that there are links in human constitution

between emotion and thought. But that is a very weak point. Is it the emotions themselves whose absence derails these cognitive processes, or is there something about some neural circuits involved in some emotions that also makes them important in some aspects of decision-making? Is it conceivable that a person could be cured of her judgemental deficits but retain her emotional ones? The connections may be biologically important but conceptually incidental.

I suspect this is not the case, and at the end of this chapter I shall return to the issue. My focus, though, will be on one particular kind of thinking, the acquisition of beliefs. I will be asking whether there are emotions that play an important role in our attempts to acquire beliefs correctly, beliefs that we have reason to continue holding and which serve the purposes for which we acquired them. In this case, I shall argue, there are emotions that play an important and hard to replace role. They are conceptually vital. That is, I shall defend the existence of epistemic emotions. Moreover, I will suggest, there are emotions that are specifically directed at epistemic ends.

Some candidates come immediately to mind. Curiosity, intellectual courage, love of truth, wonder, meticulousness, excitement, humility. One might have doubts whether all or any of

these are really essential to epistemic thought, rather than being often incidentally helpful. But before we grapple with that question there is the question of whether their relevance is as emotion, or as some other kinds of state. In particular, these names can often denote virtues as much as emotions. So first we need to understand the difference between virtues and emotions.

emotion, virtue, character “Generosity” can refer to three subtly but importantly different things. A person with a generous character exhibits a particular pattern of activity. She is sensitive to the situations of others and will suppress her own benefit or glory for their sake. She is particularly aware of situations where her greater resources can benefit a less well endowed person, and can manage them to that person’s benefit. Someone has intellectual generosity if she is more concerned that discoveries are made and issues clarified than that she get credit for it, and if she takes account of other people’s needs to have their contributions recognized in various ways. The standard is example is priority disputes: an intellectually generous person is not overly concerned that she rather than others is recorded as the first to have an idea. More directly epistemic is her tendency to solve problems with whatever method works best, including methods that stem from rival sources. A person can have a generous

character even if she gives too much to others, for example slowing down a research project by insisting on including the work of an incompetent colleague. Then she is indulgent or soft-hearted. Such people do not have the virtue of generosity. Or, to put it differently, their generosity is not a virtue.

Contrasted with both the state of character and the virtue is the emotion. A person who has exhibited admirable generosity may say “I didn’t *feel* generous”. In crediting a rival view she took herself just to be functioning in her normal scientific mode. Her emotional experience lacked a characteristic sense of giving something for nothing. It would be too simple to identify the emotion with the presence of the feeling. But there are other reasons, as we will see, to take emotions to be separate from both virtues and traits of character.

Generosity is far from alone. Similar remarks could be made about courage, optimism, carefulness, humility, and many others. (Courage in particular functions rather differently as a character trait, a virtue, and an emotion. But courage is in some ways a misleading example of a virtue.) Even when we do not often think of an emotion corresponding to a character trait we can often on reflection find one. A responsible person will sometimes, not always, have a feeling

of responsibility to the person, intellectual topic, or tradition, they are concerned with. A lazy person will sometimes feel lazy. Moreover a character trait can always be associated with a virtue, the virtue of exhibiting the relevant disposition at the right times to the right degree. Sometimes this will mean never: the character trait of cruelty is perhaps never appropriately indulged, so if we want to speak of a virtue of cruelty it would be the limit case of a virtue that consists in never unleashing the disposition. But there are many traits of character that are useful on particular occasions, even when it is not traditional to think of there being corresponding virtues. Thus we may talk of a virtue of (appropriate) anger, meaning the virtue of becoming angry when it serves a good purpose, to a degree that serves that purpose well. We might even speak of a virtue of panic, meaning a capacity to stop thinking and take instinctive evasive action *when required*. We could usefully speak of the virtue of appropriate intellectual sloppiness, meaning the capacity to cut corners when there are more important things to think about. We do not standardly include anger, panic, and sloppiness on our list of virtues because according to the folk wisdom that formed the list our need to learn not to give in to anger and panic or slide into sloppiness is greater than our need to learn to reveal them when needed. The folk wisdom may often be right, but we should not assume that it always is.

