CHAPTER 8

INFORMATION AND THE INTELLECT

(RIGHT AND PROPER USES OF MEMORY)

Our story of memory so far

A most precious possession

We have noted in previous chapters how information and memory are often synonymous. In Chapter 6, we said that they are connected with everything, and with everything we do. However, as in Chapter 6, we are still concerned at the moment mostly with the popular meaning of memory. This is the memory in our minds that we use for all our thinking and doing. In human beings, and possibly all living creatures, it is memory that is the basis of consciousness. Without our mind and memory, we would not be conscious of anything. We would be *unconscious*. Nor would we have a subconscious, for that too depends on memory. Human memory is therefore a most precious possession. Its right and proper uses are of utmost importance to us. In the last chapter we described two primary functions of mind and memory that are certainly in this category; the making of abstracts of our perceptions, and the making of analogies. An important extension of the latter is the building of "stories" that feed our imagination. Originally, the purpose of making analogies was almost certainly to detect danger and to help people find food and shelter. Nowadays, analogies are invaluable in helping us to manage our daily affairs, to do business, to progress, to discover, to invent, to create, and to anticipate the future. In our dreams and dreamlike states also, the mind continues to draw analogies and make up "stories." They may be wild, and at times outrageous. We will take a closer look at them, and the way memory is used in our dreams, in Chapter 9.

Physical properties

In Chapter 6, we speculated on the physical properties of memory and on the kind of substance it could be. We asserted that whatever a unit of memory is, it is infinitesimally small. It is small beyond anything that we can measure or imagine. It exists we believe in the smallest particle of matter. To give a name to it, we coined the term microdot. We accept that memory is produced and processed in the brain. We believe however that, by using the blood stream or the lymph glands as a carrier,

microdots of memory may also move around the body. In doing this, our memory would be joining in with hormones, amino acids, and whatever else continuously circulates within us. Some microdots might go astray and get lost in the flesh. Some might even get separated from the human body. Some particles might even be used in communicating telepathically, as some creatures seem to do when living in colonies or migrating. Some writers have suggested that memory exists in "fields of resonance" around us. From this, in Chapters 3 and 6, we speculated on the use of frequencies in storing memory. We also toyed with the idea of memory existing in a fourth dimension of space. But whatever the nature of memory, and wherever it is located, we believe that memory is a passive substance. Before it can become meaningful, usable, and active, it needs a language and an agent like the mind to interpret it. In Chapter 7, we looked at the role of language and at methods the mind might use. It seemed possible that in the mind we could have both a master memory and a working memory. We could have *stacks* of memory some of which could be different versions of each other, providing us with the sometimes conflicting views that we have of things. Some memory could be permanent, some semi-permanent, while some memory like working memory, images, and dreams, could be transient and eventually discarded.

Legitimate uses

The first crucial ingredient of all human activity is building up memory. This is so, whether we want to know who we are, where we are, what to do next, what to eat, how to use our skills, how to manage our life, or just to solve a problem. In conjunction with brain, mind, and body, memory controls our growth. It forms our outlook, guides our actions, and makes us what we are. Memory is our history and our blue print for the future. Memory is the passive part of our information while the active part of it is in our brain or mind. In the present chapter we will look at some vital uses of memory. We use names for these functions that are readily understood although the functions themselves are perhaps sometimes ambiguous. At least, the names are less controversial than the way in which their functions work. We still know so little about how our minds work. We will be looking at functions that come naturally and instinctively to us, and which nature obviously intends us to have. We will leave until later chapters more controversial uses of memory. In these, we include memory's part in curing illness by faith and prayer; experiments in Mind control; the physical manipulation of memory for dubious purposes; forcing one's will on others; voodooism; telepathy; and the possibility that one day (when nature has revealed more of its secrets to us) it might be possible to read other people's thoughts. To be able to check physically what people are thinking would alter our lives immeasurably. It is to be hoped that, before people experiment with memory in this way, they will have developed the maturity and good sense to act responsibly and safely in all that they do. In wrong hands, an ability to read other people's memory (let alone change it) could be disastrous for the human race. It could be as bad as, if not worse than, the uncontrolled use of nuclear energy and genetic engineering. We will also leave until later chapters our comments on dangerous misuses of information, and the role of memory in spiritualism, seeing ghosts, and other phenomena.

Great variety

For the present then, we will look at natural, right, and proper, ways in which our minds use memory. We will note that memory is not just a collection of facts and thoughts or descriptive data. It is also a memory of know how, talents, and skills. Knowledge of this kind is just as much a part of our memory as anything else that we remember. We will refer again, if only briefly, to memory like DNA and RNA that controls the building and growth of the body. Similarly, we will not venture very deeply into memory that is used by the body's immune system or when carrying out involuntary and instinctive actions. This primary memory is not directly a part our present studies but it is still *information*. It is memory we use subconsciously. It is memory that may have common elements with all our memory, and not least with memory particles that we have called microdots. To omit *all* reference to it would be a mistake. We will move on to noting how, from primitive times, memory has been used to recognise and identify friend or foe; and how, it has been further developed by all of us on intellectual work. We will be looking at uses of memory that largely we take for granted, namely for remembering, thinking, reasoning; prudence, conscience, intuition, concentration, learning, imagination, inspiration, and sometimes (if only rarely) memory that leads to genius. Memory provides the information which is the starting point for all our action, thought, understanding, insight, reasoning, clarity of expression, moments of truth, envisaging the future, decision, discovery, and invention. It is also the storehouse and instigator of all our emotions. Emotions colour the information we hold and influence our actions sometimes wisely, sometimes unwisely. Such is the might and power of mind and memory. If we use their properties carefully, all is well. Conversely, if we use them without care (as we will see in later chapters) many ill starred consequences may follow.

Instinctive actions and re-actions

Memory at its most basic

The most basically ingrained information in our "memory," that we know of, is that which we inherit in our DNA and RNA molecules. This is not memory in the customary sense, nor is it something we are consciously aware of. Rather it is information that is given to us at the start of life. It is information that is distributed throughout our body, guides our growth, and is aware of what we will become. Over time, it reveals what we are. DNA and RNA molecules are seeds of life. In David Boehm's scenarios, they could be enfolded capsules of information. Given time and space they are unfolded and their content is revealed. On the face of things, DNA/RNA memory is very different and distinct from the memory that we associate with the conscious mind and thinking. The connections between DNA, RNA, and our thinking powers, may however be closer than we suspect. Is it not possible that in the so far uncharted parts of DNA there resides inherited memory of our ancestors? Whatever the answer, access to our genetic memory and its effect on us is certainly well below the level of our consciousness. This is also often true with our thinking. In both cases, access to our memory is started by an electrical charge or a chemical reaction; as well as possibly by other forces. In seemingly magical ways, the body not only understands DNA and RNA instructions; it knows how to obey them. As with so many of our mental and physical activities, it manages to do it without any conscious help from "*us*."

