

**MIND EXPANDING:
SCIENTIFIC AND SPIRITUAL FOUNDATIONS
FOR THE SCHOOLS WE NEED**

**GUY CLAXTON
Visiting Professor of Psychology and Education
Graduate School of Education
University of Bristol**

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It is an honour to have been invited to take part in this series of public and inaugural lectures, organised by the Graduate School of Education. Since I joined the School in 1993, it has been a privilege to have been part of such a thriving academic culture, and to have been able to play a small part in its becoming the pre-eminent school of education in the United Kingdom. It has been my job to try to keep sight of the overarching research concern which we have adopted – that of ‘culture and learning in organisations’ – and through this, to help to develop the strong interdisciplinary and collaborative culture which we have today. This culture is in part responsible, I believe, for the intellectual quality, imagination, and practical value of the work we are producing. I hope this lecture will illustrate one of the ways in which this theme of ‘culture and learning in organisations’ is being pursued.

My plan is this. I am going to outline very briefly what my ‘take’ on education is. And then, in the rest of the talk I’m going to work my way back to education via considerations of spirituality, science, and the notion in my title which I am calling ‘mind expanding’. (This phrase, as you’ll see, is to be read as something like ‘the expansion of mind itself’, and not as a compound adjective describing the effects of certain psychoactive drugs – though the association, as you’ll see, is not entirely accidental.) So first come a few words to introduce a rather particular view of ‘spirituality’ – a view that distinguishes spirituality from ‘religion’, but also from any kind of supernatural mysticism. Then I’m going to paddle off into waters that I really don’t know a great deal about, and make some remarks about how people’s ‘spiritual needs’, as I will have defined them, are met – or not met – in traditional societies, and in the kinds of ‘risk societies’ in which many young people find themselves growing up today. I shall conclude from this that their spiritual needs are real, and are being met even less well now than they have been in more stable times, and that this is one of the main underlying causes of the kind of youthful thrashing about that we hear about daily in the media. Then I’m going to ask whether recent work in cognitive science might be able to offer any suggestions as to what meeting those needs might entail. Here I’ll draw on work in two recent books: *Hare Brain, Tortoise Mind*, and

Wise Up. And then I shall try to build onto that, a few ideas about what a 'spirited education' for the 21st century might look like. And then we're done.

So first: a few words about the state of schooling in the UK. It is a mess. Slightly more politely, schools do not, by and large, do a good job of delivering an adequate education for the 21st century. By education I mean the attempt to prepare our young people to thrive in the face of the opportunities and challenges which they, as adults, are going to face. Over the last three or four years, I have given talks to around 4,000 people concerned with education. They have included parents and governors, teachers and head-teachers from all phases, advisors and inspectors. I have asked them, in terms of the basic aim of education which I have just outlined, whether they think (a) we are achieving that goal for the vast majority of young people, (b) we would be, if currently mooted reforms were to be implemented effectively, or (c) we have a long way to go. I've had around 50 votes for (a), 100 votes for (b), and the rest (with very few abstentions) for (c). Clearly, if we go *right* back to basics, the vast majority of people agree that what we currently provide isn't anywhere near good enough, and that tinkering with curricula, exams, funding arrangements and the like, is not going to make it substantially better. Students know it too. A recent survey of 3,500 young people aged 11-25 by the Industrial Society concluded that 'their lives are riddled with insecurity...[and] schools are seen as failing to equip them with the ability to learn for life, rather than for exams.'

Something more radical is needed. But it needs to be more than fine words or wishful thinking. It needs to be practical, accessible and inviting, to teachers, parents, and most importantly of all, to young people themselves. It needs to be grounded both in an accurate appreciation of what it is, at root, that is missing, and what the particular demands of tomorrow's world are likely to be. And it also needs to be based not on a 19th century, but a 21st century understanding of what the growing mind is, how it works, and how it can be helped to develop in the most fruitful ways. It is here that my two pillars of education, 'science' and 'spirituality', meet. And it is that meeting which I wish to explore.

Spirituality

So: what is spirituality – and what is it not? Of course there's no definitive answer to this. People use the word in very different ways. But I'd like to give you a couple of examples of what I mean by it. First, a well-known little poem by Yeats that appeals to me partly for reasons that will be obvious in the first line.

My fiftieth year had come and gone,
I sat, a solitary man,
In a crowded London shop,
An open book, an empty cup
On the marble tabletop.

While on the shop and street I gazed,
My body for a moment blazed;
And, twenty minutes, more or less,
It seemed, so great my happiness,
That I was blessed –
And could bless.

Here's the second – one of hundreds of accounts of unusual experiences meticulously collected by what was then called the Alister Hardy Research Centre in Oxford.

Vauxhall station on a murky November Saturday evening is not the setting one would choose for a revelation of God!... The third-class compartment was full. I cannot remember any particular thought processes which may have led up to the great moment. For a few seconds only (I suppose) the whole compartment was filled with light. I felt caught up into some tremendous sense of being within a loving, triumphant and shining purpose... In a few moments the glory had departed – all but one curious, lingering feeling. I loved everybody in that compartment. It sounds silly now, and indeed I blush to write it, but at that moment I think I would have died for any one of the people in that compartment. I seemed to sense the golden worth in them all.

