

Chapter 1 Mind, Body and Quality of Life

You probably know the story of the blind men and the elephant. Each man described an entirely different creature depending on which part of the elephant he was touching at the time. You have also probably noticed that many popular books on the science of mind begin with a case history from the author's clinical experience in which the unusual details of the case reveal in stunning fashion some principle of the operation of the brain. This book is not based on clinical experience and moreover it refers at all times to average healthy people who do not have such unusual features - or have not told anybody about them if they have. As an alternative to revisiting medical cases or for that matter actually doing any of the practical experiments you will come across later in this book, you are invited to indulge in what Einstein famously called 'thought experiments' in which you create for yourself an imaginary experience from which something new can be learned.

Imagine that a man is admitted to hospital because he is unsure at times about who or where he is and he responds erratically to what is happening around him. There is something amiss with his mind; he might be said to have partially lost his mind - or at least to have temporarily misplaced it. How would the experts go about finding it for him and repairing it?

The brain chemists, pharmacologists and the like would be able to assay many of the molecules that are known to move from cell to cell and affect brain function to see if there was a chemical imbalance, which is a common source of problems for the mind. Their approach would be to give the patient various drugs to correct any imbalance and if these proved to be effective their names could be added to the long list of chemical substances that are regarded as essential components of the mind. They would say the essence of the mind is the biochemical balance in the brain.

The brain scanners would be able to visualise in colourful images many changes in blood flow and in chemical and electrical activity throughout the brain and, although these patterns are complex and highly variable between individuals, they would surely give some indication of what it was that went missing when the man lost a part of his mind. If this study revealed physical damage in some sections of his brain the problem might be difficult to correct, but at least this evidence would point to those parts of the brain being crucial to the operation of the mind. Therefore intact functioning brain cells are the basis of the mind.

The psychologists would be able to assess his overall mental health from his answers to a host of questions carefully chosen to reveal different aspects of the mind. They could classify his mind according to an accepted typology and also recommend treatments that may include medication and interpersonal activities. They would probably consider the partial absence of his mind to be very much their territory and would expect all other approaches to fall within their purview eventually. The mind is their special subject and they address its outward manifestation in a way that reveals details of the underlying mind processes.

If they were allowed into the hospital the philosophers would have a lot to say about the validity and the reality of the man's thinking process and whether his mind was truly his own or whether he was just sharing in a universal consciousness or perhaps imagining a

world that did not actually exist. Although these and other weighty matters would interest many people in the world at large it is unlikely they would find a place in the clinical investigation.

His spiritual advisor might recommend some meditation, perhaps prayer or religious practice, which could satisfy the thirst for meaning that may have been unquenched in his life resulting in some breakdown in his mind. His family, friends and workmates would also be able to report on the social factors that seemed to aggravate or benefit his condition and correcting these could make a noticeable improvement to the state of his mind. A management consultant could address the decision-making and time-management aspects of his life, which might at least give the appearance that his mind worked better. Finally a stress advisor could suggest ways of alleviating the causes and effects of stress with obvious benefits for the smooth running of his mind. All these people would be inclined to say it doesn't matter which chemicals or parts of his brain are involved or what psychological idiosyncrasies he might have because you can understand and service your mind best by simply looking at the practical aspects of what you do and how you do it. This is the application of the mind in daily life and shows its dependence on social and spiritual factors and the influence of stress.

All these people are quite correct in what they say, but none of them seems to have a description of the mind that is entirely complete or satisfying in its essence. Is the real essence of the mind to be found in our thought, our social relations or spiritual attitude or in the stress patterns of our lives and/or is it due entirely to the activity of certain areas of our brain and the precise mix of the chemicals that are found there? If each of these approaches reveals a different component of one 'elephant' that we call our mind then we will need to stand back and take a broader view, especially as we want to arrive at an explanation that is meaningful, but not too complicated – simple, yet satisfying.

Science and biology in search of the mind

Science in general and biological science in particular afford a much broader view of the problematical patient and the nature of mind, but they can also complicate the story too. The profound developments in scientific thinking throughout the last century greatly expanded the role of science in explanations of consciousness. Firstly the advent of field theory and the fundamental interchangeability of matter and energy spawned new theories about how living things interact with their world. Then the remarkable insights from quantum mechanics produced completely new ways of thinking about the connectivity and interrelatedness of everything from sub-atomic particles to planets and including individual brain cells,.