By instinct & involuntary

Some species (among which human beings are the supreme example) have complex brains, minds, and memories. Many species are not so well endowed, but they often have capabilities that resemble ours. Fish, birds, reptiles, insects, and so on, presumably do not have brains and minds, but they are still capable of doing remarkable things. Living things (including us) do not necessarily need brains to do something. *All species* (even plants), have *instincts*. We do things instinctively. For want of a better term, we will call it "*instinctive memory*." It is memory that tries to protect us, maintain our identity, satisfy natural requirements, respond to the environment, react to emergencies, fend off danger, and quite simply help us survive. Part of this instinct comes to us when we are born. Some of it is an aptitude that is developed automatically later in response to everyday activities and the surroundings. In human beings, with whom we are principally concerned in our study, some of this memory is controlled by our central nervous system. Among our natural instincts are, closing the eyes, blinking, scratching, smiling, nodding, yawning, raising the hand, as well as the useful so-called transparent coping (subconscious operating) that we referred to in Chapter 4. Some of our instinctive memory is developed from experience and emotions, and how we felt and acted previously under similar conditions. We develop memory of how to do things involuntarily. We then do many things instinctively. To a large extent, this memory is in our subconscious. Past memories join with current events, rekindle emotions, and sometimes intensify them; producing thoughtless action before reason has had time or chance to intervene. The antidote to such thoughtless actions, as we noted in Chapter 3, is to have what *Daniel Goleman* calls a good "Emotions IQ."

Developing our instincts

While many of our instincts seem to be almost innate and to come to us in our genes, they have still to be "*learned*." We have the aptitudes, but even basic skills such as,—how to talk, walk, run, swim, and ride,—have to be "*learned*." As we noted in the last chapter there is a school of thought that believes that most, if not all, of our abilities already exist and are pre-recorded in us. If this is true, the mind is teaching *us* and our learning is a process of "unlocking" the information. But, whichever belief is true, it makes little difference to our story. In both cases, learning means much the same thing. Before we can readily use what we learn, our knowledge has to be *calibrated and tried out* in the slow domain of time. This is what we really mean by "learning." We may not know the language of the subconscious but to survive we have to find ways of communicating with it. We may or may not inherit natural aptitudes and skills; but before we can use them they have to be learned, developed, and remembered. Some of us are fortunate and do it more quickly than others. In this way we remember and develop ourselves as individuals. Like DNA and RNA, the memory of our "know how" may be distributed in the body. And even then, even if we have the knowledge of how to do something, it is still only one half of the task. The other half of our ability depends on the fitness of our brain, our bodily joints, and our muscles, to carry out the instructions. As our body ages, we do fewer things than we used to do. The purely *electronic* circuits of our mind, the information and the know how that we once used (perhaps very successfully), may still be there as fresh as ever; but sadly the *mechanical* parts of our body may have become

worn and wearied and unable to do what we ask Our involuntary actions are less involuntary than they were. We may become less and less able to do the things we would like to do. However, all the things that we do, or would like to do, are undeniably based on *information* and that information is still there and part of our memory.

Dedicated and flexible tasks

When we say that some functions of our mind are instinctive and involuntary, they remind us of the dedicated (Special Purpose) operations in computing that we identified in Chapter 4. They are carried out for the most part subconsciously, whereas our conscious actions correspond more to what General Purpose computers do. Our involuntary, instinctive, actions are dedicated and based on unchangeable memory. They are single purpose. Our conscious acts, however, are controlled by a variable, general purpose, flexible, and modifiable memory, that may be used on any number of tasks in a great variety of ways. Once our instinctive and involuntary functions have been activated by an electrical like charge or pulse, they work extremely well and automatically. They are not designed to, nor can they, do anything else unless (as sometimes happens) our mental wires get crossed and things go wrong. Memory that controls these actions is usually well protected. It is activated in the lower levels of our subconscious mind, rather like silicon chips that are activated deep in the heart of a computer. Like a computer, our bodies probably keep dedicated memory and general purpose memory separate and independent of each other. Dedicated memory is likely to include memory that we referred to in Chapter 3 as *"unshakeable."* It could include protective memory that helps to safeguard life and limb. It is inviolable. It is instinctive, and it is ingrained within us. It is possible that there is also other ingrained information in our memory that is not quite so legitimate; that we are not aware of, and which may have got there without our knowledge. It is possible that our senses may have taken in this information at some time or other without *our knowing*, even possibly by telepathy, but that is a different part of our story. We will return to it in a later chapter.

Remembering

To recognise is to identify

It may be stating the obvious to say that the first purpose of memory is to help us to remember. From primitive times to modern day, memory has been nature's way of helping us to recognise and identify the world around us. After much trial, time, error, and ill fated consequence, primitive people used their memory to distinguish between friend and foe, to know which food was safe to eat, and which was poisonous; which places were safe to venture into, and which were taboo. Memory, however imperfect it may be, is still our first protection against a hostile world. By matching what we remember with what we can see and sense, we know whether it is safe or not to proceed. We can feel assured, or otherwise, that we are secure and not under threat. Memory keeps us informed of who we are, where we are, and how we fit into the world. Remembering is the means by which we gain access to the records of our lifetime, and it is an essential part of our survival. This possibly is why our minds first

began to make analogies and associations out of information. Unless we can remember something in relation to the world around us we are nothing. "Remembering" is the first stage of thinking and doing. If we wish to do anything at all we must first remember where we start from, and what we already know. When we have learned to do something and wish to do it again, then we must remember how we did it before. It is not always easy to remember what we have "learned" but, by thinking hard (a difficult process to define), we strengthen our memories and our resolve; and are usually successful. Sometimes remembering is painful. If it is a name that we want to remember, we may do it by using mnemonics or a stratagem like trying out each letter of the alphabet to see if it is the first letter of the name. It may still be a painful operation, and possibly a little boring. If we are trying to think of a word we may use similar tactics. When we succeed, it is a triumph of mind and memory. We may feel pleased with ourselves. There is no activity, mental or otherwise, that doesn't first require some form of remembering. Like a computer, the mind cannot function unless it first finds some information on which to start. For human beings that information is in our memory, even if later we supplement it from other sources.

Tuning in and recall

Locating the memory that we want, as we have said before, is not unlike *tuning into* a radio frequency or a wavelength in the electromagnetic spectrum. However, *"tuning in"* is still only the first step. To make full use of the memory that we tune into, we have to look for other related information and associate it in meaningful ways. To do this, the mind uses a variety of aids and techniques. Possibly many of them are similar to those that we said in Chapters 3 and 4 are used in computing. The way in which our memory is condensed, stored, accessed, and re-expanded, has a direct bearing on how quickly and accurately we remember. The concept of nested sets of data is a natural and intrinsic way of storing and retrieving information whether this is done by a computer or our minds. The computer's methods of addressing memory indirectly could also have similarities with the mind's methods. Memory particles that point both back to one address and forward to another could be one way of producing chains of memory related to some particular event. Chains of memory seem to exist whenever lost in thought we say to ourselves, "Oh, where was I?" We then go hopping back in our thoughts to some point where we were a few moments ago. The concordance and cross referencing techniques that we use in computers are other methods that the mind might use when looking for relationships between different parts of our memory. By using these techniques the mind would be able to scan, select, or reject, large quantities of data in very quick time enabling it to pin point the memories we want. To do this in some circumstances, however, the mind may have to search through its entire memory from beginning to end; in the same way that computers sometimes also do.

The influence of language

Like the processing of any information, remembering or recalling information in the mind is a process. Sometimes our remembering is transparent. We remember but we are not aware we are remembering. Our remembering may be a conscious operation or it may be helped by extraneous aids and prompts from our subconscious. But in any case, to be successful, remembering requires a language.