Now, surveys show that these kinds of experiences are far more widespread in the population than is usually thought, and especially common amongst young people. Figures of up to 80% are not uncommon in such surveys. But people tend to keep quiet about them because they don't know how to talk about them, or are afraid of being thought weird (or both).

Let us call these experiences, as Cohen and Phipps (from whom the second account is taken), do, simply 'the Common Experience': common in the sense of 'common to all peoples', as well as 'frequently occurring'. There has been much debate about just how 'culture free' the Common Experience is. Certainly people in different societies reach for different metaphors and bend their familiar frames of reference in different ways in order to try to do justice to what is, for many of them, an experience that lies well outside their normal register. But there is fairly widespread agreement now about what some of the core features of such experiences are. I want to focus on four such recurrent qualities.

The first is an unusually strong sense of *aliveness*. Such experiences are very frequently characterised by a heightened sense of energy and vitality. Though people often use metaphors of fire – such as Yeats's 'blaze' – or the Vauxhall 'light', to capture this intensity, it seems as if what they are trying to describe is simply an unusual clarity and strength of perception. It is, they say, as if an habitual, hardly noticed sense of inhibition, of being held back or held in, of being dampened, is dispelled, and the body and the senses flood with life. The literature continually reminds us that the origin of the word 'spirit' is closer to that of a high-spirited child, or a spirited horse, than it is to any kind of anaemic piety. First and foremost, 'spiritual' means bursting with exuberant life.

The second quality I shall call *belonging*: a sense of being at home, at ease in the world, that seems to be independent of actual places and situations. Neither Vauxhall station nor a London café seem particularly auspicious. This felt sense of 'belonging' replaces a nagging background sense of *longing* - as David Steindl-Rast puts it, a feeling of being somehow orphaned or displaced in the world – with a stronger sense of security. Wherever I am feels like 'my place'; whoever I am with are 'my people'. When this is the case, attitudes of suspicion or competition are replaced with what appears to be an unforced inclination towards kindness and care. Compassion, love even, do not have to be 'worked on'; they emerge as entirely natural corollaries of belonging. Yeats's feeling of being able to 'bless', and the anonymous rail passenger's love for those around him are as intense as, and hardly different in kind from, the feeling of parents for their own children.

The third quality (characteristic of the Common Experience, though not as powerfully expressed in my two examples) could be called an affinity with *mystery*. It involves a curious, almost paradoxical sense that all is well with the world, despite not knowing how things are going to turn out. People feel more able to meet whatever comes, and

experience a lessening of the need to predict and control. Mystery and uncertainty lose their ability to disconcert, and the need to be knowledgeable, to find security in opinions and beliefs, is substituted by an interest in depth and truth – wherever they may lead. Open-mindedness and inquisitiveness replace fundamentalism and dogmatism. Creativity seems as important as success. And people also seem to become more interested in ‘seeing through’ their own neuroses and illusions, and are more likely to be delighted than depressed by what they find. Of course, this heightened sense of trust and spontaneity does not involve a complete abandonment of forethought. Rather, as the Sufi proverb has it, you ‘trust in God – but first tether your camel’.

Fourth, there is a sense of enhanced *peace of mind*. If I may allow myself one anecdote: I remember sitting in a meditation hall in North London waiting reverently with 40 or so others for the appearance of an illustrious Japanese Zen teacher called Maezumi Roshi. Eventually he arrived and processed slowly to the front where he took a long time to settle himself just-so on his podium. Satisfied at last, he raised his eyes to us and said: ‘So, what you all doing here, huh?’ We laughed nervously, and after another pause, he said, ‘You here because your mind not at ease.’ And we all nodded enthusiastically. It was true. Spirituality, in this view, holds out the promise that it is possible, though a mixture of grace, insight and effort, to shed some of the mundane anxiety and confusion that Buddhists call *dhukkha*, and to find oneself more often in a state of inner harmony and clarity, and less often conflicted and self-conscious.

Underlying all these four shifts in the quality of experience seems to be an expansion in the sense of identity, so that instead of feeling like an anxious bubble, in constant danger of being jostled or pricked, one feels more union or wholeness, both within and without, and this brings with it more kinship and more trust. It is no coincidence that the descriptions are couched in such glowing language, for those who report them overwhelmingly appraise them as positive and valuable. While from the outside it is possible – as Freud and others have done – to interpret accounts of the Common Experience sceptically or pathologically, from the inside, there is little doubt that something precious, even momentous, has occurred.

I think that experiences like that are small gifts, little tastes of spirituality. And those tastes are attractive, and often leave, when they fade, as they mostly do, a thirst for more of what they have betokened. So here is my definition of spirituality. First, it involves the feeling of being drawn towards such qualities and experiences, and of wanting to increase their likelihood, frequency or stability. The urge is not to seek them piecemeal, however, but to develop the quality of being which underpins them. Second, spirituality may involve a strengthening desire to seek the company of people who seem to possess these qualities more strongly: to find what Buddhists call a *sangha*. And third, and less comfortably, the spiritual impulse may involve a feeling of heightened dissatisfaction with the absences or the opposites of such qualities. A taste of intensified aliveness may make normal energy levels and perceptions feel grey and dull. That blast of ‘belonging’ can make that orphaned feeling all the more intolerable. A surge of ‘mystery’ may make adventure seem more attractive than conventional security. And even a moment of deeply felt inner peace can painfully accentuate a more familiar feeling of self-consciousness or confusion.

