

EVERYDAY MIND AND LOVE 2018

Session 1 February 8

Welcome to U3A for 2018. Welcome back for many of you. Welcome for the first time if you're new to U3A, which is known as 'learning for pleasure.' I hope this Course will bring us all some pleasure and some useful learning as well.

I certainly enjoy presenting it and I'm here to learn as well. Each year I cover the same broad subject – the workings of the human mind – but each year is different because it's such a huge subject there is always more to explore. There are new books coming out all the time, which I like to study and talk about; I usually bring in a few books so you can check them out. We have a short break halfway through where we can talk individually.

It's called **Everyday** Mind because it's not meant to be a lot of theory or a textbook about the brain or the mind. I'll be posing some practical questions about **your own experience** of mind in everyday life. At the same time I do have a **scientific framework** to work from, as many of you know, that I believe helps us to make sense of it all. We will put this together bit by bit as we go through the year.

I've been thinking about this subject just about all my life. I grew up on a farm and loved the interaction with nature, especially with the animals – I was curious about their minds. At university I specialised in animal physiology, which is about the internal processes of body and mind. For 40 years I was a research scientist, working mostly with farm animals, investigating many aspects of **stress** – how it affects the nervous system, the hormones and the health and the behaviour of animals and humans. Animals and humans are affected by stress in very similar ways; exactly the same hormones are involved in many cases and some parts of our brains are very similar. For my PhD I had to study certain hormones that are produced in the brain in animals and humans and which affect behaviour and our mind.

The biology of mind

How many of you think that an animal has a mind? What about a plant? Basic biology tells us that even the simplest living things can 'think' in some kind of way. Some people like to distance us from animals and plants because **our conscious mind is special** – and it is – **but** to a biologist **we are all living things** – we are alive – and we die. Biology is the science of **life**. We can use biology to help us understand our own mind. I feel strongly that we come to know ourselves better when we think about what it is we share with the whole of nature. We are special, but we are also part of the ecology. As we explore our everyday minds I hope you might share at least some of my feelings that **aliveness** is a great beauty and a wonder.

One of the books here today is by **Andreas Weber**: *The Biology of Wonder – Aliveness, Feeling and the Metamorphosis of Science*. He writes about living things with great admiration. All animals and plants have the equivalent of our nervous system. Only the animals that run around have a brain and our brain is the largest and most complex. But plants also need to send signals from one part of their body to another and regulate their physiology and this process is partly electrical and partly chemical – the equivalent of our nerves and our hormones. I'll say a bit more about the relevance of Weber's book to our own minds when I'm talking about **feelings** later on.

Another quite new book is by Peter Wohlleben who manages forests in Germany and has studied trees all his life. It's called *The Hidden Life of Trees – What They Feel, How They Communicate*. Trees live for hundreds of years, some more than a thousand years, though many of our trees don't. I love the fact that we live amongst trees here and we do have pockets of old growth too like the forests in this book. He explains how incredibly social they are – communicating with one another all the time. In a forest they have a 'wood-wide-web' whereby fungi in the soil connect their roots. They appear to care for one another, exchanging nutrients if they are needed somewhere else, warning other trees of an insect attack by sending chemicals through the air to the other trees. They need one another just as we do and, accordingly, trees that become isolated live shorter lives.

Peter Wohlleben also wrote *The Inner Life of Animals*. Because I grew up on a farm and worked closely with animals I am not quite as sentimental about them as he is, but I've always been interested in their minds and have enjoyed the company of pets as well. Humans and animals can form very close bonds, of course.

Andreas Weber worked with another famous biologist, **Francisco Varela**, whose ideas have influenced me enormously. He died quite young, but was hailed as a brilliant and original mind researcher. Varela's original teacher and later colleague was **Humberto Maturana** who is the person from whom my way of understanding our mind, which is the subject of this Course, has mainly come. Humberto is from Santiago in Chile; he is now almost 90. I've met him several times, talked with him, attended seminars and corresponded; he said he regarded me as a friend. All my life I wanted to understand more about the mind; he opened the doors in my thinking that led me to the ideas and the writing that I want to share with you in this Course. Maturana didn't write any popular books himself, but a few other people, including me, have written quite a lot about his ideas.

The biology of love

My most recent book, *Dancing With the Unknown – Feelings and Everyday Mind and Soul*, is essentially an outline of this Course. It begins with the idea that a baby is born into the world, alive and well, the mother holds the baby, and that is the beginning of what we call **love**. The biology of mind is inseparable from the biology of love. Maturana is the scientist who brought love and mind together in the most meaningful way that I've ever come across. A baby is not born into the world with an already formed human mind. Each of our minds grew and developed because it was engaged in a special way with the minds of other people – because somebody loved us. Without love a human infant can develop only the most basic instinctual aspects of its mind. We grow our minds and keep our minds healthy by interacting with other people's minds – even now at our age.