For any emotion we can define a corresponding character trait, namely the disposition to have that emotion readily. Generosity is showed by generous people, though people who are not generous by character can on occasion experience generosity. Confidence is shown by confident people, among others. And with a character trait we can associate the virtue of exhibiting it at the right times, though it may not be a virtue on traditional lists. There is the virtue of being fearful at the right times; it is a vivid form of prudence. There is the virtue of being confident at the right times, a form of self-respect.

So it is not surprising that the words often do triple duty. Character links to virtue links to emotion. Those links mask deeper differences, though. The three are very different kinds of state. A character trait is a report or a prediction. It says "this is how this person acts".

Sometimes it says "this is how this person thinks": the person may be careful or meticulous or imaginative. Virtues are normative concepts; they pick out dispositions to profitable, correct, or admirable patterns of action or thought. Both traits of character and virtues are long-term states; one cannot be honest for just a moment, though one can act honestly for once in one's life. Moreover they apply to people over longish stretches of time, so that a sleeping person can still be a restless character. Emotions on the other hand are ocurrent things; they happen at particular moments and through determinate stretches of time, during which they have causal

influence on the person. As a result they can be associated with conscious affects as, potentially, any occurrent state can. So we can have feelings of being brave or considerate or careful, just as we can be consciously aware of a thought forming or a desire nagging. Most significantly, emotions are motives; they cause behaviour by making particular desires and beliefs salient. (For emotions as salience-making motives see de Sousa 1988 and Greenspan 1987. For emotions versus virtues see Morton 2002.)

Now we are in a position to see more clearly why the answer to our question “are there epistemic emotions?” might not be any interesting form of Yes. In order to acquire beliefs successfully people need to be careful, curious, imaginative, and responsible, all at the right moments and to the right degree. That much is fairly uncontroversial. It does not follow that people have to experience any emotion characteristic of care, curiosity, or the rest, though no doubt often they do. The virtue is what is required, not the emotion. There is plenty of room for emotion; since actions at particular times play a particular role in the nature of virtues: the appropriate degree of the disposition for a particular time. One can have a feeling at that crucial time, and it may be a feeling that is characteristic of a particular emotion. That does not mean that it is the emotion that is doing the epistemic work. It may not even mean that the whole

emotion is present, whatever work it is doing, rather than a characteristic feeling at a moment crucial to a virtue which shares the emotion's name.

That is the skeptical possibility: there may be no essential epistemic emotions. Virtues may be the epistemically relevant states. The aim of the rest of this chapter is to make a dint in this possibility.

epistemic motivation

Imagine an extraordinarily well trained and malleable young scientist. From early on in her career she has been mentored by older scientists who not only are top researchers in her field, but are also pedagogically sharp and sensitive. The result is that she has a superlative grasp of research techniques, is aware of the live problems at the cutting edge of her subject, and has the patience and intelligence to do very good work. There is one flaw, however. She does not care about the subject. She has no curiosity. She wants a career, and she knows that with her background she is more likely to succeed by pushing some lines of theory than others, so she is capable of a form of scientific partisanship. But she does not find herself wanting the truth to turn out one way rather than another in more than this instrumental way. She does not

sometimes wonder whether lines of inquiry that are, with good reasons, disparaged by her research group might not in the end give important clues to the underlying processes she is investigating.

This scientist may well go on to do excellent work, and make significant discoveries. She may become eminent. But it is unlikely that she will lead her subject in radically new directions. Nor that she will be the one to find the new way ahead if current approaches stall, or to see deep subtle flaws in those current approaches, or willingly take her work in a direction that seems to her important but risks a lifetime of obscurity. She is rather like the child prodigy musician with rare skills and a marvellous technique, lacking only a love of music.

