

## EVERYDAY MIND AND LOVE 2018

Session 7 June 14

Today we will continue to explore one of the most important topics in mind science – the business of **social engagement**, which I called ‘the magic of social engagement’ in my book. We will also complete our study of Amy Banks’ *Four Ways to Click* about building stronger and more satisfying relationships. She identified four brain processes involved in social engagement that can be honed and strengthened by practising them. She calls them Calmness, Acceptedness, Resonance and Energy (C.A.R.E.); we addressed the first two in the last session.

These four are closely related. What she calls **Energy** is the pleasure that we get from our interactions with other people. The pleasure or reward system in our brain is designed especially for us to enjoy our relationships. We need to start from a **calm** state of mind, with minimal fear and a good vagal tone and also with the secure feeling that comes from **accepting** yourself as worthwhile and knowing that you are accepted by others. Then, what she calls **Resonance** is an automatic process of **mirroring** and **imitation** that is built into our mind and body. We don’t really control it, but we can learn to neglect it or we can enhance it by being aware of it.

### **The experience of resonance**

Without realising we are doing it we position our bodies, move, sit and stand, in ways that either strengthen the connection or distance us from another person. It’s very subtle. During a very friendly conversation two people will lean forward and copy the posture and positioning of head and hands of the other person. When sitting cross-legged you may cross your legs towards the other person to feel closer to him or away from him to create a feeling with a little more distance between you. You can consciously copy gestures, but the subconscious component of resonance is far more important than the conscious.

I’ve spoken before about facial expression and what a large part those little facial muscles – especially the involuntary ones we can’t control around the edge of the mouth and the eyes – play in connecting us with other people. When you pay attention to another person’s face you unconsciously imitate his or her most subtle expressions and, as you know, whatever your face is doing influences your own emotions, so you feel something that connects you to that person. This attunement with the feelings of others is known as **empathy**. I mentioned the experiments showing how a pencil in your mouth to limit facial expression or the use of Botox to paralyse wrinkle muscles will impair your ability to interpret someone else’s emotions.

The idea of empathy seems simple enough, but the processes involved are not. Empathy is quite different from sympathy in that it is non-judgmental. We often think consciously about our feelings and the feelings of others, but the process of empathy is essentially subconscious. Here there is confusion about what we call mind-reading whereby we think we know far more about the intentions of other people and their motives than we actually do. In *Harry Potter and the Order of the Phoenix*, Professor Snape chastised Harry for thinking that Voldemort’s ability to ‘extract feelings and memories from another person’s mind’ was mind-reading. Showing his keen understanding of neuroscience, Snape said: ‘You have no

subtlety, Potter. Only Muggles talk of mind-reading. The mind is not a book.’

The serendipitous discovery of **mirror neurons** in the monkey brain almost 30 years ago became one of the most celebrated ‘breakthroughs’ in the history of neuroscience, but the extent to which it can be extrapolated to the human brain is still far from clear. Although the principle of mirroring is now accepted, opinion is still widely divided on how it is achieved.

A team led by Giacomo Rizzolatti in Parma, Italy, was recording signals from the premotor cortex of macaque monkeys as the monkeys reached out to grasp something with their arms. Over a period of time they accidentally recorded brain activity corresponding to specific muscle movements when in fact the monkey had not moved at all. One story is that, during a break in their research, Vittorio Gallese reached for something on the table in front of the wired-up monkey and was surprised to hear the characteristic chatter of the recording instrument that he had come to associate with the monkey’s arm movement. Another story is that Leo Fogassi picked up a peanut, which was a familiar activity for the monkey, and they noted that its brain activity at the time was exactly the same as when the monkey itself had picked up a peanut.

They didn’t take much notice of these apparently anomalous results at first; nor did the Editors of the prestigious scientific journal, *Nature*, who rejected their first paper because of a ‘lack of general interest.’ At that time a nerve cell was supposed to be either sensory or motor – either for perception or for doing something; it could not do both. It took years of patient research to establish that certain cells in the monkey’s brain will fire when the monkey sees someone else performing a deliberate physical action just as if it was performing the action itself.