Perhaps **everyday love** is an even bigger subject than **everyday mind**, but if you will bear with me, I think we can work together to appreciate how they fit together. There will always be more to learn – we can't know it all. What we can do is use our minds to find some **meaning** that is satisfying. **We use our mind to think and feel and** we know we **have emotions**. Somewhere in this process we get a feeling and we have some thoughts that tell us: 'this makes sense.' I can understand something about this – not everything, but enough to be useful to me personally at this time. This is one way of saying what our minds are all about – they are enabling us to **make meaning**.

There is a big proviso about this. Ultimately, each of our meanings is so personal it cannot be exactly the same as someone else's meaning. We can agree on lots of things, but our individual minds are fundamentally private. I'll give you a more scientific explanation of why that is so a bit later. It is both good news and bad news. It shows that you and I have the freedom and responsibility to understand the meaning of everything in our own unique way – we don't have to be somebody else, we can't be. It also means that we may feel lonely and separate if we think other people don't quite see things as we do or if we have difficulty accommodating their different points of view into our mind. Here we need love.

The best and the worst of one's mind

I want to ask each of you to think about (and write down if you wish) one recent experience in which your meaning seemed to be the same as someone else's and you felt very close to them – you 'knew where they were coming from' – your feelings, thoughts and emotions seemed to match; you could put yourself in the other person's shoes. This is a topic I would like to expand this year. I have a couple of new books here today – one called *Empathy* and the other *The Empathy Instinct*. I won't talk about them now, but would like to spend more time on it than we've done before. You might also like to think of a time which was the opposite of that – when you and your friend seemed to 'be on a different wavelength.' And the fact that many people seem less willing to put themselves in someone else's shoes today. Barack Obama said there seems to be an 'empathy deficit' in our society and we need to do something about that.

I'm also going to ask you what is the **worst** thing that your mind does for you and what are the **best** things that your mind does. What are the experiences that make you feel that your mind is a problem or is wonderful – your best asset. I hope from this we can build up a list of useful words to describe what our mind actually is or does – in other words to begin **to define the everyday mind**. It also helps me to know your particular interests so I can tailor the Course to suit as many people as possible.

Starting with the **worst**, but not dwelling on them, I think of feelings of fear, pain, loss, hopelessness or failure. Suffering is a blanket term for all the different forms of discomfort or distress. Loneliness is a big issue in our society today and it leads to many health problems. I know there are emotions involved in this experience and also lots of thoughts, but primarily as far as my mind is concerned it seems to be the **feeling** that is the worst part. **Feelings** are a very important part of our mind.

How do you handle **having nothing to do or doing nothing**? This is quite important for understanding our mind. Recent research has shown this to be very uncomfortable for many people today, almost unbearable for quite a few. Timothy Wilson, a researcher we will be following later in the Course, put individuals on a chair in an empty room for 15 minutes and they all said they didn't like it. Then he wanted to see how far they would go to relieve their boredom. They could give themselves a rather unpleasant electric shock. Two-thirds of all males gave themselves at least one shock, on average seven times. They didn't have to, but there was nothing else they could find to do. One quarter of the females did the same.

Our minds are being stimulated so often in so many different ways that our brain is full of **expectations** that something should be happening. Other research has actually shown that to be in situations we call boring is beneficial for your mind and leads to more creativity and

better decision-making. Day-dreaming is good for that, too. There is evidence that children who learn that it's okay to be bored some of the time have fewer problems later in life.

The **best experiences of mind** are certainly many and varied. I think of all forms of pleasure, enjoyment and satisfaction and also peace of mind, contentment and relaxation. Happiness is a very complex state of mind that is hard to define and we all know that it isn't necessarily found by searching for it directly. I want to spend a bit more time this year talking about happiness – it's a very tricky subject.

Working out what happens when we experience **pleasure** has always been one of the holy grails of mind science and chemical substances have always been chief suspects. The opium poppy from which morphine, heroin and codeine are obtained has been the source of pleasure and pain relief since the earliest human civilisation. Now we mostly use synthetic opioids or opiates (as they're called). It was discovered in the early 1970's – around the time I was doing my PhD (when lots of new hormones were discovered) – that there are opiates actually produced in our brain and body that are called **endorphins**. Later in 1990's I was studying these because they are involved in stress and they reduce pain and produce nice feelings.