There are emotions she lacks, at any rate with respect to her chosen field. She does not feel wonder at the connections between facts that she can glimpse through the data. She does not feel curiosity about what scientists two hundred years later will have arrived at. Nor does she feel momentary skepticism — in everyday language a loaded attitude rather than a philosophical position — about whether current techniques can unlock the further secrets of the topic. These are rather grand emotions with rather grand objects. We could have brought

them closer to the ground by choosing a research field for her and supplying some details. But they are emotions that people feel in everyday life when they care what the truth is about everyday topics. Good examples of dispassionate curiosity are provided by our reactions to mysteries about public figures publicised in the media. A film star is charged with murder: is he guilty? We may have no bias either way but the evidence pro and con is tantalizing. We hope that a new piece of evidence will settle the matter one way or another; we are upset when a promising lead proves to be a hoax. Our attitude to mysteries in history is similar. I have no preference between the various hypotheses about why the Viking settlements in Greenland died out, but I would like to know which of them is right. I may feel vaguely disconcerted when a promising explanation turns out to be impossible. We feel all these emotions with respect to even more familiar questions too. Who keeps leaving half-filled cups of coffee in the photocopier room?

These are clear cases of emotion, because they involve mental events that occur at particular times, activate deep instinctive routines, and motivate us to courses of action. They connect with both the limbic system and the frontal lobes. We can be conscious of many of them, and may express this by saying “I feel”, and the feelings can be intense — joyful, bitter, exhilarating

— or nagging. In ascribing one of these states to a person we are providing material that could be used in causal explanations of her thoughts and actions: we are alluding not just to typical patterns of the person's behaviour but to events that can be part causes of particular items of behaviour.

Some of these emotions are linked to virtues — curiosity, originality, caution — but they are not redundant given the virtues. The connection here has to be stated carefully. After all, our almost-perfect scientist had a large clutch of epistemic virtues, enough to equip her to do well in her field and make real discoveries. Even her lack of curiosity is qualified; she wants to find out the answers to many questions, though she wants the answers for reasons that are not purely epistemic. And all scientists and all enquirers of any sort are like this. We are motivated, most of the time, by the need to solve particular problems, and by the need to get ahead with our occupations. If we are in knowledge-gathering occupations then the requirements of our jobs dominate our researches. And in our researches we show real epistemic virtues. So the scientist I described is not a monster. What she is lacking is subtle, and will show up only in particular circumstances. (Cases like this are discussed in Stocker 2004.)

The normal connections are these. We have instrumentally epistemic emotions: we are curious about the answers to questions of practical importance to us. To satisfy our curiosity we can enquire, of course; we can exercise our epistemic virtues in the required ways. We can also become curious about the truth of various propositions that arise in the course of the inquiry. But, we can investigate these without being curious about them, since we can be guided just by our need to know the answers to the main question, and our curiosity about that is generated by the practical problem that made it important. Most people, in fact, in most inquiries, do become curious about some of the questions that arise in the course of a practically motivated inquiry. Never about all of them. And most inquiry can proceed without these secondary curiosities.

Two additional factors complicate the picture. First there is curiosity not generated by any practical concern. It isn't always a noble thing. For example people are often very nosy about other people's lives: they feel frustrated if they cannot discover interesting facts about others emotions and habits, and they feel disappointed if the facts they discover are too ordinary and unremarkable. (We are all like this to some extent, though it can become pathological.) But people are also commonly interested in political, religious, historical, or scientific questions

quite independently of any practical needs. Different people have different amounts of curiosity for different topics, of course.

Related to this is the second complicating factor, the peculiar occupation of professional knower: detectives, scientists, scholars, fortune-tellers. People with such occupations are employed to discover truths about particular topics. Usually someone employs them and there are some kinds of information that they are expected to come up with. However often in such an occupation people are motivated to discover truths about particular topics not because they will lead to solutions of practical problems for the researchers themselves, but because it is part of the job description to do so. The truths they discover may be of practical importance to other people. The motivation of professional enquirers is often practical in an indirect way: they want to come up with answers in order to further their careers or satisfy their employers.

One connection between disinterested curiosity and professional inquiry is that some professional inquirers think of themselves as primarily motivated by disinterested curiosity. Physics is “natural philosophy”, a special kind of love of wisdom, where *sophia*, wisdom, presumably means the acquisition of important truths. No doubt there is a wide range of

motivations here, between pure love of wisdom and calculated professional advancement. No doubt inquirers have self-images that can deviate from the actual facts about their motivation, in either direction. And some forms of inquiry require and generate epistemic virtues that are linked to disinterested curiosity. For example when in the course of an investigation into whether some theory is true an interesting possibility arises, whose truth is not obviously relevant to the theory, a good scientist will be interested in whether the possibility is true. (But, life and resources being short, a good scientist will also be careful not to let the main investigation get side-tracked by such things.)