As we showed in Chapters 3 and 7, our skill in handling information often depends on the versatility of language as well as its limitations. Language can help us but it can also misdirect us. We know very little about the language (s) of our subconscious. At the conscious level, however, there is no doubt that in dealing with our memory we use a lot of natural language. The use of alphabet mnemonics that we referred to earlier is one trivial example. Without language of some kind, we can't express what we mean either to ourselves or to others. The reason we find it difficult to recall our earliest childhood memories (say before the age of three) is presumably because at that time we did not know many words. We had not yet then learned our native tongue. Faint memories that we have of those times may be described vicariously by words we have since learned. But, as we noted in the last chapter, there are many languages besides the language of words. Vague emotional memories from pre-childhood days that we cannot now put into words may still linger in the subconscious mind, and may influence us long after we have grown up. One language that obviously goes back to before childhood is the language that helps us to recognise faces and features. The language that enables a young baby to recognise the friendly face of its mother and to appreciate its happy comfortable surroundings is a language without words.

The role of microdots

Sometimes, when we try to remember something, we have only a vague notion of what we are looking for. We need help to decide what we want. Like looking for needles in a haystack, we search through more and more detail in our memory. Gradually with effort and will power we get a glimmer of the memories we are seeking and we go on to build up a bigger and better picture. We are often amazed if not overjoyed as more and more relevant memory comes to our aid. The rather long time that it sometimes takes to remember could be due to our having inadequate language at the time our memory was created. Slow recall could be caused by both defective and deflective language such as we have discussed. It could also be due to weaknesses in our building up of memory microdots such as we speculated in Chapter 6. Not all events in our lives could be expected to produce the same number of microdots. The greater an impression on our minds, the greater could be the number of microdots created. If only a few microdots are formed for some particular event, reconstructing the memory of it afterwards could be time consuming and difficult. In addition, if we believe that microdots are a bodily substance, it could be that over time some microdots could fade or even be lost. To rebuild old memories, it could be that the mind has first to find a few relevant microdots. It then has to reproduce or regenerate them in quantity; before it sends them off to find other associated memory. Some of this could be *fill in* data such as we discussed in Chapters 1 and 7. The assembled microdots could then presumably be re-combined and revamped until seemingly the memory is reasonably accurate. The pain associated with remembering could be due to the large amount of work that the mind gets through in doing this. No matter how faded the memory of an event may have become; it seems that given enough time, concentration, a few relevant microdots, and the use of good relevant *fill-in* data, the memory of an event (or at least something that resembles it) can always be rebuilt and brought back into our minds. Once a memory is restored it may *seem* as good as new although, perhaps often, it may not be as accurate as we think it is.

More thoughts on computing and people

Reconstructing memory from one or two microdots of memory is reminiscent of what in computing we call *boot-strapping*. Possibly, the mind completes its reconstruction of memory using the *fill in* data from the *Abstraction* processes that we described in Chapters 1 and 7. The computer for its part also uses *fill in* data. It pulls itself up, so to speak, by its *bootstraps.* The computer is started or, as it used to be called, it is "*booted up*" by implementing a few brief instructions. These are entered either manually; or, from some permanently pre-recorded routine, by pressing a button. These instructions call in other instructions that in turn call in other instructions, and so on until the computer has all the memory required to tackle the jobs that are waiting. This rebuilding of memory, as in our own minds, takes place automatically. The computer gets the required data from its memory store and puts it into a working area. On the other hand, there are significant differences between the memory of our mind and the memory of a computer. In a computer, there is no need to protect against a fading memory as there is in a human being. While it is true in computing that data is often duplicated, the purpose of this is mostly for back up and protection against physical damage, loss, or theft, rather than fear that the recordings may deteriorate. There is certainly no need in computing for huge multiple recordings such as we have suggested could be taking place in the human mind;—whether this is in the form of millions of microdots, or in some other form. Computer memory is static and reliably permanent. It doesn't change by itself. Human memory shifts its position automatically in the light of new events. It is volatile; it changes over time, and is fallible. The *fill-in* data that our memory needs to reconstruct events is subjective. The data is subject to individual consciousness and awareness, properties of which (as we have noted) are not germane to a computer. Human remembering is a private, personal, precious, and live experience. It is *emotional*. Our memory may also have physical connections with the body's well being and with our aches and pains, as we will note again in Chapter 10. The act of remembering may actually be mentally and physically therapeutic. As we grow older, it may even help us to restore our waning faculties. On the other hand, remembering by computer (which more accurately we may say is *data retrieval)* is cold, clinical, factual, impersonal, and without emotion.

Remembering is more than a recollection

Human remembering then is much more than a recollection. When we *think* of something, we call to mind or conjure up a new scenario; but when we *remember* something, we *confirm* it. As we suggested in Chapter 6, the very act of remembering is a *confirmation*. It is a *verification* of something. We are *conscious* of what we are doing. We distinguish between old information and new information that is in the present. We may notice how different our memory is from what we thought it was. While our memory has been tucked away it may have changed or become distorted. We may be able to check this by referring to some written document that we made at the time. The mind is not simply reading a label that says, "This is your information just as you recorded it" or "this was your dream." When we remember, we *reconstruct* an image. This may be near to what we noted at the time but that is by no means certain.

At first our memory may be blank or faint; but, if it is jogged or supplemented in some way, we may say immediately, "Oh yes, I do know all about that." The process is very different from looking up an entry in an old typed or hand written diary. Our memory is not so fixed and permanent. Sometimes, possibly, we only "half" remember, or we change our memory to fit in with present day facts. We may even concoct it. It is not always easy to be sure what is real memory and what has more recently been imagined. Our memory may play tricks on us. Our memory, as we may say, lets us down. But nevertheless something like what happened at the time, and the emotions that went with it, may come hurtling back to us. Yes, we say, it happened. I can confirm it. But *how* do we confirm it? Something within us vouches for the truth. But what is being compared with what? To whom or what are we talking? It is a mystery. The mind appears to be checking against something previously recorded although that something may be subjective, possibly fading, and unreliable. The mind could be checking against a master memory or it could be comparing two stacks of memory. *One* could be a stack of the memory that it has just created (from some current event or someone else's description); and, the *other* could be a stack of memory created a long time ago. There is a match between particles in two (or more) stacks. There is *confirmation*! Remarkable too is the fact that our memories may be abstract; or they may be visual, almost as if we were tuning into a television programme. We may start humming a tune that we are reminded of. We become transported back in time. We are not just remembering an impersonal event. We feel again the actual sensations and the feelings that we had, or believe we had, at that time. Emotion is recreated. A once vivid scene may be brought back to life. Pleasant memories can be golden treasures. Horrible memories can haunt and frighten us. There is joy and fear in remembering, a feeling of re-living the past, a feeling that no computer can ever have. The biological link in remembering, as in all the mind's functions, is the difference between living and not living.