The endorphins are a good example of how much **our mind depends on what happens in our body**. **Physical exercise** is a powerful releaser of endorphins, as is sex; one of the most useful and interesting releasers of endorphins is **singing**, especially choral singing. This also releases **oxytocin** which is another 'feel good' hormone we'll be talking about later.

Whatever you do with your body influences the state of your mind. To meditate, for example, we need to start by relaxing every part of our body from the toes up to the head. This changes what is happening in your brain and in your mind.

The pleasure centre in the brain

It was back in the 1950's that two researchers in Canada, James Olds and Peter Milner, did a famous experiment to discover, quite by accident, the region in the brain where pleasure is generated. They had electrodes implanted in different parts of the brain of rats to see which ones affected the rat's behaviour. It happened that they fired a particular electrode when the rat was in a certain corner of its box. They expected that the rat might avoid this corner after that, but it kept coming back there to get another jolt. In fact the rats became so keen on this kind of brain stimulation that they kept chasing it, even in preference to eating or drinking, until some rats exhausted themselves and actually died. This brain region became known as the 'pleasure centre' or 'reward centre' of the brain. It seemed like a fantastic discovery at the time – to know exactly where we can make pleasure happen. But it was not, of course, the royal road to finding happiness.

There is a particular **neurotransmitter** involved in the pleasure response. Our brain is a network of nerve cells or neurons, interconnected in millions of different circuits carrying electro-chemical signals. Where two neurons meet there is a tiny gap called the **synapse** and the signal can only get to the next nerve by floating across this gap on a particular hormone called a neurotransmitter. A hormone, by the way, is a chemical substance that travels from one part of the body to another to carry some information – it's a chemical messenger. There are different neurotransmitters in different parts of the brain and where pleasure is generated the main one is called **dopamine**. Many of the neurotransmitters are amines – a very small and simple chemical molecule. Serotonin and adrenaline are other examples. In Parkinson's disease there is a deficiency of dopamine.

What this part of the brain is actually doing is checking **expectations** and whether they are likely to be met or not. If an experience brings pleasure our brain keeps on the lookout for it and if it is obtained too easily – by taking a drug, for example – this expectation sets up a craving and we become addicted. We all have problems with addictions of some sort, though mostly these are only minor. They do affect our quest for happiness. I will be enlarging on the idea that our best experiences of mind have more to do with **managing expectations** than with directly obtaining pleasure.

BREAK

The old and the new

Here are two very contrasting experiences that I had on one day during the holidays that illustrate two very different aspects of our mind that are also topics for our Course this year.

The day began with a visit to the Dutch Masters exhibition at the NSW Art Gallery where we had a wonderful guide who explained a lot of things more passionately and clearly than I've ever heard before. This period in the seventeenth century when the northern counties of the Protestant Lowlands gained independence from Spanish rule was extraordinary in the history of art because painting was freed from the control of the church and the rich – anyone could paint and ordinary people could own paintings. I had seen many of these paintings in the Rijksmuseum in Amsterdam many years ago, but seeing the most famous ones again enlivened my mind with a lightness and joy. The *Woman in Blue Reading a Letter* by Vermeer draws your mind into another person's life, her feelings, her thoughts. There are only 34 Vermeers in existence and one of them is here in Sydney. The very famous Rembrandt *Self-portrait as the Apostle St Paul* has the most intriguing and mysterious facial expression I've ever seen – better than the *Mona Lisa*. I could study it for hours.

So what is it about the mind of those painters, or any painter, that makes such a strong connection with the mind of another person? How does that work? And why is it so important that we cultivate our **artistic sense**; that's definitely one of our topics.

When we left the Art Gallery my wife wanted to go to Jamie Oliver's for lunch so she got out her smartphone and asked Google how to get there. The phone displayed a map with directions, distance and time of arrival; as we walked, Penelope asked it what is our next turn and it said turn left here. This is a very different use of our mind – aided by technology. And what a huge influence **technology** is having on the way we use our mind, especially the way we pay attention. I think we need to explore this more thoroughly this year in our Course, but to what extent will depend on how many of you use this technology or are interested in it.

How we pay attention

Technology has already revolutionised **the way we pay attention**, which is a very important part of how our mind works. We can't attend to everything at once. In fact we can only pay attention to a small fraction of all that is going on around us. We must accept that the scope of our attention is limited and we actually miss a lot. We have to be very selective in choosing where to focus our attention – what to notice and what to ignore. We direct our mind according to what our mind thinks is important to us at that time. Also, some kinds of stimuli grab our attention – for example, a loud noise or anything that moves including a flickering light or a bright light.