The aim of this section has been to show how epistemic emotions such as curiosity, intellectual disappointment, and fascination can serve to motivate aspects of many enquiries. From what we have seen so far, though, they do not seem to be essential for many of these aspects. A person utterly devoid of curiosity would need to be strongly motivated in non-epistemic ways in order to function well as an enquirer, but such strong motivation does not seem to be impossible. Such a person might be blocked from the most creative and far-reaching aspects of enquiry, but for most everyday purposes — as far as we have seen so far — the absence of

epistemic emotion seems to make things harder rather than impossible. Probing a little deeper into the nature of inquiry may clarify the picture further.

knowledge: relevant alternatives

When you are curious about something you want to know the truth about it. You don't just want to have a belief, and perhaps even not just a belief that happens to be true. Large amounts of philosophy have been directed at the question of what is special about knowledge, and why we should value it (Sosa 2007.) My aim here is to draw connections between the concept of knowledge and core epistemic emotions. One obvious connection is that knowledge is what slakes curiosity. Imagine a situation in which conclusive evidence is hard to come by. For example you want to know whether a particular coin is biased. It was supplied by a gambler you do not trust, whose character you are curious about in any case. You flip the coin six times and it comes down H,H,T,H,T,T , which is well within the expected range for seven tosses of a fair coin. But there is a very slight preponderance of Tails, so you do not rule out completely the possibility that the coin is biased to Tails. You are offered a bet on the coin and you choose heads. For the amount you are betting it seems to you that you are sure enough that the coin is at any rate not biased towards tails. But you wouldn't say you knew this. To take yourself as

knowing it you would have to toss the coin more times, or check into its history. Doing this will take time, or expense, and you may be willing to pay this price — not in order to be in a reasonable position to place a small bet, but in order to slake your curiosity. For many practical purposes probability is enough, but our curiosity is not satisfied until we take ourselves to know.

There are many accounts of knowledge current in epistemology. One of them, the relevant alternatives theory, provides a frame on which many contemporary ideas about knowledge can be presented. According to this account when a person forms a belief there are various possibilities which have to be excluded if the belief is to count as knowledge. For example to know that my bicycle is in the shed I may have to rule out the possibility that the friend who borrowed it yesterday did not return it as promised, or that it has been stolen. Without some assurance on these points my belief is naïve complacency or wishful thinking rather than knowledge. On almost all accounts I do not have to exclude the possibility that the bike was stolen by aliens, or even that it has been confiscated by my bank. These are not relevant alternatives in my situation, or at any rate they are not unless my situation has some bizarre elements. Exactly what makes an alternative relevant in a given situation is a subtle issue that divides various approaches. (Dretske 2000, Lewis 1996.)

Sometimes the fact that an alternative ought to be excluded is a mechanical matter, a matter of good epistemic training. Sometimes, though, it requires that a person be subtly in tune with the demands of the situation. Suppose for example that you are in charge of a project to establish whether the chemicals used in the manufacture of a brand of babies' bottles are carcinogenic. You are supervising a team of researchers who have to analyse the plastics that result from the manufacturing process, test them in cell culture models, test them on animals, investigate breakdown paths for them in terms of chemical theory, construct computer models for their interaction with various enzymes, and more. The aim is to be able to say that you know that the chemical is or is not safe. You clearly have to check such things as that the composition of the bottles really is what it is claimed to be, and whether familiar digestive enzymes degrade the plastics into well-known carcinogens. But there are many other things you may have to investigate. Suppose that preliminary results suggest that the plastics interact with mild acids to produce a family of chemicals that are not thought to be harmful, but which have been very little studied since they are rarely associated with food. Should you get into issues about the basic chemistry of this family? Suppose that the results for one kind of enzyme are different for

those for others: should you check whether the person charged with doing that set of experiments is less thorough than the rest of your team?