Thinking

Thinking starts with memory

Once we are awake, or as we might say in computing, once the mind has been "booted up," it has a few simple instructions to work on. These call in other data, and we begin the almost indefinable process of thinking. On waking, each person's mind probably has a few individual inbuilt instructions, like those in a computer that we call in automatically. In computing we call them *"Autoexec"* (automatically executed) instructions. From then on, our thinking continues on and off for the rest of the waking day. We can always divert our thinking and start thinking about something else, for which the mind presumably calls in other relevant information to work on. Probably our first thoughts on a topic are involuntary. We look at analogies and dreamed up stories that the subconscious mind is continually offering us. However, the conscious mind soon steps in and takes control. Some ideas from our subconscious may be accepted. Others are rejected. But whatever we believe is the nature of thinking and reasoning, it most certainly requires memory and intelligence. It includes searching through masses of information, finding associations, and drawing analogies and conclusions. Just one single thought, one experience, or one idea may be rapidly related to and combined with scores of others which are then examined, manipulated, and kept or discarded, as suits our mood of the moment. In the same way that

the computer gets its instructions from a program, so the mind takes instructions from our mental requests. We first tell our minds what we want doing. It is like saying "Think on these things." The mind then searches through our memory for relevant material, using some key words or ideas as a clue The language that the mind uses could well be an AND, OR, NOT, language like the one we described in Chapter 3; it may be a language of analogy and metaphor; or it may be one of many other language forms we have referred to. As everything gets into place, more instructions are *"fired"* and "*thinking*" begins. Further searches of our memory may follow and go on for quite a long time. Quite often the mind will shake its head and suggest that we "look outside" for our information; which of course we may do adding in yet more information in the process.

Memory is complementary

Memory is only one part of thought. As with all information, if we wish to derive meaning from memory, we need an active agent as we have said. We need an active force (in this case, the brain or the mind armed with language) before anything meaningful can result. Thinking and memory are complementary. If a wonderful memory is accompanied by poor capabilities for thinking and reasoning; for making *intelligent* use of analogies; and for making mental pictures; this is unlikely to lead to many bright ideas. The situation would be like a craftsman having plenty of good raw material but inadequate tools and skills to work on it. On the other hand, an excellent reasoning mechanism without a good memory is also unsatisfactory. This situation would be like a very intelligent farmer having only a few seeds to sow. It would be like a smart computer with nothing much to work on. Using our microdot ideas, good thinking could be helped by the microdot labels that we discussed in Chapter 6. The use of labels, concordances, and other techniques, could lead to a rapid association of ideas, to a rejection of irrelevant data, and to a timely assessment of a situation. A label might cause a jump to a higher level of thinking, wider knowledge and background, and to more abstract thoughts. Labels could also have a vital role in keeping our mental instructions and our memory data quite separate. As in computers, and as we will see in later chapters in the mind, disastrous consequences may follow if for some reason our memory labels are incorrect or misleading. Not least, instructions and factual information in the mind could become mixed and indistinguishable.

Thinking is sometimes subconscious

Depending on one's definition of thinking, it is true to say that our thinking sometimes seems to be subconscious. Certainly, before we think consciously, there seems to have been some *pre-conscious* thought. There is in fact some evidence to show that some of our thinking takes place *well away from* the conscious mind. It can even take place while we are thinking about something entirely different. In this case, our thinking is clearly in the *subconscious.* The thinking might in fact be considered part of our central nervous system rather than the *brain*. Indeed, in a computer (in which its *Operating system* often seems to resemble our Central nervous system) the Operating system is where *preparation* for work (i.e. its thinking) takes place. Subconscious thinking in *our* minds also undoubtedly occurs while we sleep,

although our dreams do often cast doubt on its quality. Perhaps we get good evidence of subconscious thinking when something, that we have temporarily ceased to think about, suddenly projects itself again into our consciousness. It happens even when we are in the middle of thinking about something else. We also become aware of our subconscious thoughts when we have inspiration, when we day dream, and when (although wide awake) we are reminded of our dreams. We have the feeling that, although we are not thinking about something consciously, some thoughts on the subject are still going on below the surface. This passing down of memory into the subconscious is similar to the abstracting process that we described in the last chapter. At each lower level, our memory could become more and more condensed. When it is recalled later it could pick up the necessary *fill in* and collateral information, expanding again as it does so. The possibility that some of our thoughts develop independently in the subconscious could explain why, when our memories are recalled, our thinking is not always consistent. It could be why on some issues our memories seem surprisingly contradictory, and why over time our reasoning changes. Embarrassingly, we may have to admit to changing our mind.

Prudence

Exercising caution

An invaluable service of the mind is to exercise caution when we weigh up information, or whenever we are deciding what action to take. Prudence may be necessary for our physical protection and well being, or it may be a reflection of our conscience and spirit. We are constantly advised to be prudent, to think before we act, to check our facts, not to take them at face value, and not to take unnecessary risks. In this way, our minds will analyse and ponder over our information, and usually we will be left reasonably free of danger. When our mind and body are in good working order, deliberation on what we should or should not do seems to take place at the highest conscious levels of the mind. "We" are in control. We must still not forget however the influence on our thinking of our subconscious with its many analogies and sometimes frightening warnings based on past events. Each person's mind interprets information differently depending on that person's background, experience, memory, predisposition, likes and dislikes, personal character, and so on. A *timid* mind will see more danger and urge more caution than would a robust mind. A *robust* mind on the other hand is more likely to be adventurous and vigorous, inclined to dismiss fears of failure or confrontation, and to be more aggressive. As with all its information, the mind has to strike a balance between what is reasonable and what is to be avoided. We ourselves (if we can be thought of as being something separate from our minds) have to choose from what is before us. The laws of randomness, (the 50:50 outcomes that follow from the laws of randomness), which we discussed in Chapters 2 and 5, seem sometimes to restrict what we can do. However, the gift of choice that we have in making the majority of our decisions is an essential part of living. Prudence is part of that choice.

The mind as arbiter

Much of the caution that the mind exercises for us may be traced back to the *"slow to change"* or *"unshakeable"* data that is in all of us. This, as we suggested in Chapters 1 and 3, is data on which the mind

depends for its viability and sanity. In general, the ease and speed with which the mind may manipulate data is to be welcomed. In a flash we can exchange new worlds for old, but it is always important for us to leave ourselves an escape route back to *reality*. Our *unshakeable* data provides this. In Chapter 2, we spoke of the dangers of self deception in recklessly giving ourselves over to *virtual reality*. We also noted how the *unshakeable* data within us could counter this recklessness by providing us with stable, reliable, and common sense beliefs to fall back on. On the other hand, as we pointed out in Chapter 3, our *unshakeable* data also has negative aspects. The fixed and stubborn views of our *unshakeable* data may sometimes lead us to holding on to dogma, taboo, and prejudice, and even to suffer mental illness. Inflexible, unalterable information in our minds can sometimes be the cause of inhibitions, excessive prudery, squeamishness, and even fear of talking about a subject. We all prefer to talk of pleasant things rather than disagreeable ones. The mind in such cases is arbiter. It helps us to reach sensible solutions that are compatible with the pressures and the world in which we live. We will have more to say later in the book on Political Correctness and the way in which information *influences* and is *influenced by* Society. The information we hold in our minds is affected by present day attitudes and mores. Political Correctness affects all that we say and do.