Let me be more explicit about a rough distinction between three different kinds or levels of spiritual experience that is implicit in what I have just said. First there are the kinds of *gifts* – short-lived and out-of-the-blue – that my two examples describe. Second, there is the hope, at least, of stabilising such experiences – maybe not so intensely – so that they become not ephemeral, but lasting and endogenous: coming

from within rather than evoked from without. They imbue experience more continuously with a different *quality*. And third, there may be other experiences, analogous to the gifts, that are deliberately sought or manufactured. The desire for aliveness, belonging, mystery and peace may lead people to try to contrive *surrogate* experiences that have something of the same feel. Aliveness, for example, can be predictably intensified in particular settings or forms of activity – dancing, swimming, fighting and sex tend to do it. Such surrogates tend to have two features, however: they are, like the gifts, fleeting and contingent; and they are more likely to be generated piecemeal, rather than reflecting a deeper unity or liberation. More of that anon.

It will be clear that this approach to spirituality distinguishes it strongly from some - not all, but some - conventional or institutional forms of religion. It is not centrally about ritual, creed, or the observance of a moral code. It is not about trying to be a better person by struggling with baser instincts. But neither is my approach enamoured of the supernatural or the mystical. My account of spiritual experience deliberately leaves out what for many people are some of its most important aspects: the occurrence of 'visions', or the emergence of supernatural powers such as telekinesis or precognition. Fascinating and contentious though such phenomena are, I am certainly no expert in them, and prefer to leave them to the investigations of parapsychology. I tend to side with the many spiritual traditions which treat such phenomena as of only marginal interest or significance. Zen Buddhism refers to them as *makyo*, illusions. A meditator once told Maharishi Mahesh Yogi – the Beatles' guru from the 60s – that she was having vivid visions of meeting Jesus in her meditations, and asked him what she should do. Maharishi replied 'Shake hands, say hello, and come back to the mantra.' I'm in that camp, I'm afraid, and apologies to anyone for whom the supernatural dimension of spirituality is of the essence.

Spirit in society

From the little I know of history and anthropology, it seems that the intense, whole-hearted pursuit of spiritual ambitions has, in many societies, been only of interest, or available, to a minority – the seer, the shaman or the medicine woman. The majority have had neither the opportunity nor the necessity to cultivate their own personal spiritual qualities. The necessary inquiry has often been actively discouraged by an established church or priesthood. Scholars such as Elaine Pagels argue that this is precisely what happened to the Christian Church in the ideological battle between the Gnostics and the bureaucrats in the third and fourth centuries after Christ, for example. Instead of encouraging spiritual inquiry, societies may be structured in a way that partly assuages, and partly suppresses, the desire for the four kinds of spiritual experience. Aliveness can be 'allowed' and celebrated in sporadic rituals or festivals. Belonging is provided by community life, but may be contingent on acquiescence to accepted beliefs and manners. The opportunity to explore and question, to make friends with uncertainty, may be prohibited by religious and cultural traditions that claim to offer all the answers. And 'peace of mind' becomes a gift to the observant: 'the peace of God which passeth all understanding.' Under such a regime, whether perceived as benign or autocratic, concern with one's own spiritual development may become dangerous, or even literally unthinkable.

But I wonder what happens when societies are not so stable, homogeneous or oppressive. When 'belonging' no longer inheres in the repeated roles, rituals, relationships and responsibilities in which people are enmeshed and engaged? When aliveness equates with anxiety, and peace of mind is swamped by perplexity? When uncertainty is not a day out at the beach for a spot of surfing, but feels more like being adrift on a li-lo in a heavy, roiling sea? What place then for the spiritual impulse? Is it a luxury, an irrelevance under such circumstances, or a basic

necessity? Should it be fostered, or sidelined? Do today's young people in Bristol and Cardiff, Manchester and Lambeth, find themselves in that situation – up a dangerous looking cultural creek without a spiritual paddle? And if so, how are they coping? And what do they need?

There is no need to rehearse here the clichés about post-industrial, post-modern societies. The decline of traditional industries and their communities; the collapse of the so-called 'grand narratives' and their allied institutions; the rise of electronic media and the proliferation of lifestyle models they bring; the technologised management of health and distress; cheap global travel and the disappearance of geographical ties and national loyalties; the rise of different forms of work, and working practices; the melding and colliding of different cultural values and habits in work groups and personal relationships; the exposure of children to a myriad of challenging pressures, information and imagery...the list goes on. Robert Kegan, in his book in *Over Our Heads: The Mental Demands of Modern Life* distinguishes between what he calls *automatic* and *stick-shift* cultures. An automatic culture, like an automatic car, takes a lot of the decision-making away from you. In a stick-shift culture, whether you want to or not, you find yourself much more at the controls of your own life, required to respond to all kinds of opportunities and responsibilities that, in the automatic culture, you may not even be aware of. Whether it is Ulrich Beck talking of the 'risk society', or Kenneth Gergen speaking about 'the saturated self', there is little doubt that many young people today face more uncertainty, more complexity and more choice than their parents or grandparents grew up with. More opportunity and more freedom, and their flip-sides, more responsibility and more doubt.