You will have difficult decisions to make about which possibilities to investigate. You are likely to *worry* about some of them; you will *be haunted* by the thought that some subtle interaction may have gone unnoticed. You will feel *responsible* for the accuracy of your results and the performance of your team; you will be *concerned* about anomalies for which you have no good explanation. You will be *fascinated* by preliminary results that suggest that the picture is not what you originally thought, though you may also be worried by them. You will be *attracted to* lines of investigation that might settle questions that arise during the project, and *wary* of others because of their potentiality to distract your attention or waste your time. You will be *satisfied* that you have ruled out some worrying possibilities, and *unsatisfied* with respect to your investigation of others.

Worry (haunting, obsession), concern (responsibility), interest (fascination, attraction, wariness), (dis)satisfaction. These are epistemic emotions that are linked to a common theme. That is the situation of a person facing a large network of possible topics to investigate. The

topics branch into subtopics, possibly endlessly. She has questions that she wants the answers to, and usually reasons why she wants them, and needs to define and carry out a strategy for getting to a satisfying answer in a limited time given limited resources. So she has to look ahead, and at suitable times take stock. When looking ahead she will fasten herself on some lines of investigation, to the exclusion of others; and when taking stock she will consider whether she has fastened on and excluded the right ones. It is like any other complex project requiring a large personal investment: there are delicate questions of emphasis and strategy, and some of them require long-term attention and mobilisation of resources. We could not manage such projects without emotions of self-management.

The question that haunts this chapter is still with us. Grant that when people undertake serious epistemic projects they experience emotions such as those I have listed. Grant even that unless they experienced these emotions they could not carry out these projects as intended: they would not end up with knowledge. Does it follow that it is the emotions as emotions that are essential, rather than the associated epistemic virtues? The emotions might just be side-effects. (The same questions can arise with morally as well as epistemically relevant emotions.) I think

we can put this worry to rest in the case of emotions associated with finding and eliminating relevant alternatives.

Consider epistemic worry. The scientist of a few paragraphs back, investigating possible carcinogens in baby bottles, may early in her investigation have considered the possibility that a well-established carcinogen is produced by interaction of the plastic with normal food acidity or with digestive enzymes. She may have investigated the obvious pathways by which it might be produced and have satisfied herself that they do not lead to it. But that does not show that it does not result from some unobvious pathway. To deal with that, she will remain alert for chemical processes involving the carcinogen and its precursors. She will notice them when they arise in the course of other considerations, and she will try to imagine possible such processes. Most likely this alertness and this imagination cannot be carried out at one moment and separately from other investigations: they have to be a constant background theme, ready to surface at opportune moments. That is to say, they have to *worry* the person, haunt her in fact. It is not just that the person has to have the epistemic virtue of worrying about the right possibilities at the right moments and to the right degree. The worry has to work on her as epistemic motive. It has to nag.

Worry gives a model for the operation of other epistemic concerns, such as standing curiosity or concern. Suppose that in the course of investigating the possible carcinogenicity of the bottles, our chemist discovers that an enzyme that should be disintegrating a certain protein is not. This fact seems irrelevant to the problem at hand, but it is intriguing. It would be wrong to divert the investigation to it, but it is too interesting to ignore. So she remains vigilant, hoping that something the research team discovers will give a clue to the anomaly. Her vigilance is driven by curiosity about the anomaly, and hope that they will come across something relevant to it. The curiosity is not a side effect of the epistemic virtue, but a factor intrinsic to its operation. And it operates through a pressure on the person's patterns of awareness, what she notices and ignores, so that it comes with a characteristic feeling

Knowledge requires exploration of a maze of possibilities, some consistent with the fact that is known, and some incompatible with it. Some of this exploration is impossible for us unless we are prompted, pushed, and goaded by epistemic emotions such as worry, fascination, and curiosity. The relation between the emotions and the virtues here is not unique to the epistemic domain. The normal human operation of many virtues involves the activation of emotions that

move the agent to the required pattern of action. Kindness for example usually involves the sentiment of affection; fair-mindedness often involves the sense of injustice; courage that of outrage. In none of these cases is the emotion always required for the operation of the virtue, but normal human beings would find it hard to sustain the virtue if they were not capable of the emotion. So too with knowledge. There are many circumstances where unmotivated epistemic virtues need not be driven by epistemic emotions, but where a subtle or complex network of alternative possibilities needs to be explored, creatures at all like us will need to care about what facts they hope to discover.