Conscience

A moral obligation

All of us it would seem have a natural and automatic instinct to store information in our minds. When we refer to or take a look at any information, we have already started remembering. When we make comparisons between parts of it, we are already comparing different situations that have occurred in our lives. We learn from these situations how to survive in a sometimes hostile world. Our *conscience* arises out of the way we analyse and use this information. In the last chapter we suggested that an uneasy conscience could be caused by differences between different stacks of memory in our minds. We reflect on these differences and we try to satisfy ourselves that what we have done, or thought about, is in accordance with some unwritten law that is rooted in our *Unshakeable* data. Some people will argue that conscience is merely something we build up over time as we cope with *reality*. It is they believe a kind of persecutory pain that we inflict on ourselves from infancy onwards, whenever we do not attain the ideals of behaviour and perfection we set ourselves. Others argue that conscience is something beyond experience, which is handed down to us by God when we are born, and that it is part of the moral obligation we have for living. The arguments are reminiscent of those about the innateness of knowledge that we discussed in Chapter 4. But, whatever view we take, it seems that our conscience is a part of that unchangeable (or at least very slow to change) *unshakeable data* that is in all of us. For most of us, living by our conscience (or *wrestling* with it) is a desire to see what we consider is *fair play* and honest action in all that we do and are engaged in. Sometimes we fear retribution if we don't follow the dictates of our conscience. The task is bewildering for our minds because of the many conflicting interests we have. We look in vain for an independent judge. We hope for someone or something to whom we can hand over all our information and ask for an impartial verdict. We *talk* to ourselves. But more than this, we want someone else to talk to, someone to whom we can confess. Some religions conveniently provide this. In short, we feel the need for God to help us. Such a need

supports what *Voltaire* wisely affirmed many years ago that; "If God did not exist, it would be necessary to invent Him[35]". *Blaise Pascal*, the famous French mathematician and philosopher is reported to have said earlier that wise men would *always* believe in God. If there *is no* God, nothing can be lost by believing that there is. If there *is* a God, there is everything to gain by believing it.

The Mind is keeper

The prudence and caution with which mind and memory influence us is based on common sense and conscience. Together with memory, our mind is the keeper of our conscience and guardian of our morals. Conscience is a companion that lives within us and with whom we consult on ethical matters. It tells us what is right and what is wrong. It advises us what to do when there is conflict. If we do not follow our conscience we are unhappy. We may say that we feel a pang of conscience or that something grates against it. Some people will even say that if we cannot come to terms with our conscience, i.e. if we have something on our conscience, this is a sickness of the mind. Certainly, if there is excessive anxiety and worry because of our conscience, it is a cause for concern. It is an aberration that we will address in Chapter 10. For the moment however we may look on our conscience as a guide helping us to do the right thing. When our conscience is assuaged we feel the better for it. We have done what we feel is right. Conscience is the basis of our beliefs, of our faith in human values and in the moral and physical laws by which we appear to be ruled. It is what Immanuel Kant called "*good will*," the will to do good. Whether we go on to do good depends on our *intelligent* reasoning and on the intelligent use of whatever *free will* we have. Collectively, conscience is the basis of human morality. As we see in our next topic, it is intuitive.

Intuition

A product of the subconscious

Whatever stirs our conscience, or indeed whatever triggers our thinking at all, is difficult to imagine. However, like nature with its seeds and flowers, the mind seems to know *intuitively* when the time for something is right. It may be that intuition begins with the instinctive memory that comes to us with life that we referred to earlier. We have an instinct to do or think something. It may be that intuition is the product of some silent communication between our conscious and subconscious minds. In the *downward* process, the results of our thinking and knowledge gained from our experiences seem to be turned over for the subconscious to reflect on. The conscious mind may be taking a rest and asking our subconscious to take over the work. Such delegation would be similar as we noted in Chapter 4 to the way in which a computer consigns some programs to be run in the background while in the foreground it gets on with other jobs. In the *upward* process, thoughts from our subconscious seem to push themselves up into the conscious level. We have a feeling that we are being told something intuitively. We have a strong feeling that something is factually true, although logically we are unable to prove it.

35 Voltaire. Épîtres, xcvi

The subconscious mind talks to us in its own way in a language of analogy and metaphor that is often perhaps more emotional than logical. The information that it passes to us is like that in a seed. It is trying to get out. We may feel relief when it does. We are reminded of *Arthur Koestler's* theories of *holons* that we referred to in Chapter 4, that stability and harmony in nature is achieved by the continuous interchange of information between layers of control. When we feel elated about something, but don't exactly know why, it may be that our subconscious mind has found (or thinks it has found) the answer to something and is drawing our attention to it. It confirms that our subconscious mind is working independently of us. Sometimes our subconscious will appear to be browsing; sometimes half dreaming. At other times it will be alert and keen to tell us of its findings. Perhaps it points out yet another interesting analogy or it makes up yet another story with which it hopes to impress us. What it tells us may come completely out of the blue. When we accept what it tells us, we may feel that we have had a brain wave. If we don't like what it tells us (and, to return to our seed and flower analogy) we may nip it in the bud. We may however still feel we have had an intuition. We may still feel that we have been granted a glimpse of something that was previously hidden from us. We may be amazed and puzzled by the information that the subconscious mind produces for us. We should at least try to understand how and why it does it.

Not all intuitions are brilliant

Not all our intuitions are brilliant. Indeed, often we are wisely advised not to heed the first thing that comes into our head. Even during periods of serious contemplation, meditation, and musing, our thoughts may sometimes wander off along uncontrolled paths producing ideas that do not stand up to reason. Our intuitions may be the result of basic instincts, reveries, wishful thinking, a basically cheerful mood, a despondent disposition, or whatever. There is no way of telling. When we are awake and alert, this does not matter because our brain quickly applies a filter and checks whether the information that our subconscious sends us is plausible. When we are asleep however, as we will see in our chapter on dreams, the offerings from our subconscious are more acceptable to us. This is true no matter how stupid the dreams we have had may seem to be when we are awake. Dreaming apparently takes place when our normal common sense filters are not working and when switches that normally activate our motor nerves and neurons are in the "off" position. It is a time when our defences are down and our higher level reasoning functions are suspended. We know that our dreams are often illogical and even totally absurd, but we can also see that some of the wheels of our mind are still turning. Otherwise we wouldn't dream at all.

Intuition like thinking is inescapable

The mental activities of instinct, remembering, thinking, pangs of conscience, and intuition, that we have referred to are natural, inbuilt, functions of the mind and body. They are as legitimate and proper as breathing, eating food, and, other natural functions. As we grow older we may become indolent and

choose not to use our minds and bodies as much as we might, but while we live we cannot escape our instinctive actions and reactions, our thinking, having intuitive thoughts, and (consciously or otherwise) using information. It is the existence of these ceaseless mechanisms within us that stimulates us, keeps us awake, and prevents us from vegetating. It is these mechanisms that cause us to take up mental challenges like IBM's THMK puzzle that we noted in Chapter 4. It is nature's way of keeping us alive and true to our purpose. It is an important difference between people and computers. It is also an indication why in the end perhaps we may outdo the computer. Long after people have given up arguing whether computers can or cannot think, people themselves will still be thinking. We cannot escape thinking even if we try, although admittedly some of the thinking may not be very profound. It is as if we have been pre-programmed to keep dusting up our memory and to keep exercising our brains in order to keep them agile. Just as the body requires physical exercise to keep it in shape and its muscles in trim, so the mind keeps fit by thinking. Thinking is an important part of the body's survival kit. It is an exercise that keeps us alive and interested in ourselves and in the environment. Even, when we are sad and despairing, thinking is an essential lifeline. Thinking, reasoning, and remembering, are our reality. When we stop thinking we are "dead."