As automatic gives way to stick-shift, so it may be that spiritual aspirations that have been held in check begin to come back into play. Perhaps the appetites for vitality and aliveness, belonging and care, adventure and mystery, and inner peace and harmony are resurfacing, and people, young and old, are looking for opportunities to express and develop them. The ubiquity of the Common Experience, and the value which is generally placed upon it, certainly suggest that it may lie low, during inauspicious times, but not die out. But without a framework that gives meaning and significance to these impulses, their expression may be wild or confused. They may turn into the pursuit of their surrogates, rather than a more sustained desire for 'the real thing'.

The desire to feel intensely alive may lead to the search for or creation of extreme situations, which could include anything from bungee jumping to fox-hunting, fighting to 'dangerous liaisons'. Some of these activities are harmless and others hurtful, and people disagree about which is which. But I am suggesting that thrill-seeking may not merely indicate escapism; there may be a genuine thirst there looking for any sort of fizzy drink.

The desire to belong – to feel safe and respected, caring and cared for – where that is not provided by the automatic culture, or has been rejected, can lead to intense and mature friendships, or to impulsive marriages and babies at risk. Kids desperate for 'respect' will sometimes do things that are stupid or cruel, if the anticipated pay-off is a brief moment of peer approval.

The desire for challenge and adventure, mystery and uncertainty, may amount to little more than the need for 'kicks' – to do something 'just to see what happens', however careless or destructive - if people haven't developed the equipment and the attitudes that deeper, more challenging or more personal kinds of learning require. To take off the control pedal, and allow an upsurge of thoughts and feelings that may

well have been suppressed for good reason, can be dangerous and scary. That's why Zen Buddhism emphasises what it calls 'learning to keep your seat whilst the horse is bolting.'

And the desire for peace of mind, in the face of seemingly unmanageable stress and doubt, may lead to the desperate date with narcotic drugs. As one young woman said in the Industrial Society survey: 'If you're insecure anyway or you've got a problem, or you're out with your mates and someone comes to you and says, you know, I've got something, what do you want...It's just a way of escaping it, or pushing yourself to a certain limit.' Again, it is a cliché that lack of self-respect makes people vulnerable to such impulses.

Let me take stock of where my rather meandering train of thought has led me. Risk societies lack the structures that channel and constrain the expression of the spiritual impulses. But those impulses have not gone away. Young people especially have no lack of appetite for aliveness, belonging, mystery and peace of mind, but some of them lack the understanding, the dispositions and even the abilities to direct these desires for themselves into channels that are more deeply satisfying. Many young people do have the wherewithal to thrive on chaos, as Tom Peters put it. But many do not, and instead they seek the surrogates, and they do so in ways that jeopardise, rather than enhance, their own well-being, and the well-being of the communities they inhabit.

If this is anywhere near the mark at all, two questions immediately suggest themselves. The first is: how can we create new social scaffolding to replace that which is missing? Is it more neighbourhood clubs or 'activity centres' that we need to provide? And the second question is: how can we help young people cultivate the dispositions and abilities they might need in order to create greater peace of mind, or a stronger sense of belonging, for themselves, wherever they happen to be? I think both are reasonable questions, but being a psychologist by training, and not a sociologist or political theorist, it feels more fruitful for me to pursue the second of these avenues rather than the first. And this question begins to bring me back to my attempts to link my interest in spirituality to my professional concerns with cognitive science, and with education. Can cognitive psychology tell us anything useful about what is happening in the mind when the Common Experience occurs? And if peace of mind, endogenous vitality, belonging and care, and an affinity with mystery and depth, are desirable traits, is there anything that schools can do directly to enhance students' spirituality? In short, can science help us to see what 'spirited education' might involve? Let me describe two strands of work that I have been involved in.

Unconscious intelligence

The first strand is concerned with unconscious intelligence. Now, to a strict Cartesian thinker, the very idea of unconscious intelligence is a contradiction in terms – a nonsense. Descartes and Locke taught us that Intelligence, Consciousness, especially deliberate conscious reason, and our personal Identity, are inextricably entwined. Intelligence is necessarily conscious. Whatever is not conscious can't therefore be intelligence. And furthermore, that brightly-lit nerve-centre of the mind is where we find the essence of ourselves, our human personhood, our very identity. I call this the ICI model of the self and mind – Intelligence-Consciousness-Identity. Basically, this model says we are all born philosophers. Conscious, clear, explicit, systematic and articulate thought is good; intuition, imagination and mere experience are, at best, secondary, and, generally, suspect. The origins of this lop-sided view of the mind goes back to Plato and even beyond.

This model became so well entrenched in Western culture that even when Freud and his predecessors came along and demonstrated the existence of unconscious forces in the personality, they could only be interpreted as Not-Intelligent – i.e. wild and emotional – and as Not-Me – the Id, the It, a disavowed Other that is alien and subversive. If the Id is to become ‘me’, it has to be translated into consciousness via ‘insight’. ‘Where Id was, there shall Ego be’ was the core maxim of psychoanalysis.