Now there are many different proposals for a 'theory of everything' that integrates what is known about cosmology, sub-atomic physics, biology and consciousness into a single coherent explanation. A good example of this is Ervin Laszlo's *The Connectivity Hypothesis* and *Science and the Akashic Field*, the latter utilising an ancient Sanskrit term to signify an all-encompassing field of 'information' whereby we are all part of one big mind. There are other kinds of theory based on concepts such as 'the quantum brain' and 'the holographic universe' and an Australian therapist, John James, has a new book in which our 'soul' is described as the personal aspect of an overall energy pattern that he called *The Great Field*. These are all interesting and potentially useful, but, at their present stage of development, they seem to me to be neither simple enough to apply in

our everyday lives nor complete enough to be very satisfying as explanations of the human mind.

One of the most articulate and perceptive observers of the broad subject of consciousness within the scientific context is the English playwright, Michael Frayn, who wrote *The Human Touch - Our Part in the Creation of the Universe*, which is about the irreducible element of subjectivity in our understanding of everything. He discussed the more fundamental laws of science and the attempts to reach agreement within the field of quantum physics that have been fairly fruitless so far, the famous Copenhagen business of his best-known play notwithstanding, and came to this conclusion: “. . . we still end up, just as we do in the Copenhagen interpretation, with a reality that is accessible only partly to the observer, and which is expressible only through his participation in the world.” This brings us back to the need to focus on our own personal experience of our mind.

The science that underpins our personal experience is biology. In recent decades several pioneers in biological science have stopped seeing it as secondary to mathematics, physics and chemistry – merely the application of scientific laws such as the valence principle of chemical bonding to an interesting phenomenon called life – and proposed that biology is the primary science of human existence. One biology professor who made this case very powerfully was Humberto Maturana from Santiago in Chile. This book draws its main themes from the seeds he started to sow more than 30 years ago, which are only now beginning to blossom in the broader science of mind. From biology we can learn what it is to know, what is special about being human, why there is a need for love and many other interesting things about the marvellous human mind. The most famous of all biologists, Charles Darwin, had earlier drawn our attention to the apparent continuity of behavioural and physical characteristics from simpler species through to humans.

Biology is the study of all living things so it is also the study of all self-directed organisms. To be alive is to have a certain kind of autonomy within the medium in which you live. This is more obvious in living things that move, but even those that remain quite still have the ability to control what they do in a profound way. Their cells are sufficiently separate from the world they live in to enable them to carry out completely independent processes such as photosynthesis in plants or the conversion of foodstuffs into heat in warm-blooded animals. Although this degree of autonomy is a fundamental feature of living beings, it was not explained in detail until Francisco Varela, a former student and major collaborator with Maturana, wrote *The Principles of Biological Autonomy* in 1979.

Maturana posed two very basic questions for his research. They were: (1) what is the nature of a living system? (2) what is the process of perception and cognition? We will see as the story unfolds in this book that his answers to these questions drew a single unifying thread through the great fabric of the study of the mind. To try to understand the mind is to try to understand the nature of life even though we may only be able to see through the glass dimly – to paraphrase a famous text. Another biologist aiming in this same direction was Gregory Bateson who wrote *Mind and Nature – A Necessary Unity* in 1979. The answer to Maturana’s first question is contained in the abstract conceptualization known as ‘autopoiesis’ (see later) and this provided the explanatory framework for the answer to his second question. Pioneering thinkers such as Maturana have brought biology to the forefront of scientific explanations about how we use our

mind in our everyday existence; how we make decisions, why we feel glad or sad, what gives us satisfaction and so on.

There are so many avenues of research and thought that make up the main stream of cognitive science today and such a plethora of popular books on neurobiology that I must be quite selective to tell a story that is scientifically coherent yet thoroughly practical in that it deals with what we do with our minds every day. Throughout the years I have worked with this particular biological approach I have noticed that the state of the art in cognitive science and Maturana's thinking seem to have come closer together. I will give some examples of this as we go along.