Concentration

Strengthening the will

The two primary processes of the mind, abstraction and analogy that we have referred to may be traced back probably to the beginning of life. From these early uses of memory we can see how all creatures have been able to survive and protect themselves against the elements and other creatures. These functions of memory are as important today as they ever were, but they are also historical. Abstraction and analogy are now automatic, involuntary, and inevitable. They require little self-conscious thought but they are fundamental defences in each and every one of us. Memory today however is not only defensive. Besides helping us to remember and to think, memory has many other right and proper uses. It creates the background for us to learn, to imagine, to have inspiration, to develop our talents, and even to become a genius. We address such topics below. Our brains and memory are now tuned not only to our most basic needs but also to loftier objectives. They help us to invent, paint, portray, do business, think in abstract terms, study, moralise, and philosophise. Even these fine uses of our memory may be only a beginning. Ways in which memory is sometimes used, for example in combating disease and bodily illness (a variation of so called mind over matter) could be more powerful still. We will discuss these possibilities in a later chapter. There is little doubt that the more that people use their memory correctly the more benefit they will get from it. The kind of thinking we are now talking about however is a long way ahead of the automatic reflexive memory with which we started. What we are now discussing is intense concentration of thought. It is *"hard"* thinking with a view to solving problems and doing greater things. Some people go so far as to believe that by hard concentration they can create forces that cause things to happen outside themselves. We touched on this possibility at the end of the last chapter when we referred to the unimaginable powers of the human mind. Some people believe that they can influence the outcome of external events. They try to *will* themselves into winning in a game or a lottery. More sinisterly, some will try by thinking *"black magic"* to *cause* harm unto others.

Conceivably, such concentration of thought (if ever it were possible),would be achieved by concentrating particles of memory in one's own mind; and then *firing* them off, with self generated will power, towards a selected target. We will look at some people's belief in such a possibility in later chapters. It is all part of the mystery and power of information.

Focusing of thought

Beyond mere thinking then, from which as we have said we can never entirely escape, the next most important function of the mind (from which escape is perhaps only too easy) is concentration. We may look on concentration as some extra power that we draw on when we want to reach some important truth or solution. It is a power that is as *invisible* as the information that it works on. It is a power that we invoke when we exclude extraneous thoughts from our reasoning and when we resist the temptation to do other probably more comforting things. It is at the same time like putting one's mind in blinkers so preventing it from looking sideways at irrelevant matters. Concentration of the mind implies bringing together many themes and threads of information that our mind and memory hold but at the same time it excludes many others. It implies focussing on one aspect of information and thinking hard until a satisfactory outcome is reached. Concentration is a valuable exercise in mind control. During concentration, we forgo mental and bodily pleasures and other sensory distractions. Concentration means immersion in a subject and a deep commitment to an objective. It is an important step in learning and in other mental activities that we look at in a moment. In a microdot scenario we could visualise the process as a one of assembling related microdots by using their identity labels and other means of identification, sifting out the relevant, ignoring the irrelevant, and concentrating power on what is left, putting it into order, and then projecting it on to some specified target or subject.

Will Power

The effectiveness of our concentration at any one time depends on the strength and intensity of our will to concentrate, as well as possibly on the quantity and quality of our microdots. Only memory that is most relevant to the particular purpose of the moment is required. Nothing else from the vast store of all the information that makes up our memory is of interest. By sheer will power, all non-wanted microdots have to be kept at arms' length. (If it is accepted that microdots may move round the body, *arms' length* is perhaps an apt expression). However, as we have noted, our subconscious mind may still persist in interrupting our concentration by bringing other information to our notice. When we concentrate we have to resist such distractions. The subconscious in this case may not be a very reliable ally. Ascetics during long periods of meditation and silent contemplation are said to resist all temptation and irrelevant influences. In doing this, they reach extremely high states of mental control. They obliterate from their thoughts everything except information on their chosen subject. Even this ideal concentration may of course be broken by unexpected events of fate, earthquake, typhoon, fire, and flood. In lesser mortals, concentration may also be broken by a lack of determination and will, by flagging interest, by an unexpected telephone call, bodily needs, and by other incidents that persuade us to divert our attention. Concentration may also be weakened, as we have previously suggested, if we are led astray by deficiencies in language; by intriguing associations of words, by the crowding in

of distracting thoughts, by errors in our reasoning, as well as by the mischievous interruptions of an over active subconscious. Faced by all these mental diversions, our minds may well be persuaded that there are other things more worthy of their attention. Our powers of concentration and single minded purpose are sometimes severely tested.

Learning

Learning for the future

One of the main purposes of concentrating the mind is to help us to learn, and one of the main purposes of learning is to acquire knowledge for the future. Our learning may be the learning of a skill, learning how to avoid danger, learning how to resist attack, as well as memorising facts. We may learn something so that it can be a base for later quick reference and study. We may be learning a language, or a poem that we can recite later by heart. The purpose of all learning is to be able to recall at will, and in the quickest possible time, information we have accumulated in our memory. When we concentrate, we often repeat and repeat over and over again what we have learned until its recall is as swift, automatic, and as easily available to us as we want. Whether some knowledge such as our knowing how to do things is implanted in us before we are born,—and the mind teaches us; or whether we acquire knowledge,—and we then teach the mind; is not important (as we noted earlier). What we could be doing in microdot terms is reproducing and *linking* more and more microdots on a given topic, so that they can be reached and recalled at a moment's notice. Linking could be achieved by labelling, date-stamping, and forward and backward addressing techniques, such as we discussed in earlier chapters. Each time we learn something by rote it could be that we produce more and more microdots and more and more *links* between them. Replication, like re-use, is an obvious way of strengthening the *threads* of memory. The more copious our microdots are, the easier it would be to concentrate on them; and greater would be our confidence in what we have learned.

Burning in microdots

If we accept that our memory may consist of particles, and that they are something akin to microdots, it could be that what we mean by learning takes place in four stages; *firstly*, by the creation of microdots (as a result of observing, listening, reading, re-reading, and concentrating, and so forth); *secondly*, by linking and replicating them as freely as possible; *thirdly*, by storing them ready for immediate recall when wanted; and *finally*, by rehearsing our recall abilities until we are satisfied that we can locate quickly what we want whenever we want it. At this point in the process, our learning of the moment may be said to be complete. Some learning may take place in a mood of exuberance and may be driven by a thirst for knowledge when nothing else seems to matter. There is no better fuel for learning than an insatiable interest. Other learning, when we have less interest in a subject, may be dull and tedious. It may mean a lot of toil, mental exertion, and discomfort. It may bring with it uncomfortable connotations and an awareness of unpleasant truths. Ignorance may seem a better option. Ignorance it is said is bliss. Replacing ignorance, challenging the Sphinx, assimilating knowledge, and comparing it

with other information in our memory, can be painful. The pain we experience could come from the effort of creating and assembling microdots, and the continual electrical "*burning in*" of memory. We use the same expression in computing when we say that data is electrically "*burned*" into silicon chips, magnetic disks, and tapes. It is perhaps for these reasons that learning sometimes seems agonisingly slow and tortuous. The pain of sheer mental effort no doubt slows up our learning process. There are however other reasons, which we will look at next, why it sometimes takes us a long time to learn.