An acknowledged leader in this field is a Californian neuroscientist, Marco Iacoboni, who wrote *Mirroring People - The Science of Empathy and How we Connect to Others*. His research and that of others has shown that mirroring activity in the brain seems to link the emotional state of one person with another. Seriously autistic people who have difficulty reading the emotions of others lack this sort of brain activity.

What I call shared meaning has a lot to do with the subconscious linkage of our emotional states, but it is misleading to refer to this as mind-reading. Iacoboni sums it up well in saying that we are ‘wired for empathy,’ but it is a pre-reflective mechanism, not created primarily by our thoughts. In fact our rational thinking and beliefs probably interfere and corrupt the natural connecting process that is occurring at a deeper level so we are usually wrong to conclude that we know the intentions and motives of another person. Much mistrust, more so between ethnic and political groups than between individuals, stems from our superficial thinking mind actually working against its own natural instinct for empathy.

Another very readable book about the significance of mirror neuron research is *The Empathic Brain - How the Discovery of Mirror Neurons Changes Our Understanding of Human Nature* by Christian Keysers. He is a champion for the need to develop a culture of empathy in the world today. There are brain studies showing that women have a naturally greater empathic ability than men and also that men reserve their empathy for people they regard as fair-minded, that is having similar beliefs to one’s own, and can block out empathy for their enemies, whereas women have more difficulty denying empathy even for those that are against them.

There may be more to intersubjectivity than mirror neurons because it has been observed as

an entrainment and synchronisation of neural networks between people who are doing things together. Accomplished musicians playing together are an excellent example. Even when jazz musicians are improvising wildly, the empathic connection between the players is very evident and it is a source of great pleasure for the musicians themselves and for those who are watching and listening.

The evolutionary development of language probably depended on brain mirroring because it occurred through gestures and sounds being reciprocated and experienced emotionally. The language centres of the brain are closely linked to the premotor cortex. Our brain copies the speech actions of another person in order to understand what they are saying. It has been shown that if the motor nerves that produce your speech sounds are disabled you can't hear clearly what other people are saying to you.

An example of mirroring that Amy Banks uses is the young son of the Police Chief in the film *Jaws* who copies perfectly his father's worried expressions, drooping shoulders and angry tone even though he doesn't understand what has caused his father's distress. There is a reciprocal dance of feelings and actions whereby a baby learns from its mother how to use its mind. She mimics the baby's facial expression enabling it to 'see itself' better. And our children watch what we do far more intently than they listen to what we say. Learning is not simply hearing or thinking about something, it involves doing something yourself.

We tend to think we are doing what we already know to do, but in fact the doing is shaping the knowing as well. As we do things, what we do profoundly is affecting what we know and therefore what we think and feel. This is called the 'embodied simulation' theory of making meaning and it is explained well in a book Benjamin Bergen called *Louder Than Words – The New Science of How the Mind Makes Meaning*. One of his examples is to ask the question: which way does the key turn when you open your front door? You will almost certainly feel a hint of movement in your wrist when you worked it out? Another example: do you use your ring finger to support the pencil while you are writing - or not?

A good comparison of these different theories of connecting and responding to others is given by Matthew Lieberman in his book *Social – Why our Brains are Wired to Connect*. A more general book is *Social Intelligence* by Dan Goleman in his discursive style. This is an subject about which much more needs to be learned to give us a more complete understanding of how we make meaning through social interaction.

Perception and action are so closely linked in our brain that perception interferes with action in a way that can be unhelpful, even dangerous. A topical example is the use of mobile phones while driving. It has been shown that the meaning you form, by embodied simulation, when you are conversing on a mobile phone is sufficient to impair your ability to drive the car, even if you aren't looking at the screen or holding the phone to your ear.

Changing bad habits, even overcoming serious addictions, usually involves doing some things you aren't really keen to do for long enough that the effect of the doing on the knowing has changed the way you actually think about the habit itself. It rarely works to try to think differently first and hope that your doing will follow. There's a saying: 'It's hard to think your way into a better kind of living, but you can always live your way into a better kind of thinking.'