But there is now a mountain of evidence, which I collected together for the first time in my book *Hare Brain, Tortoise Mind* in 1997, that this picture is false. Implicit memory, subliminal perception, the importance of incubation in creative problem-solving – these and many areas of research attest not just to the existence but to the moment-to-moment value and sophistication, of what I called in *Hare Brain* the ‘undermind’. The undermind is not the hot, steamy jungle of psychoanalysis, but something much cooler and more cognitive. Conscious and articulate is not always smartest. It is quite possible to think too much, try too hard, and become over-explicit. Jonathan Schooler at the University of Pittsburgh has shown that trying to describe a face, or the taste of a wine, can make you worse at recognising it in the future. Schooler, and others like Stephen Smith at Texas A and M University, have also demonstrated that different ways of thinking suit different types of problems. To be sure, logical brainteasers succumbed to the methodical, well-articulated kind of thought. But other problems, which required a greater degree of insight, seemed to respond best to thinking that contained momentary lapses of concentration – ‘holes’ in consciousness where ‘nothing seemed to be going on’ – or where periods of focused thought were interspersed with others where the problem was deliberately put on the back burner, or attended to only in a fainter, fuzzier kind of way. (This, and a great deal of other research, is summarised in *Hare Brain*.)

One particular experiment by Colin Martindale at the University of Maine, back in the 1970s, particularly intrigued me – so much so that Paul Howard-Jones of the University of Wales Cardiff and I have just been awarded a grant by the Lifelong Learning Foundation to replicate and extend it using more up-to-date technology. Martindale selected high and low creative people, and asked them first to dream up a story line (as they might for a child at bedtime), and then to work on the bones of this story more deliberately – to shape it up. Using EEG recording, Martindale found no difference between the two groups in their level of cortical arousal during the later, elaboration, phase. Both, to put it simply, were in focused mode. But during the earlier, ‘inspiration’ phase, a marked difference emerged. The less creative people were doing the same thing. Their high-arousal, high-focus patterns showed that they were trying to think up the story using the same analytical frame of mind that they used to critique and elaborate it. The EEG patterns of more creative people, however, revealed a dramatic de-focusing of their awareness. Instead of trying to manufacture the story, they were letting it come to them. Using the new functional MRI scanner at the University of Exeter, Howard-Jones, Ian Summers and I are going to see how these thinking modes differ locally as well as globally in the brain. And we are also going to see whether it is possible to increase people’s creativity by getting their brains to work differently behind the scenes. Earlier work by Howard-Jones has suggested that, for many so-called less creative people, high-focus cognition is merely a habit, a default setting of the mind, that can be changed quite readily with an instruction or a simple activity. We shall see.

So the cognitive science strand of my thinking has led me to concur with philosopher Michael Polanyi’s dictum that ‘we know much more than we know we know’. It convinces me that gaining access to that ‘more’ depends on entering a state of mind that is less focused, less questing, less impatient and less controlled than our education tends to value. It suggests that people may differ in the ease with which

they enter or enjoy such a state of reverie. But people who don't take to it spontaneously may, with only a little coaching and a little effort, be able to make better use of it. Engaging successfully and enjoyably with complex uncertainties – mysteries – requires the ability to let your mind go and roam around by itself, and to feel comfortable doing so. People who feel afraid to let go are less at home with mystery. They avoid it, or they have to rush in and neaten it up, often before it is ready. And they ignore their intuitions – those little intimations of unconscious activity which, like the kicking of a baby in the womb, reveal that something is busy growing but not yet ready to be borne. A survey by Ference Marton has shown that taking your intuition seriously is almost a pre-requisite for a Nobel Prize in science, by the way.

Neuroscience

Thus, if we buy the ICI model of intelligence, consciousness and identity, we may effectively be closing down the aspect of our intelligence that is most at home with mystery, complexity and uncertainty. And we may also be reducing the 'presence' and intensity of our perception – what I have called our 'aliveness'. To see how that comes about, we have to take a slightly longer look inside the brain. Of course, the one thing we know for sure about the brain is how little we understand it. Neuroscience is still in its infancy, and anyway the brain is immeasurably more complicated than our conscious intellect can ever comprehend. And I am only an enthusiastic amateur, and like all amateurs, prepared to rush in where wiser angels quite rightly fear to tread. Nevertheless, the large-scale neurodynamic models of Edelman, Damasio, Freeman and others are beginning to give us leads that it is not entirely silly to extrapolate from, and I have a few speculations to offer. This is my second stand of research, and what follows draws on the book 1994 *Noises from the Darkroom*, from various articles in the *Journal of Consciousness Studies*, and from my Sir John Templeton lecture at Cambridge University earlier this year. It also draws on ideas in *Consciousness* by Rita Carter, who, I'm happy to say, is in the audience this afternoon.

We know that there are two basic kinds of activation in the neural circuits of the brain: excitatory and inhibitory. Just as in a car you need both an accelerator and a brake in order to have good control over the car's speed, so the brain needs both excitation and inhibition to control itself. Inhibition has many functions, of which I just want to mention two at this point.

First, it is needed to turn off neurones after they have done their job. If there was not such a mechanism, gradually the whole brain would become active, like a house where nobody ever bothered to turn off the lights. Inhibition helps to keep the overall amount of activity in the brain relatively constant. And secondly, it is inhibition that enables us to maintain those disciplined trains of thought so prized by the Enlightenment philosophers. As patterns of excitation move through the brain, they tend to 'turn on' associated circuitry – unless those associations are dampened by some kind of corollary inhibition. When we are thinking in a focused way, like the participants in Martindale's study, our frontal lobes are busy building short-term inhibitory stockades round the centres of activity, to stop them leaking out too widely.