Brakes on learning

Despite our best intentions and our will to learn, the human mind can be contrary. Sometimes it is ready and able to absorb information on any subject, from anywhere, and at anytime and with very little conscious effort on our part. At other times, taking in information and learning seems devilishly hard and slow. The harder we try to learn, the harder it seems to be. Even certain words seem to resist being learned while others are accepted at once and with relish. As we discussed earlier, there are linguistic barriers as well as linguistic blessings. Language can encourage us to learn but it can also divert us. Another reason for slow learning may be that our learning mechanisms are not all that they could be. Enthusiasm may be lacking. The mind may not be sufficiently preoccupied with its task. It would rather be doing something else or, if it is feeling lazy (in a lazy frame of mind), it might prefer doing nothing at all. Another cause of slow learning could be that, when we have signalled to the mind that we would like to remember something permanently for rapid recall, the brain and central nervous system are cautious. *The mind* might be concerned to prevent confusion and misunderstanding. It may keep things learned by heart in a separate category of memory. Information that is intended to be *permanent* through learning may be regarded like the *unshakeable* data we have previously described. A place would need to be found for it. The data must not conflict with what we have learned before. It must accord with our present memory and with our present understanding of the world. At least the data must be suitably labelled. If the mind were not to do this, it could become confused. In short, the mind may want to know *why* we want to learn something by heart and whether this is reasonable. The mind could be vetting and filtering microdots, adding labels like "learned under stress," "reasonable," or perhaps "absurd." To be part of our mind's permanent data bank the data would have to be reasonable and trusted. The *central nervous system* might want to be sure that what we are doing is *physically* safe. It might want to avoid being over burdened. It could be too easy for the body and brain to become physically over loaded. It is unreasonable to expect any processor to accept a lot of unchecked data as gospel. Our mind and body could be no exception. They might wish to slow down the making of microdots. Even a computer has buffers and controls to regulate the flow and nature of its input. The unrestricted production of microdots could have unfortunate side effects. To the delight of the unwilling schoolboy, we realise that all this could be the excuse he has been looking for. It could be that the body's brakes on our learning are sometimes ordained by nature. The brakes may be a safety valve and a way of protecting us from overload.

Imagination

Widening the horizons

Beyond concentration and learning, but still certainly very much a proper use of memory, is our imagination. If to concentrate and to learn is to be *introvert*, imagination is *extrovert.* This is true even if our imagination is preceded by very deep thoughts. Imagination gives us a free rein over our subject. Who knows what fantasies each mind entertains in its imaginative moments? These fantasies are like the "exchange of new worlds for old" and the "imaginary worlds" of simulation, that we described in chapters 1 and 2. Computer simulation however is a much more disciplined and controlled activity than its human equivalent. Imagination in a human mind is a part of the *unreal* side of information, even if its purpose is to achieve real benefits. By stretching our memory, and by distorting information into all shapes and size, the mind is able to provide us with vivid pictures and images that whet our appetite for adventure, change, and exciting exploration. The mind is encouraged to widen its horizons, to experiment, and to build on some of the wildest analogies and scenarios that it can muster. The subconscious, with its endless analogies and involuntary contributions to story making, no doubt plays its part. The playful use of language also very often leads us to form new ideas and practical applications. One word leads to another and, in their tow, ideas follow in large numbers one on top of another. It is probably true to say that, of all the inventions and discoveries that have ever been made, most if not all, have been preceded at some time or other by a fertile imagination juggling with words and symbols.

Gathering in microdots

In the microdot world, using one's imagination could mean asking the mind to select, analyse, and link together as great a variety of microdots as it can. This would be many more than would be used in normal thinking. Fortuitous combinations and surprisingly meaningful connections would be seized on and developed. Many more microdots than usual might be converted into pictures, using perhaps even frequency references that we referred to in Chapter 6. Imagination seems likely to be much more visual than abstract. As brain or the mind goes off on its imagination spree, the operation might seem like throwing a pebble into a pool of microdots. At each ripple of the waves that follow, loosely related microdots as well as the more obvious ones could be brought in for study. From random and lucky associations, promising trails could be followed up and more microdots retrieved. All would be assembled, examined, and skilfully manoeuvred to produce novel and unusual ideas and notions. Widely varying situations could be postulated and visualised. These could be as varied and fanciful as fancy takes us and our available memory allows. Here too, however, to avoid absolute nonsense there could be a certain amount of filtering so that unwanted or unsuitable microdots are dismissed and some of the mind's most fanciful creations are rejected. Even memories of our imaginings could sometimes be retained, and so ever more microdots with their appropriate labels might be stored away for future use. It could be a never ending process.

Limits and inhibitions

Assuming that microdots are still the main ingredients of our memory, it could be that our imagination is limited sometimes by a paucity of microdots, by some weakness in their manufacture, by difficulties in recalling them, or by a decline in our thinking and picture forming abilities. The circulation of microdots and easy access to them might also be hindered by a person's state of mind and physical condition. In order to get the most out of any information, as we noted in Chapter 1, it is essential that both its active and passive components should be healthy. We have also noted that people are sometimes inhibited from entertaining certain thoughts at all, because of inflexible principles, customs, and other beliefs that they follow. Certain thoughts are taboo. Regrettably, in such cases our imagination is also curbed. It is not possible to enjoy the riches of a truly freely roaming imagination if restraints are placed in its way. There is also the so called "*unshakeable*" data that we all seem to live by. This could put a brake on our thinking. To these obstacles may be added the sheer volume of information that modern living bestows on us. Our minds almost choke with the amount of information they have to contend with. With all these difficulties to overcome, it would not be surprising if our mind and brain are not able sometimes to manipulate our microdots as well as we would like. If we cannot use our microdots in imaginative ways, we could well be accused of having little imagination. There are many reasons why our minds may refuse to let us imagine. Information has many hidden properties in its make up.

Inspiration

Beyond the imagination

Beyond imagination there is a wonderful gift of nature that we call inspiration. Inspiration goes further than imagination. Whenever we say that we are inspired;—whether we are trying to create something in art, trying to understand a problem, trying to get out of a difficulty, or just wanting to see our way forward,—we have a sudden feeling that something wonderful is intervening on our behalf. We have a feeling that someone, some magical force, or some higher power is helping us. The feeling is a joyous one and usually a high spirited one that comes to us as we say in a *flash*, or it may be a sudden revelation that comes to us after of a period of prolonged rumination. But no matter how the inspiration arrives, and no matter what its origin is, it is usually very welcome. It is another valuable way in which our minds use information. Whereas imagination may at times be an indolent almost dream-like activity, inspiration is always fresh, alert, energetic, and alive. It is positive and uplifting, and it is usually prompted by an urge to do good and beautiful things rather than the reverse. It is information with flair. It is information with some emotional content. It may arise as much from the heart as from reason,—"the heart has its reasons that reason doesn't know." In these cases our inspirations may be harder to realise than first we thought. They may not always lead to success. But inspiration (much more than the imagination) is always enthusiastic. It is a part of the human spirit that we discussed in Chapter 5 and, like the human spirit; it has in it a touch of the divine. To be inspired to do evil, although theoretically possible, is a contradiction in terms. Such an unfortunate possibility depends presumably on a deep belief in Darkness and the Devil. Inspiration in one person often leads to in-

spiration in others. It is contagious. People feel inspired by others or by their work. People can feel impelled to follow in an inspired person's footsteps, to equal and to do even better than has ever been achieved before. It is an example of using information as a power for good as opposed to a power for evil, a dual observation that we made at the very beginning of our story.