We know we must be aware of our surroundings so we can position ourselves and move about safely and with purpose. In this respect our mind is maintaining a **connection** with our world. We don't just drift aimlessly and bump into things or shrivel up with heat or cold – our mind responds so we maintain an appropriate relationship with every part of the world around us. This is a useful way to think about what our mind does. We can't afford to lose the connection. It maintains the connection for us.

In this respect **we give priority to what other people are doing or saying** because we know that this kind of inter-personal relationship is by far the most important. New-born babies already know the difference between a human face and any other object. There is a significant region of our brain that enables us to **recognise faces and facial expression** with extraordinary skill. In fact we find faces in patterns and textures wherever we go as if the brain is saying: 'where's the face?' and 'what does that face tell me?' Our faces and our eyes are the strongest connectors of all so they naturally have a prominent role to play in our mind's work. When we smile or glare at one another we trigger wholesale changes in our emotions, deep in our subconscious mind. A mother and the baby at her breast make eye contact: this is the **biology of love** – both the **physiology** and the **psychology** of love.

Mar Aiken, in this book called *The Cyber Effect*, describes sitting on a train watching a young mother breast-feeding her baby while using a mobile phone and she said that not once did the mother look at the baby. Most 'conversations' that younger people have today are not face-to-face. They are an exchange of text or images on a hand-held computer, often preferred to actually talking on the phone. It is efficient because it can be asynchronous – the other person doesn't have to be there at the same time – and it avoids the necessity for any close emotional contact from facial expression or voice. Over time this way of connecting changes things in our brains and changes the way our mind works as Susan Greenfield has explained in her book called *Mind Change*.

Mary Aiken is a forensic cyberpsychologist who studies how human behaviour changes when we are online. It is quite a frightening book in that the online experience can be highly addictive and it **distorts reality** so much that people have difficulty coping with the real world. Predatory behaviour from cyberbullying to sex crimes has already done a lot of damage. She is not ignoring the benefits we get from being able to go online, but I think her cautionary tales will help us to learn how to avoid harming our minds, especially where our children are concerned. We will have to live with technology. The challenge is to learn to work with it so we don't sacrifice the beautiful things about our mind, we enhance them instead.

Artificial intelligence

When we were all younger the word '**intelligence**' referred to the mind of a human or animal, but nowadays there is a very large and growing effect of '**artificial intelligence**' or AI. Toby Walsh from the University of New South Wales is a world leader in this field and his book *It's Alive* was given to me by a granddaughter at Christmas. It's about some of the history and the present-day consequences of AI which they say is here to 'liberate our minds.' Without doubt it is changing the way we use our minds, but the idea of liberating them is rather dubious and fanciful.

In 1950 a British mathematician, Alan Turing, famously predicted that by the end of the century we would have ‘**machines that think.**’ He was right. You may have seen the film a year or so ago called *The Imitation Game* about Turing and his role in breaking the Enigma Code used by the Germans during World War II thus providing secret intelligence that helped to win the war. He was imprisoned for homosexuality after that and committed suicide in 1954 though he was pardoned by the Queen just a few years ago.

Turing also warned that there may be dangers associated with this, as have other leaders of technology such as Bill Gates and Steve Wozniak (the founders of Microsoft and Apple). The leaders of Google and Facebook seem to want to play down these doubts. We are becoming used to machines that think, but we really have no idea what effects this technology will have on the function of our own minds as time goes on.

The rate of change in technology so far outstrips the ability of society or human biology to change that we will always struggle to keep up. Toby Walsh says we are ‘sleepwalking into the future.’ He makes predictions about what could happen in the years ahead, some of which are already apparent. Robotic machinery has replaced human workers in factories and ship loading and will soon take over more of the transport business. Driverless vehicles are already here, trains and cars. He predicts the end of human driving altogether. Security guards will soon be robotic and remote controlled drones can kill people far away. We are already using voice commands with our devices; he predicts we will talk to everything in our home and office quite soon. Computers already do a lot of decision-making in business, they will hire you and fire you. They could provide medical advice on a daily basis by accessing your wearable sensors. They already create news stories, tell you the weather and so on and so on. We need to know about our own mind to cope with these new forms of mind.

What are the most important things your mind does for you?

Today has been a bit of a ramble - an **introduction** to a few of the topics that will come up as we explore the workings of our mind throughout the year ahead. I also wanted to float the idea that **feelings are at the forefront** of our experience of mind.

Next time we meet I’m going to ask you to think about **what are the two most important things that our mind does for us** and we’ll use that to move closer to a definition of what the mind is and how it works.