So inhibition keeps us focused. But because there is only so much total activation to go round in the brain at any one time, it seems that the more inhibition we are using to stay focused, the less excitation there is available to 'light up' the circuits that are underlying perception and thought. When there are many potential calls on our attention, it takes a good deal of inhibition to keep them under control, and that begins to limit the subtlety of movement and feeling, and the richness and intensity of experience, that can be achieved. In other words, aliveness begins to suffer. As we

all know, the more preoccupied we are with the inner labyrinth of thought, the less likely we are to smell the coffee, and the more accident-prone we can become. Athletes and musicians are very familiar with the debilitating effect of conscious thought on virtuosity.

The self system

The tendency to over-focus, and the need to suppress a cacophony of competing claims on our attention, is connected with our models of 'self'. Mihaly Csikszentmihalyi has suggested that what he calls the 'self system' is essentially a complex ganglion of acquired goals and concerns. Basically, I am what I care about. The self system defines what gets in to the portfolio of possible needs and threats that I have to be on the look-out for. Did they laugh at my joke? Is someone stealing my ideas? Does my bum look big in this?... Though socialisation, this interconnected web of concerns takes up residence in the neural circuitry of the brain, and comes, like a cuckoo in the cortical nest, to exert a powerful control over its operations

How does the self system influence the working of the rest of the brain? Each active goal may well work by priming and contouring the rest of the neural landscape so that any potentially relevant input receives preferential treatment. Like an over-enthusiastic pin-ball player, goals tilt the metaphorical surface of the brain so the balls run in the preferred direction. And this tilting takes energy again – it draws on the total pool of activation, further depleting the 'free energy' that is left over to feel and sense. The more active concerns we have, the more of our stock of neural activation has to be tied up in tilting the table. Modern human beings may develop such an extensive portfolio of concerns that vigilance is continually required, and strategies to anticipate and outwit impending threats may have to be continually deployed. Beset with worries, life can get tiring and tiresome, as we all know only too well.

In addition, we need inhibition again. If we did not temporarily suppress some of our interests while we were engaged in pursuing others, we would be constantly distracted, and never get anything completed. We have to be able to keep on track, and it is one of the jobs of the prefrontal cortex to dole out inhibition so that we can do so. But our goals are not just multiple – they often conflict. As the size of the stack of priorities expands, so glitches, clashes between competing goals, become increasingly common. I want to be liked, but I want to be honest; I want to be secure but I want to be challenged. The need to 'save face' means we struggle to look knowledgeable when we are actually unsure, or to look calm, cool and collected when we are feeling anxious or upset. Thus we become divided against ourselves, and prone to deal with the discomfort by suppressing our awareness of aspects of our own experience – yet another role that inhibition might be required to play. If we don't find ways to resolve these glitches, we may become blocked or paralysed as competing action plans pull us in different, perhaps irreconcilable, directions. Freud himself offered a neurological model of repression in his renowned 'Project for a scientific psychology' published in 1895, and the idea has recently been revived in more sophisticated terms by Dan Stein and others.

We could also speculate about another way in which a seemingly insoluble tangle of goals might be simplified: some of the goals themselves could be repressed. We could find a way out of the dilemma by pretending to ourselves that some things that matter to us actually don't. For example, one set of priorities spring from what seems to be a natural desire to take care of the people and the environment around us. Even very small children have been observed to be affected by other people's distress, and it may well be that, being social animals, a degree of altruism is innate, and we are 'wired' to care, as well as to compete. But if caring and kinship threaten

to make the motivational tangle even more intractable, we could just ignore them – maybe temporarily, or maybe more chronically. By doing so, we make life simpler, but at the cost, of course, of cutting ourselves out of the webs of mutual goodwill and support that are potentially available. The cost of simplification is estrangement from being cared for, and even from our own predisposition to care for others – in other words, from belonging.

We can construe the socialised brain, then, in a way that begins to generate accounts of the loss of spiritual quality. Instead of seeing things as they are, in their own richness and their own right, we find ourselves looking, as Hermann Hesse put it, in ‘a cloudy mirror of our own desire.’ Rest may become a scarce commodity, and peace of mind in short supply. Care, and with it the feeling of belonging, may be unconsciously strangled. And aliveness is sapped by the convoluted contortions that the brain is required to perform.

By the same token, even a sketch as quick and crude as this may also begin to stimulate ideas about how spirituality might be reclaimed. If it is the ‘self system’, the tangle of conditioned goals, and the way they contort the functioning of the brain, that is at the heart of the problem, then a route to the recapturing of the spiritual quality of experience may lie not in the attempt to *engineer* experiences that have such quality, but by finding ways to *disinhibit* them. And there may be learnable ways to do that. In principle, therefore, spirited education might focus on helping young people learn how to manage their own brains more effectively, so they do not inadvertently lose access to qualities of being that are actually profoundly nourishing and wholesome. What has been inhibited can be disinhibited. Habits of attending or reacting or repressing might be perfectly capable of being unlearned. What has been obscured can be revealed.