When Fritjof Capra published *The Web of Life*, which was subtitled *A New Synthesis of Mind and Matter*, in 1996, he drew heavily on what he called the 'Santiago Theory' of Maturana and Varela. He put this within the cultural context of 'deep ecology,' a school of thought founded by the Norwegian philosopher, Arne Naess, who professed that the natural sciences were the only valid means of understanding reality. As the scientific field of ecology grew it brought with it a greater awareness of interconnectedness as a hallmark of Nature – in other words, a better appreciation of what is known as an organic rather than a mechanistic view of the world. Another influential biologist and author, Mary E. Clarke, compared two contrasting world views: the 'billiard ball' model in which isolated individual units move independently and interact by coming into contact with each other *versus* 'Indra's Net' where a Buddhist figure sits atop a jewel-encrusted net in which each jewel is influenced by and reflects every other jewel.

A particular example of the organic approach known as 'process thought' was founded by the legendary Alfred North Whitehead and promoted by John Cobb, an American theologian, and Charles Birch, the Australian professor who wrote extensively about biology within the context of Christianity. They viewed human experience as the highest example of a common reality that attributed "some degree of freedom to choose" to all living things and even molecules and atoms. In other words, they claimed there was a purpose in everything. The way in which the earth itself functions in some ways like a giant living organism was pointed out by the British inventor and chemist, James Lovelock, in the Gaia hypothesis. Thus mind has been found by scientific thinkers to exist in humans, in other living things and in Nature herself, but its nature has still not been simply explained. There is, of course, a huge problem about doing this.

The mind-body problem

We cannot go far in this quest without facing the so-called mind-body problem, which has two parts. Firstly, the fundamentally different nature of matter and mind or your body compared to your thoughts immediately sounds a warning. They not only seem to be physically completely different – your flesh compared to wisps of thought – but what we know about their rules of operation distinguishes them from one another very clearly. They are different domains of scientific explanation so to reduce one to the other or to describe one in terms of the other simply does not work. I will continue with this a little later in this Chapter.

The second part of the mind-body problem is the circularity inherent in what we are doing. Emerson Pugh put it succinctly when he said: "If the human brain were so simple that we could understand it, we would be so simple that we wouldn't!" Author of *The*

Devil's Dictionary, Ambrose Bierce, said something to the effect that mind is a mysterious substance whose chief activity is trying to find out its own nature, which is futile because it has only itself to know itself with. Using our mind to find out what our mind is and does, can there ever be a satisfying conclusion? Perhaps we should not be surprised that those of us who persist in doing this are sometimes viewed with suspicion by our more 'reasonable' companions! In fact there is a scientific principle called Gödel's Theorem regarding 'formally undecidable propositions' which states that no logical system can ever be completely decided within the logic of the system itself.

Fortunately, progress in scientific thinking has given us a way of dealing with this problem because there is a relatively new science of circularity. We cannot expect completeness, however, in our explanation of mind-body science. In fact it is the incompleteness that enriches the study of mind and enables us to enjoy the poetic, aesthetic and imaginative aspects of the human condition; more of that later.

The science of circularity

The new thinking in biology that stemmed from Maturana, Varela, Bateson and many others (Heinz von Foerster, Ernst von Glasersfeld, Gordon Pask, to name a few) has been part of the development of a new branch of science called second-order cybernetics. This science derived from cybernetics, within which powerful new concepts were introduced around the middle of last century. Cybernetics at first grew up alongside the study of systems theory. A system is what you are looking at when you see various component parts working together as one. You can distinguish the individual parts and their relations (which Maturana called the 'structure') from the system as a whole (its overall 'organisation'). Many useful notions flow from this way of thinking, *e.g.* that the whole is not just the sum of its parts.

Cyberneticians developed the idea of positive and negative feedback such as, for example, when a thermostat responds to a change in room temperature by turning a heater or cooler on or off so that the temperature is maintained at a certain preset level. Cybernetics was described as the science of control systems in both biology and machines. This led to thinking about human behaviour as a control system and then to what von Foerster called the 'cybernetics of cybernetics,' or second-order cybernetics, which is the science of observing systems (those that do the observing), rather than the science of the things we observe. This became a crucial tool for studying the circularity of self-organising systems, which all living things are.