Amy Banks suggests ways to improve your emotional resonance through a greater awareness of this aspect of our connectedness. She has people spend more time in resonant relationships

and become more comfortable with their feelings as distinct from their thoughts. This includes a greater awareness of **the different kinds of emotions** that we experience, which is the next major topic we will consider and also a key ingredient of Amy Banks' final concept – **Energy**.

### **The experience of energy**

The word, energy, can be used in many different ways in relation to the mind, but Amy Banks takes a very simple approach that I think has a good deal of merit. She singles out the brain's '**reward centre**' that is driven by the neurotransmitter, **dopamine**, to explain what it is that motivates us or **energises** us to do what we do. Then, her take-home message is that we tend to forget that the most healthy rewards we can experience are those that come through relationships. We are so easily lured into all kinds of personal or selfish rewards and pleasures that they may end up taking priority in our lives and this is all the more likely to occur if we are having difficulties in our relationships. She suggests ways we can strengthen the brain's primary pathways for obtaining reward through relationships.

Another 'breakthrough' in mind science that was hailed as momentous at the time was also quite serendipitous. Back in the 1950's, two researchers in Canada, James Olds and Peter Milner, discovered, 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 preferring it to eating or drinking, until they were completely exhausted. Subsequently scans revealed that the same parts of the human brain were involved in our experience of reward and pleasure, which seemed very important at the time, but it was not, of course, the royal road to finding happiness because chasing pleasure is not the way we find happiness in our lives.

Activating these dopamine systems certainly gives us strong motivation to repeat the experience. All our addictions to drugs of any kind and to other pleasurable experiences for that matter involve this mechanism. But this part of our brain is just part of a larger cognitive and emotional network that guides what we do in a much more general way. It is closely connected to our sense of self and is at the centre of our mechanism for paying attention to our connectedness, evaluating options and making decisions based on our previous experience. The dopamine system is mainly for checking **expectations** of different outcomes, rather than the outcomes themselves. Dopamine switches off when the pleasure arrives and returns to checking out other possibilities. I like to think of this as the physiological basis for the fact that we can never quite find the ultimate satisfaction and our pleasure usually wanes soon after we experience it. The harder we try to make joy and happiness happen, the more elusive they seem to be. It will be more useful for us to learn to **manage expectations** than it is to achieve particular outcomes.

Yet we experience our best feelings when we are striving in the direction of pleasure and satisfaction. Our mind is fundamentally designed as an instrument of **seeking**. It is in the searching and exploring, in the efforts we make to know more and understand more in ways that bring us some satisfaction, that we experience the real strength of our minds. This is really our need rather than our wants. **The desire for stronger connectedness is the most**

**authentically human desire and from it our greatest pleasure comes.** We have a great need for love – which we receive most easily by giving it. This applies at all three levels of our connectedness: with others, with ourselves and with the unknown.

### **The primary emotions**

This brings us to a point where we can look more closely at **what our most basic emotions are and what their role is in our mind.** There are a few books out recently that emphasise the way we construct and shape our emotions through our thinking, but this is only part of the story. Many of the emotions we commonly experience are learned as we grow up and shaped by our social interactions. I will talk about these later. But there are seven primary, instinctive emotions that we are born with from which all the others are derived. Some books about emotions seem to overlook this basic biology that is a key component in the evolution of our human mind.

All emotions are powerful **predisposing forces** in our mind. By this I mean they predispose us towards certain attitudes and actions. They do not determine those actions precisely, but a particular emotion makes it much more likely we will think and act in certain ways. A good example is the way that fear will contract our thinking and feeling to concentrate on the source of the danger whereas love will expand our outlook and generate positive behaviours.

Emotions are most easily identified by the effect they have on our facial expression and this led to an awareness of **joy, sadness, fear, anger, surprise and disgust** as universal human emotions that are obvious across all cultures. Paul Ekman's book *Emotions Revealed* explains this well. His team identified 64 different facial expressions and associated them with particular emotions.