Microdots and analogies

Sometimes inspiration is talked about nonchalantly as if it just comes without much effort. In truth it probably occurs only after a great deal of soul searching. When we are inspired we are probably well attuned to our surroundings. We are able more than usual to delve into random parts of our memory, more capable of spotting significant features, and more likely to make clever connections between seemingly unrelated events and data. Through the use of languages and the mind's information mechanisms, we are able to make leaps and bounds in our reasoning. From a *microdotic* point of view we could be reaching and recalling some of our fainter and less numerous microdots, causing them to "*unfold*" and "*grow*," revealing unsuspected truths. We could be making better use than normal of the analogies and involuntary scenarios produced by our subconscious. We could be better placed than normal to take advantage of all the other help that our memory system provides. It could also be that, when our minds are sharp and alert, there is more likelihood of serendipity and an aptitude for manipulating chance. This was a quality that in Chapter 5 we thought would be difficult to find in the artificial intelligence of a computer. Inspiration, like serendipity, is a quality that distinguishes us from computers.

Genius

Beyond inspiration

Beyond inspiration lies genius. Unlike most mortals, who occasionally have brilliant ideas but are unable to hold on to them for long, a genius can not only juggle with and retain ideas but can develop them to the ultimate end and make significant and practical use of them. Unlike talents and skill, the magic of genius cannot be taught or learned. A genius is a rare person. More than most people, a genius will probably have special levels of intelligence and ways of dealing with information. A genius will be equally at home with the abstract as with the material. In both inspiration and genius there is a powerful element of creation. The same information may be available to many of us, but we are unable to see it, and use it in the same creative ways. A genius will be able to delegate more tasks to autonomous thinking and will be capable of spectacular mental acrobatics. A genius will be able to reach down into the lower depths of the mind and skip back quickly to the higher levels of thinking and analysis, without losing balance. Geniuses are more prepared than most of us to take intellectual risks. Possibly they are able to bypass the mind's natural information filters and overcome any breaks and barriers that the mind erects to protect itself. A genius will usually know how to disregard bias and prejudice. Intellectually, a genius will not be afraid to experiment with hypotheses and illusion. He or she may be prepared to go to the furthermost limits of common sense. Sometimes, in pursuit of some goal or

inspiration, a genius may neglect what are thought to be normal necessities of life and may seem to be eccentric. In words taken from an interesting book on Eccentrics[36], it would seem that being a genius is rather like being an eccentric. There is a loosening of the reins of consciousness. This allows the creative person to act on subconscious impulses, even in the face of opposition. Possibly a genius, even while wide awake and alert, is able to wander dangerously through his or her subconscious as we suggested in Chapter 2. Most of us are able to do this only when our mind's guards are down as when we dream. Could it not be that these dangerous sallies into the subconscious are why it is said sometimes, perhaps unfairly, that often there is only a thin line between genius and madness?

Genius knows no bounds

In microdot terms it is possible that a genius disregards or does not produce sufficient microdots to deal with the day to day requirements of living that most of us regard as essential. It may be that it is at these times a genius appears to us strange and eccentric. Possibly some of the remarkable abilities of a genius are a compensation for this shortcoming. Possibly, the mind of a genius is able to deal simultaneously with more than the usual number of microdots; and is able to capture and hold on to them even when at first they may seem irrelevant. A genius is certainly able to resist other pressing demands on the mind's attention. As in the case of inspiration, the mind of a genius may be thought of as free wheeling through memory, associating with and extracting intelligence even from microdots that seem insignificant. In general, a genius is not likely to put any bounds on what he or she considers. Like eminent chess players, a genius is probably able to hold lots of possibilities in the mind at once; or, like a skilful juggler, to keep many balls in the air at a time. A genius is able perhaps to recognise and capture the most significant particles of thought, assemble them, and direct them as required. While the rest of us can only stand and stare, a genius possibly makes magical connections between microdots, revealing their secrets, before moving on to subsequently marvellous inventions and discoveries. More than most of us, a genius may be able to exploit different layers of memory and memory stacks in the human mind that we discussed in the last chapter, switching tirelessly between them. It is even possible that in some mysterious way a genius is able to draw on powers beyond today's concepts of energy and matter. Could it be that, through the gateway of the mind and the subconscious that we speculated on in the last chapter, a genius is able to make much more use of these powers than most of us? Might not a genius sometimes see things from the advantage of a fourth dimension, perhaps say from within the space between the atoms? For the moment we will leave such speculations until later chapters, when we will look at other remarkable events that are happening even now in the information story.

Information is the starting point

Creating memory

However wonderful and remarkable the many ways of using our minds may be, the starting point for all of them—from the simple act of remembering something to the remarkable powers of genius—is

36 David Weeks & Jamie James. Eccentrics

information. To say this in no way detracts from the dedication and mental effort that has to be applied to information to produce these wonders. Some people make much more use of the information in their minds than do others. However, all of it is information; and, when it is in the mind, the name we give to it is memory. Even our most recently acquired information is already memory. Memory is the key to all our mental activity. It is with us all the time. Sometimes memory supports us fully. Sometime it is in conflict with us and leaves us feeling uneasy. Sometimes it is accompanied with strong emotion which is later reconstructed and reinforced causing us to act in powerful and unpredictable ways. Sometimes our memory drives us forward. Sometimes it holds us back. Sometimes it is our partner. Sometimes, e.g. in the shape of our conscience, it is a hard task master. Above all, it gives us consciousness. Without it, we cannot even be conscious. This is the nature of memory even if, as it sometimes seems to do, it enters into us without our asking. All these ways of using memory are natural uses of information. For the most part they are positive, right, and proper ways of using our memory. For all of us, they are among Nature's most bounteous gifts.

Shaping the human role

The use that we make of our memory is a reflection of human thought from earliest primitive times. It spans the ages of all the great thinkers, scientists, and philosophers. It includes all the thought provoking activity that is now taking place in the world; even by the ordinary person. People are using their minds and consuming and manipulating information more than they have ever done before. Processing information in the mind, as well as in the world outside it, occupies a much larger proportion of our daily lives than it ever could have done in primitive times. The priorities of life were very different then. The main pre-occupation of people was how to protect each other and how to survive. Even in those days hard thinking was necessary in order to maintain life, but there was little time to think of anything else. Today's thinking is wider and deeper at every level in society. We are becoming more and more thinking creatures. Our role in the great order of things is changing. Our thinking now ranges over an ever increasing number and variety of subjects and branches of knowledge. It is encouraged continually by the mass media and by other sources of information and it is often abstract. This expansion of thought is certainly taking place and is to be welcomed; even though, regrettably, too much of it perhaps is directed towards material things. In shaping the human role we must never be afraid of information, nor feel inhibited in what we think. On the other hand it is vital that we retain *control* over what we think. We must remain the master of our information and not its slave. We will speculate later on how the increasing use of information is changing society, and may be even our species. The changes may be irreversible but, in the meantime, we must surely welcome, encourage, and value the great gifts of reason and understanding that Nature has given us. We can only wonder in amazement at how such a tremendous amount of information activity can take place in such a small space as the human brain. This fact alone is surely telling us that information is something precious. It is quite different from what previously we may have imagined.