We human beings are self-regulating systems. Our bodies keep everything about us in order so beautifully we don't even realise it is happening. All our essential temperatures and pressures and the concentrations of every chemical in our body are maintained at just the right level, despite the changes occurring all the time in the medium in which we have to live. This is called homeostasis, which is part of the broader principle of biological autonomy. We are autonomous unities. We are ourselves. I will explain this basic principle in more detail shortly.

The second basic principle that arises here is that we cannot exist separately from everything else; we must be connected to our environment at all times. Autonomy does not mean separation; it means self-governing. Our ability to self-regulate actually depends on the biological connections that we make with the world around us. We can be

ourselves only if we are a meaningful part of something bigger, *i.e.* the world in which we live. This is really the fundamental human dilemma: how are we able to be ourselves and yet be part of our society at the same time; often they seem to conflict. There is always a tension in this regard. We need the connection with one another to promote our self-regulating process. When people become too isolated for too long you often see a breakdown in their physiological self-regulating processes.

The advent of second-order cybernetics is so important it has been compared by some writers to the invention of the wheel and the printing press because its concepts of autonomy, self-regulation and connection provide a new theory for understanding how we live as individuals and how we live together with others and for achieving better relationships among individuals, groups and societies.

Mind as ‘the great connector’

I have introduced these bits of science at the beginning of our journey because they provide the first opportunity for me to suggest a simple way of thinking about what the mind is and what it does; in other words to give you a working definition of mind. It is our mind that equips us to handle the basic human dilemma mentioned above. Our mind enables us to be ourselves while simultaneously connecting effectively with what is outside of ourselves. This connectivity/autonomy is a biological imperative which would not be possible without the incredible device we call our mind.

My suggestion at this early stage is that you might think of mind as our principal means of connecting with one another and with the world around us in a certain manner that will be explained more fully as the story unfolds. This way of thinking is not exactly the main stream of cognitive science, but it has a good pedigree within the recent generations of this new ‘breed’ of biological science. Bateson compiled a large body of his work into the book, *Steps to an Ecology of Mind*, in 1972, describing the ecological theory of mind as “a revolutionary approach to man’s understanding of himself.” In Mary E. Clarke’s wonderful book, *In Search of Human Nature*, she dismissed the narrow-minded cognitive science that equates mind with brain and, building upon the ecological approach, suggested that “mind is what connects my individual brain-plus-body to the universe, gives my actions meaning and makes them adaptive.” This begins to address the more direct question about where, exactly, might our mind be located.

Where is your mind to be found?

If the question was “where is my body?” there would be no problem. Most of it is right under my nose as the saying goes. Much of it is tangible and visible and the whole thing moves around wherever I go and sometimes seems to weigh more than it should. Under its surface I know there is an extremely complicated collection of at least 50 trillion individual cells arranged into major organs such as the heart, lungs, liver, kidneys, digestive tract and many others. I am also aware that these function as interconnected systems such as the cardiovascular system that circulates freshly-oxygenated blood to every cell, the immune system that checks out and deals with disease-causing agents and the digestive system that sorts the nutrients I need from the other junk I eat, utilising the former and, hopefully, excreting the latter. Through my sensitivity to pain I know about my nervous system that branches like a highway network all over my body and comes

together in a metropolis of activity in that incredible organ, my brain. These are all bits of flesh that I could see and touch as long as I had direct access to them.

Locating the mind is not so easy. Most people think of it as being closely associated with our brain, with good reason, because damage to the brain affects our mental function quite obviously and we know also that the brain is the ‘central nervous system’ and the hub of all the networks of communication within our body. We return now to that primary problem of mind-body science. We know as biologists that each of these brain cells is a hive of biochemical activity involving many different molecules, but all it produces is more of the same molecules. Every cell we have contains coded information in its genes that guides the production of new proteins, which are the building blocks of our body, and every cell is a molecular ‘factory,’ utilising energy sources, excreting waste products and producing the molecules it needs to keep going and also some that may be needed by other cells as well. To a biologist this maelstrom of molecule production is an intricate and beautiful process, but the question is: could it also produce our thoughts and feelings, our memories and wishes and all the stuff of our imagination?