The primary emotions I am talking about here were worked out by mapping neural networks in the brains in many different animals, associating basic behaviours with each network pattern, and then confirming that these basic patterns have continued to evolve in the human brain. The leader in this field was Jaak Panksepp who wrote the textbook on Affective Neuroscience and another large book that is somewhat easier to read called *The Archaeology of Mind – Neuroevolutionary Origins of Human Emotions*. I have altered his terminology slightly to fit my simplified story.

The seven emotional instincts that we share with other mammals are SEEKING, FEAR, CARE, LUST, PLAY, ANGER and GRIEF. Their roles are easier to understand if we accept that emotions are the engine room – the power generator – the motive force – upon which the rest of our mind (thoughts and feelings) depends. Our mind is powerless to operate without its subconscious emotions. They drive it onward, each emotion predisposing a certain repertoire of behaviours.

Panksepp chose the word, **SEEKING**, to describe the fundamental driving force or instinct that I have already alluded to today – the desire to explore, find, investigate, venture into, take hold of, utilise, and ultimately to connect. It is an extensive network involving many parts of the brain as you might expect, but its general characteristic is that it is driven mainly, though not entirely, by the neurotransmitter, dopamine. All learning is triggered by emotional arousal and it involves the development and management of expectation. Panksepp often calls this the SEEKING-EXPECTANCY system. The mind needs to make predictions all the time and it does so on the basis of previous experience. But he goes to great lengths to explain that the emphasis on the idea of reward is misleading – that is never an endpoint, we

must always go on seeking.

The debilitating condition known as **depression** – one of the biggest health problems in the world today – is essentially a breakdown of the SEEKING system and it will only be effectively managed when we can learn to re-invigorate this basic instinct of our mind. The only class of compounds that do this are opium derivatives, but anything that stimulates dopamine in that way is immediately addictive and the dependency is so strong that this is not a feasible way of managing the problem. Panksepp's work has stimulated a search for non-addictive ways of stimulating dopamine and I believe there are some promising candidates.

The **FEAR** system is also inbuilt at birth and without it we would have no protection against threats of any kind. We need it just as much as we need any emotion. It serves to sharpen our thinking in any situation and if its effect is lessened too much our mind could be described as lazy. Of course it is designed to respond to a threat and these only occur every now and then, so the problem we have is that we may learn to anticipate fear far too often with an emotional state called **anxiety**. This is a good example of the secondary, learned emotions that arise out of our core emotions as a result of our life experience.

The human mind has an extraordinarily strong instinct for **CARE**. Part of our ability to empathise is the feeling for another person's pain that propels humans into care-giving behaviours, most of which are expressed as love – unless they are too selfishly motivated and judgmental. Because our evolution involved increasing vulnerability, especially for the newborn, and therefore the need for greater intimacy and sophisticated social engagement, we developed more obvious caring behaviours than any other species.

The essential process of reproduction would not be possible without the sexual drive or **LUST**, but of course this has evolved in humans into an important aspect of the most intimate and powerful physical connections that we make.

We can see the essential instinct to **PLAY** most clearly in the young of many species and we humans retain this instinct throughout adulthood as well. It is not a trivial accompaniment of the mind – it is one of the powerful forces that shape everything we think, feel and do especially because it is closely linked to the SEEKING system. Stuart Brown who wrote the book called *Play* describes how it 'shapes the brain, opens the imagination and invigorates the soul.'

The **ANGER** instinct stems from the need to take corrective action against a serious wrong and, like FEAR, it has a very specific purpose and is not designed to be used indiscriminately. It is the base from which we learn **resentment**, one of the most insidiously destructive of the secondary emotions.

The huge power of the **GRIEF** instinct becomes evident on the loss of a significant loving relationship. It is essentially the pain of separation and so it operates at a lower level in all stages of growing up and making connections that do not last for very long. Panksepp brackets the word, PANIC, with it because separation produces agitation, but he makes it clear that this is not the same as the FEAR response, it is a distinctly different deep emotion that stems from our great need for connectedness.

So these are the roots of our entire emotional repertoire. In the next session we will bring in some more recent research based on brain scanning that adds to this picture of the fundamental role played by emotions in our wonderful human mind.