responsibility

In the case of the chemist the investigation was not driven by pure scientific curiosity. A carcinogen in baby bottles is a deadly threat, and if the scientist has ignored some factor that later proves to have awful consequences she is likely to feel a kind of epistemic guilt. She will feel that she ought to have known better. (See Buri Choy 2008.) We usually have a practical reason for inquiry, and very often this reason involves the welfare of others. We are then responsible for finding out truths relevant to their concerns, and we will be concerned not to fail in this responsibility. Again there is a distinction between virtues and emotions. One can

exercise the virtue of epistemic responsibility without experiencing any emotion. The emotion I shall focus on here is that of anticipated remorse: one feels a foretaste of the regretful feelings consequent on not living up to one's responsibility, which spurs one's diligence on. Since the concern is with epistemic responsibility, the remorse in question is that of not having carried out an inquiry as one should have.

The responsibility for an object of concern, typically another person, can be separated from the responsibility for an aspect of the inquiry. Consider a babysitter. He is spending the evening in the house of a small child, and his core responsibility is to ensure that the child survives the evening unharmed. There are things that he needs to be informed of in order to do this, such as whether the child is awake or asleep, whether the child's breathing and temperature are normal, whether the house is on fire. Most of these are easy to ascertain, but the babysitter is adolescent and easily distracted, particularly by the presence of his girlfriend who drops around, against the wishes of the child's parents, for an evening of smooching and television watching. Suppose that during a two hour stretch the babysitter does not check on the child's well-being or pay attention to the condition of the house. The babysitter is acting irresponsibly. Since he has not yet developed habits of responsible action the easiest way for him to act responsibly

would be to feel concerned about the child's welfare in a quasi-parental way. He would then have a crude emotion of responsibility which would generate a rudimentary virtue.

If the babysitter had felt responsible for the child's wellbeing, he would have paid less attention to his girlfriend and more to the state of the child and the house. He would have taken on a responsibility to stay informed about the child and the house. In this way the emotion of moral responsibility, with a particular person and situation as its objects, generates an emotion of epistemic responsibility, with the gathering of information as its objects. Like other epistemic emotions, the feeling of responsibility can instigate open-ended projects with unspecific aims: the babysitter may become curious about where the fire extinguisher and the first aid kit are and whether they have been well maintained.

The emotion of responsibility is associated with epistemic worry. If you feel responsible for knowing something you worry about possible leads you have not explored and possibilities you have not excluded. These may nag at you, leading to scrupulous or obsessive investigation, checking, and imagination. You need to set your mind at rest. Sometimes the result is desirable, in that the person proceeds in an epistemically responsible way. Sometimes it is an obsessive

distraction from more important things. But whether or not it is functioning as an epistemic virtue, it is an epistemic emotion.

epistemic consequences of non-epistemic emotions

Most emotions are non-epistemic. Fear, anger, or sadness, for example, are not usually directed at knowing or believing but at the threatening, offending, or disappointing thing or situation.

But most emotions also generate an interest in knowing. If you are afraid you want to know how to get away, and if you are angry you want to know how to hurt. Very often this interest in knowing generates an epistemic emotion. If you are afraid of something you may have a very live curiosity about ways of avoiding it, which may direct your intellectual energies in the typical way of epistemic emotions. This may become obsessive, and may spread to an interest everything about the feared object; it is not unusual for people to have an abnormally intense interest in things they fear or hate. There is a natural rationale for this: if something is dangerous then any information about it might be useful. Of course for finite creatures like us the time and effort expended on gathering not-obviously useful information about dangerous things should be proportionate to how dangerous they are. Very often the focus on the object

of the emotion is disproportionate. Then the epistemic emotion is irrational, but it is still an epistemic emotion. All the more reason for distinguishing between emotions and virtues.