What we experience as our mind seems so different from any chemical substance. It is invisible, intangible, ephemeral and quite mysterious even though we take it for granted in the most matter of fact way. There are several different ways that people have tried to address this mystery. Long ago, before the advent of science, people had no choice but to respect and admire or fear all the mystery because the option of exploring its mechanism did not exist on a large scale. Natural philosophers such as Aristotle did think and write a lot about how the body and mind might work, but their evidence was extremely scanty by the standards of today. The most powerful tradition for understanding mystery was religion or mystical experience and much was written about the mind in relation to the spiritual or non-material realm, which was essentially regarded as another order of reality. The popularity of materialism has swept much of this aside since then and current explanations about the origin of mind fall into three general categories.

If mind arises from matter and not from somewhere else then the first option is that it could be a direct by-product of molecular activity, an epiphenomenon that is incidental to the biological processes in our brain and does not influence these processes itself. The behaviourist psychology that was dominant around the middle of last century is an example of this kind of thinking and it is still quite prevalent in neuroscience today. It is the most materialistic position to take and no less a scientist than Francis Crick, who was a Nobel co-laureate for his discovery of the structure of DNA, supported it even though he called it an ‘astonishing hypothesis.’ The second option is that it could be an emergent property of a biological system that has reached a certain level of complexity. This is based on the systems thinking that also originated in the middle of last century and the subsequent development of complexity science and chaos theory. It is a more philosophical kind of materialism, but effectively avoids bringing in anything from outside the body. Thirdly there is the approach of a number of biologists like Charles Birch who honoured God’s role in all creation and maintained that mind is inherent in the cells in the first place as it is in all matter; in fact it was the force that brought the matter into existence.

When you start to think about what your mind is actually doing your thoughts will not be predominantly about your brain, however. The experience of our mind strongly suggests that it involves more than the contents of our head and you could say it must extend

beyond our body because we use it to become aware of everything we see, hear, smell and touch around us. You and I perceive a whole world other than ourselves and are able to place ourselves within this world, often using our wondrous imagination to create worlds that aren't even there in a physical sense at that time. One person who has written about and studied this in a very direct and practical way is Rupert Sheldrake. He referred to the 'extended mind' as the way our mind seems to reach out beyond our brain into the world around us. The words, attention and intention, come from the Latin *tendere*, which means to stretch. When you form an image of something with your mind that image appears to exist out there in front of you, not inside your head.

Describing the process of your mind is a bit like explaining your experience of watching a television show. The images you see came from a studio and a transmitter through your antenna, but they may as well not exist until you turn on your television set and tune to that channel. In other words it is only when the connection is made that the phenomenon of the television show comes into existence. You would assume it was there somewhere all the time, but it was not a part of your experience so you don't really know whether it was or not. You could say that the television experience is a product of the electronic recording, transmission and playback mechanism, but they would not produce the experience unless the connection is made by your tuning in. Similarly we might ask how the experience of music occurs. I play the guitar and the resultant sound comes from the way the instrument and I are combined as I listen and play. Neither the guitar nor I could make those sounds except by our interaction. The music is made by our connecting and if you connect you will hear it too.

In all this we are saying that mind is not a thing - it is a process, but what kind of process? The established 'textbook' way of thinking about the mechanics of perception such as vision and hearing is of a one-way process whereby information is passively received or collected, but we will see in the first few Chapters of this book that to think instead of perception as a two-way process is very helpful and revealing. Light reflected from an object enters your eye and triggers activity in your brain and at the same time the shape of an image goes out to meet up with the original source of the light to form a sensory circuit. This kind of circular connectivity is typical of the operation of our mind as we shall see. Throughout the so-called information age, which began with the first telephone line and spawned all the different forms of data transmission we know today, we have become culturally attuned to think of our senses as conduits for the receiving of information, but this does not fit the biology as it is known today. Almost all neuroscientists would agree that the mind does not lie in wait in our brain for something to be shown to it, but just how it functions as a 'great connector' is still far from clear.

The mind being closely associated with the body and the brain in particular does not mean that it resides there and it cannot be thought of in isolation from the medium in which we exist. The possibility has been canvassed quite widely that mind or consciousness could be everywhere and we simply tap into it by virtue of our brain and our senses. A Nobel laureate in the field of neuroscience, Sir John Eccles, wrote about this more than 50 years ago. Jungian psychology includes the concept of a 'universal unconscious' and the modern version of a 'Great Field' contains all our individual minds. The idea of a field of energy, or a field as 'an invisible region of influence' as Sheldrake put it, is an extension of scientific materialism dating from the pioneering advances in physics mentioned earlier. Ancients would have had no way of explaining how we can see or hear one another over vast distances because they had no idea of an

electromagnetic field that provides an invisible connectivity. We have no idea whether fields of interaction could exist between us and serve as a medium for our minds, but we cannot dismiss any possibilities for explaining our experience just because they have not been scientifically proven.