For example, imagine what might happen, in the internal economy of the brain, if a convoluted and chronically active self system could be switched off – decathected, to use the Freudian term. Suddenly the anxious preoccupation with a whole raft of self-centred threats and needs would disappear. Self-consciousness – looking at oneself critically through the assumed-to-be-judging eyes of other people – would also die away. As the babble of conflicting goals quietens down, so ‘what to do for the best’ might appear less problematic. If care is indeed one of our natural, residual concerns, then that might come to the fore. We might be startled to find that we feel loving towards a train compartment or a café full of strangers. And, as pockets of locked-up inhibition are released in the brain – like sentries being stood down – we might find that the suddenly-available surfeit of activation rushing into our perceptual systems feels rather like a blaze of fire in the body, or a suffusing of perception with brightness and detail. Could it be that the Common Experience reflects not a literal revelation of God, but a happy accident in the frontal lobes of the brain? Could it be that these are just different languages for describing one and the same experience?

Here is a little more from the essay of Herman Hesse’s, ‘Concerning the soul’, from which I quoted a phrase earlier. (I’ve tinkered with it to get rid of the gendered language in the original.)

At the moment when desire ceases and contemplation, pure seeing, and self-surrender, begin, everything changes. People cease to be useful or dangerous, interesting or boring, genial or rude, strong or weak. They become nature, they become beautiful and remarkable, as does everything that is an object of clear contemplation. For indeed, contemplation is not scrutiny or criticism, it is nothing but love. It is the highest and most desirable state of our souls: undemanding love.’

And here Hesse gives us a clue about where spirited education might start – in the cultivation of contemplation – the ability to perceive without problem-solving, you might call it.

Before I turn to education, however, let me do another bit of summing up. I want to highlight two implications of the cognitive science which I have discussed. First, we possess the ability to attend in different ways. These different ‘modes of awareness’ or ‘states of mind’, as we might call them, are regulated by the frontal lobes, and correspond to different kinds of activity patterns in the brain. We can obviously swivel our awareness towards different aspects of the environment, and we can also turn it inwards, towards our own thoughts and memories, as well as outward. But more than that, we can vary its degree of focus, so that sometimes we are thinking tightly or perceiving narrowly, and other times we are in a more relaxed or holistic mode, allowing thoughts and patterns to emerge rather than driving them down predetermined tracks. Being able to make flexible use of these modes gives us access to experiences that are valuable in their own right, and it also seems to be a prerequisite for genuine creative thinking.

Second, the flexibility and sophistication of the way people use their minds can be expanded through experience, but it can also be reduced. Specifically, the company children keep changes, whether intentionally or not, the ways they go about thinking and sensing and feeling. Just as cultures shape the growing child’s emotional repertoire – one encourages deference in the face of conflict, for example, another assertion – so they also mould the development of perceiving, attending, remembering, judging, describing and problem-solving. And this influence is exerted not only via the cognitive role models to which children are regularly exposed, but also through the kind of ‘selves’ they are invited (or required) to grow into. An anxious child may need to develop habits of attention that are scattered and fragmentary. A child who comes to think of herself as ‘clever’, in traditional academic terms, may find that her world has little use for rich perception or creative intuition, and the allied modes of mind may become neglected, underdeveloped or rusty. She may also grow to experience ‘failure’ as an assault on her self-esteem, and thus become conservative in the learning challenges she is willing to accept. There is plenty of research by Carol Dweck, Jacquelynne Eccles and others to show how real these risks of narrowing the mind are.

Spirited education

And so, finally, back to education. I think that spirited education can and should be about the expansion of mind and all its faculties. Of course young people need specific packages of ‘knowledge, skill and understanding’. But more vital than the question of what these should be is the question of whether minds are being expanded or contracted as they learn. You can be taught physics in a way that makes you more attentive to the minute movements of the physical world, or less. You can learn history in a way that emphasises and strengthens ‘remembering’, or ‘thinking’. You can do PE in a way that encourages your interest in your own body, or in a way that makes you only competitive and comparative. In a hundred different ways, education can make you more alive, more at home, more inquisitive and receptive, and more at ease with yourself – and more interested in expanding these qualities – or in a way that shrinks and deadens the spirit. The question is: what do schools and teachers value; what do they model; what mind-expanding opportunities do they afford; and what do they discourage or ignore? One way makes young people more spirit-prone. The other, by design or default, makes them neglect matters of the spirit, or leads them to seek surrogate satisfactions rather than the ‘real thing’.

There is not time to explore all the ways in which minds can be expanded, so I am going, in the time I have left, to concentrate on just one: the faculty of attention, or awareness, or mindfulness. Here is another poem to illustrate what I mean. It is called, perhaps unpromisingly, 'Mother collecting marine specimens'.

She poles the skiff from sunlight
Into the drawbridge shadow, eases
Against a piling, its muddy shapes
Exposed by lowering tide.

In a cave-like cool, she nudges
Grey clusters, crusty forms.
She scrapes, selects,
Lays silty bits and clumps
Into a bucket of clear water.

Intent, she peers and plucks.
A streak of blood appears on her thumb.
She doesn't notice. She never does.
I slide a finger over creosote blisters,
Hear them pop, feel them flatten,
Then stare into the realm of the underbridge –
Great toothy gears, twisted cables.