Emotions are complex states combining cognitive and affective elements, in ways that are discussed by Deigh's and Roberts' chapters in this book. An emotion nearly always has an associated cognitive aspect: a collection of beliefs and desires concerning the object of the emotion with themes characteristic of the emotion. In crude stereotype if you fear something you believe it is dangerous and want to get away from it, and if you hate something you believe it is bad and want to hurt it. As many writers (for example Goldie 2000) have pointed out, these formulas are often too crude. Someone can have a fear of a particular spider even though they believe that it is completely harmless. And their desire to get away may be motivated more by the unpleasantness of the sensation of fear than by any intrinsic benefit of distance from the tiny harmless creature; in fact, the person may say that they do not want to avoid the spider though they find themselves tending to move away. In many such cases what we have instead of full-blown cognitive states are cognitive tendencies: the person afraid of the tiny spider will be more receptive to evidence that it is poisonous than if she was not afraid, and will be more interested in random facts about it. These are likely to be manifested in epistemic emotions.

The arachnophobe will look frequently at the spider, notice when and where it moves, and will go out of her way to open a book entitled *One hundred small but deadly spiders*. These are epistemic strategies, the strategies that would result from epistemic emotions of interest and curiosity about the spider.

Often an emotion has no conscious affect. This is most likely when we do not want to know that we are subject to it, as when we dislike a person that we ought to love. Quite often when this is the case the unconscious emotion will generate an epistemic emotion of which the person is conscious, and this will be a clue for the person about the existence of the primary emotion. The person who does not know that they have come to dislike their spouse may find that they are fascinated by divorce-advice stories in popular magazines, find themselves trying to remember the plot of the old Marcello Mastroianni film *Divorzio all'italiana*, and listen very patiently to friends' stories of the escapades that led to the end of their marriages. In typical Freudian style this may generalize into an interest in escape in general, so that facts and stories about getaways become more interesting to the person. Someone who does not know that she is afraid of men may ask herself why her career as a biologist is driven by an inquiry into the hypothesis that groups of females need to incorporate males as a protection against other

groups of females armed with males. The epistemic emotion is often easier to detect than the underlying hatred or fear because our patterns of inquiry cannot function without a lot of conscious input, so that we are often aware of their general direction. Of course the inferences from the epistemic strategy first to the epistemic emotion and then to the underlying emotion are dangerous and fallible. We are often wrong about what we feel, especially when we are driven by theories about ourselves. And of course many epistemic motions are not generated in anything like this way.

conclusion: the persistence of curiosity

The aim of this chapter has been to defend the existence and necessity of epistemic emotions. At the beginning I referred to the fact that deficits in the capacity to feel emotions are often linked to cognitive deficits. But I warned that this may not tell us much about whether we need emotions in order to think, in particular to acquire accurate beliefs. An alternative hypothesis is that human beings happen to be wired up in a way that means that damage to the capacity to experience emotions tends to involve damage that interferes with the workings of some epistemic virtues.

I have presented some reasons for thinking that epistemic emotions play a more essential role than this hypothesis would suggest. Inquiry based on emotion-less virtues would tend to be shallower and less disinterested than much of our inquiry is. Much inquiry is shaped by the ambition to acquire knowledge rather than simple evidenced belief, which is closely linked to alternative-elimination procedures which easily exploit emotions of exploration and persistence. One theme that has run through these and other considerations has been the need for persistent motivation impelling us to follow up lines of inquiry to their ends and develop new lines when the ones we have followed have got to unsatisfying ends.

It is appealing to describe this motivation in biological terms, as following up scents, foraging, and exploring. A domestic rabbit, for example, put in a new environment, will explore it thoroughly, frequently rehearsing the routes that return to a safe location. A dog in a park will take stock of all the old and new dog smells, updating its database of who is in the neighbourhood. These are forms of curiosity, as basic an emotion as fear, anger, and affection. The most important feature of curiosity, for our purposes, is its persistent, hard to satisfy, quality. You may have acquired a perfectly serviceable belief, but curiosity drives you on to find a better one, or to check out the remote likelihood that it is mistaken. You may have explored

all the lines of inquiry into a topic that you can think of, but in the middle of the night you find yourself toying with far-fetched ways of getting more information or applying different kinds of consideration. These are signs of curiosity, intrigue, and fascination. It is worth noting though, since the readership of this Handbook is largely scholars, students and others whose lives are dominated by inquiry, how narrow the divide is between these emotions and other less admirable ones: obsession, compulsion, nosiness, fixation.

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