Rupert Sheldrake is one who made it clear that it would be folly to regard the mind as something situated in our heads. Humberto Maturana also wrote in some detail his reasons for saying “the mind is not in the head.” Essentially he argued that we cannot equate phenomena of behaviour with phenomena of brain activity because they exist in quite different domains and to lump the two together is not a sound way of thinking. We can look at the relationship between the two, but one cannot be the other.

My approach to locating the mind is firstly to respect the mystery of it, not only because of possible material processes that are not yet known, but also because I think the non-material is worth considering as another order of reality as it was regarded in the earlier history of spiritual experience. It is through the mind that we know about things, but there seems to be a lot that we don't know as well. We will spend the whole of this book still pondering this basic question about the precise situation of our mind in relation to our body and the answer will become clearer in various ways, but will never become certain. That is the nature of the journey and I trust it will be far more a cause for excitement and enjoyment than a reason for despair.

I think and I am

Throughout history it has been necessary to postulate some separate existence for our body and our mind for the convenience of speaking about their differences, but the trend today is to try to put the two together wherever we can. Woody Allen said in the film *Getting Even*: “Is there a split between mind and body, and if so, which is it better to have?” The person who gets most of the credit or shoulders most of the blame when a mind-body split is mentioned is René Descartes whose catch cry even today is ‘I think therefore I am.’ Descartes was a mathematician, philosopher and scientist who lived from 1596 to 1650. He was born in France, but lived mostly in Holland. Apparently he liked to spend all morning in bed, thinking, and it cannot be denied that his thoughts were influential. This habit may have eventually contributed to his death, however, because he contracted pneumonia after being required by the Queen to give her special instruction in the early hours of the morning.

What he was claiming was that the essence of our being or the substrate of our existence was a mind (*res cogitans*) that was quite distinct from the body which was a mere extension of our animal nature (*res extensa*) and essentially mechanical in its operation. This idea distinguished our ‘soul’ from our purely biological form and became the template for much of human thought about mind and body ever since. We will address in this book what the American neurobiologist, Antonio Damasio, called ‘Descartes Error’ as we explore the biological basis of the human mind. Damasio said “we are and then we think” and he equated consciousness with ‘a feeling of knowing,’ which is the direction we are heading in this story.

The remaining background we need to consider here is the question of what our mind is doing for us in everyday life and how that affects the quality of our lives.

What do you expect your mind to do?

With a few possible exceptions such as the ear lobes or the ‘Adam’s apple’ we have a fairly clear idea of what each part of our body is supposed to do. Of course we don’t know the intricate detail of how the individual cells function (unless we are cell biologists and even then our knowledge is very incomplete) or the structure of the many molecules that travel around our body completing circuits of activity, but we know that our heart circulates blood, our lungs transfer oxygen into the blood from the air we breathe, our stomach and intestines digest food and so on.

Of our mind we have great expectations, but saying precisely what they are is not so easy. In a way we expect our mind to do everything. We expect it to think, which is an interesting concept anyway. We say we process thoughts and organise them as if we call them up at will, but in reality all we do is have a stream of them one after the other. Some experts say we can only have one thought at a time, but I know some women who might disagree with that as women are notoriously much better than men at doing several things at once. Anyway we place a huge reliance upon thinking as our best resource for staying alive and being successful so its importance cannot be denied. Mind you a lot of our thoughts lead in the direction of fear and desperation as well.

What about our feelings? They get mixed up with our thoughts all the time yet some of them seem more basic and deep-seated than the frivolous machinations of our thinking. Charles Birch wrote a wonderful book called *Feelings*, which began with the line “Feelings are what matter most in life,” but in most human cultures, the emotional aspect of the mind has to take second place behind the rational because emotionality is supposed to detract from the great reasoning ability that is our chief source of pride as human beings. In this book we will take a much closer look at that and acknowledge the way that the emotions underpin our whole thought process.