Above our boat, the whirr of tyres.
No one knows we're under here
Or thinks of these barnacles,
Their hair-like legs kicking
Just below the water line.
Bells begin to clang, the hum
Ceases, the bridge shudders,
Its teeth begin to grind.

When we re-enter brightness
And the ordinary pitch of traffic,
I lean to look in Mother's bucket:
Green stones, yellow trees,
Purple stars, an orange flame.

The poem comes from an article by Anne McCrary Sullivan, an American poet, in the Harvard Educational Review, entitled 'On the art and science of attention'. Through a series of poems, and a prose commentary, Sullivan explains how her mother taught her to see, and how, as a teacher, she draws on this experience to educate the perception of her students. She offers them poems that induce attention; she creates exercises that require them to look; and she offers them herself as a model of sustained attention, in the same way that her mother was for her. In the article her intention, she says, is to raise questions about 'how attention develops; whether a model of intense attention has power for teaching attention; how attention to external realities might facilitate awareness of internal realities; how focused attention to an immediate reality may engage memory and/or imagination.'

She describes her childhood as an 'apprenticeship in attention', accompanying her mother, the marine biologist, again and again, as she collected and analysed her specimens, unconsciously imbibing the habits and pleasures of close, sustained

observation. 'My mother taught me attention to the complexities of surface detail and also attention to what lies beneath those surfaces...She held classes in mud and water and light. She taught with buckets and shovels and nets...In doing so she made me a poet.' Now, as a teacher, she tells her students to stare at a small patch of grass until something happens, so that tiny events become a source of excitement and absorption – and then to write. She wants to expand their powers of and enjoyment in pure attention, not to understand poetry better, but to cultivate the mindset of the poet – which are also part of the mental world of the scientist, the doctor or the management consultant. That is mind expanding education. And that is also, I think, bringing students closer to the world of spirit. Teaching attention is not only functional; the ability to deploy attention fully and dynamically enriches and deepens experience itself.

'Aesthetic vision suggests a high level of consciousness about what one sees. It suggests a 'wide-awakeness'...It perceives the potential for transformation within any apparent fixity...it includes emotion, imagination and paradox. It embraces complexity. It dares to address the ineffable.'

Supple habits of attention bring aliveness – and they also open the way to deeper engagements with mystery. Mysteries are things that won't succumb to rational problem-solving, however earnest, and no matter how well-supported by expensive machinery. The technological attitude of our culture sometimes seems so strong that people no longer understand the difference between problems and mysteries, but, as Raymond Chandler said, 'Show me a man or a woman who cannot stand mysteries and I will show you a fool, a clever fool perhaps, but a fool just the same.' Mysteries need what Heidegger called 'contemplative thinking', and that means dwelling attentively within the mystery, without rushing to paste comprehension over the top of it. Attention is the sine qua non of learning, and the more complex the learning, the more the contemplative registers of attention are needed.

And attention brings peace of mind, in a variety of ways. To be able to watch the ebb and flow of your own thinking with the same detached absorption that Anne Sullivan watched the barnacles, is very useful, and it can be taught. John Teasdale in Cambridge has shown convincingly that people taught to watch their thoughts in this way can avoid the Siren-calls of their own depressive thought patterns. They can hear the voice that tells them they are no good – and refuse to buy it. There is a great deal of piece of mind in that – and the knack can begin to be learned in a few hours. And one of my PhD students, Caroline Mann, has shown that schoolchildren can learn to quieten their minds in this way – and that this improves their memory performance, and reduces their stress levels.

Learning the arts of attention expands the mind in a variety of ways, some that are of immediate utility, and others that nurture the spirit in a deeper way. I want to conclude by defending the latter against the demands of the utilitarians.

Contemplation, mindfulness, aesthetic vision – there are many forms of attention that are their own reward. The language of educational reform at present is far too technical and utilitarian. Trying to develop 'core competencies' or 'key skills' may be a practical improvement over 'raising standards', but it does not fire the imagination. Rhetorically, it is an Iain Duncan Smith of a concept. A recent cartoon shows two boys, slouching to school, one saying to the other: 'Bad news. They've discovered something called 'lifelong' learning.' The field of 'learning to learn', with which I have been associated for many years, is, it has to be said, is also more *andante* than *con brio*. I think the next phase of my work might be to liven it up.

A final word. The idea that spiritual development involves cultivating a wider range of states of mind, or 'attentional modes', may strike some of you as unbearably mundane. But it is actually close to the heart of many of the spiritual traditions. If it is any comfort, you might sympathise with the questioner in Zen story of Master Ikkyu and a 'man of the people'.

One day a man of the people said to Zen Master Ikkyu: Master, will you please write for me some maxims of the highest wisdom?' Ikkyu immediately took his brush and wrote the word 'Attention'. 'Is that all?' asked the man. 'Will you not add something more?' Ikkyu then wrote twice running 'Attention. Attention.' 'Well,' remarked the man rather irritably, 'I really don't see much depth or subtlety in what you have written.' The Ikkyu wrote the same word three times running: 'Attention. Attention. Attention.' Half-angered, the man demanded, 'What does that word 'attention' mean anyway?' And Ikkyu answered gently: 'Attention means attention.'

Thank you for *your* attention.

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