We use our mind to make sense of our senses by converting our sensory experiences into perceptions and subsequently into knowing, which is the term I use in this book interchangeably with the term, cognition. We also use it to make decisions as to what to do and one of Maturana’s precepts that will be elaborated further is that doing comes from knowing - in other words, what we do is what we know to do at that time. Communication with one another plays a huge part in our lives and without our mind we could not communicate. We also use our mind to control and manipulate others – let’s face it! Our children, in particular, need to be directed for many years before they can operate safely on their own. In many other situations we would like people to do what we want them to do and we often employ every fibre of our mind to that end.

We use our mind to get all our needs met from the most basic like food and shelter to what Abraham Maslow called belonging, esteem and self-actualization in that order. We will consider these higher-level needs in some detail in this book. In short, we expect our mind to provide a good quality of life, whatever that might be. We expect it to keep us alive and safe and provide us with whatever is pleasurable and satisfying about life.

What is quality of life?

Life can be happy, joyous and free or life can be miserable and wretched. We would prefer to be happy, but it’s not that simple because happiness can be elusive and

unpredictable. Nowadays there are many books about it, but I don't think they have changed a great deal since Bertrand Russell wrote *The Conquest of Happiness* in 1930. Russell was the doyen of all rational thinkers yet he captured the idea of happiness as something that could not be sought directly, but was a by-product of a 'good life.' He wrote that "a man comes to feel himself part of the stream of life, not a hard separate entity like a billiard ball, which can have no relation with other such entities except that of collision. All unhappiness depends upon some . . . lack of integration . . . between the conscious and the unconscious mind . . . between the self and society. The happy man is the man who does not suffer from either of these failures of unity . . . whose personality is neither divided against itself nor pitted against the world. It is in such profound instinctive union with the stream of life that the greatest joy is to be found." I would say that integration and union is our core business in a biological sense and we can achieve it to a greater or lesser extent according to how we consciously choose to use our mind.

Quality of life includes health and innovative physicians like Larry Dossey, beginning with *Space, Time and Medicine* in 1982, recognised the potential of new developments in science for healing the mind along with the body. He wrote several books about the beneficial effects of prayer on recovery from illness, which is at the more mysterious end of the spectrum of what I am explaining about the mind. The subtleties of self-actualization that bring us satisfaction in life are not amenable to simple definition. Explaining elusive concepts is like trying to wrap up water in a parcel or shut the wind into a box, as Alan Watts used to say. To define means to fix and when you get down to it life and mind can't be fixed in that way. As well as being practical this book is meant to be open-ended because our understanding of what is quality of life cannot be captured by a simple formula.

I hope it is clear from this opening Chapter that the reason we can use our mind to talk about our mind is that we are talking about our experience. We will consider in the next Chapter the idea that our brain puts this together in the form of a story. A story has a quality of coherence that serves to 'hold us together' so it is important to our quality of life. A story also has a sense of movement; it is never still and there is always more to come. In this sense the mind's story is very much like the experience of music. It is an 'unfinished symphony' and it is the unfinished aspect of the story that intrigues and motivates us as long as there is also the security of a reasonably familiar thread to follow.

Our mind seems to take an equivocal position with regard to order and sameness. Our great need for security and repeatability is coupled with an almost welcome inevitability that we will not always find it. Music is able to fulfill our expectations in terms of its repetitive elements, but is enriched by the systematic violation of expectations when the tempo changes or a cadence is unresolved - for the time being at least. Music represents and manifests the idea of continuous movement and the holding of a thread while venturing into an unknown future that twists and turns as it will.

Finally quality of life has to do with love, which is a central theme throughout this book. The idea of love appeals to most people, but there are so many ways of describing and appreciating love that it is a seemingly inexhaustible source of activity for the mind – a never-ending search for meaning. Perhaps it is the most basic yearning of our mind; the easiest to excite and the hardest to satisfy. It is a bit like a song that you like: there is a lot more to it than the simple, logical meaning of the lyrics. What you hear at a deeper level

is the melody and the harmony. In this book we are listening also for what another biologist, Darryl Reaney, called the ‘music of the mind.’

In the next Chapter we will consider what it means to know something and the distinction between knowing and not knowing. We will also begin to explore the process of vision as a part of the mind.

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