

**Cultivating Creative Mentalities:
A Framework for Education**

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Is it possible to organise life in schools and classrooms in such a way that young people not only have the opportunity to *express* their creativity, but systematically *become* more creative? That is the question addressed by this paper. It draws upon and synthesises a range of different kinds of evidence – anthropological, phenomenological, experimental and neuroscientific, as well as classroom-based action research studies – that clarify what it means to have a ‘creative mentality’; and suggest that the answer to the question whether such mentalities are capable of cultivation is ‘probably yes’.

Clearing the desks

The study of ‘creativity’ seeks answers not to one but to a family of complementary questions that need distinguishing if we are not to suffer unnecessary confusion. For example, ‘What counts as a creative product or performance?’, concerns the social and psychological processes of judgement. It asks how value is ascribed. And the answer depends critically on specifying ‘for whom?’ An idea can validly be judged novel, insightful and useful *by its creator*, and how this attribution is made is quite a different question from how the accolade ‘creative’ is bestowed and negotiated *socially*. There is no need to get hung up on whether a ‘true’ creative product can be ‘new for me’, or whether it has to be ‘new in human history’: they are different questions.

The question ‘What is creativity?’ invites answers in terms of the way products relate to a particular domain, history or community of practice. Margaret Boden (1994) suggests that to answer this question we need the philosophical idea of a ‘conceptual space’, within which performances and products are carried out. Examples would be ‘perfume containers’, ‘contemporary art installations’ or ‘astrophysics’. Boden argues that any putative creative product may be either *exploratory* or *transformational*. Exploratory creativity discovers new possibilities that are already latent within the ‘space’, while transformational creativity changes the nature of the space itself.

There is a wider sociological question of the value that is placed on ‘creativity’ *per se* by a group or a society. 21st century British primary education, for example, tends to see creativity as being a generally ‘good thing’ – and tends to downplay the potentially wasteful, destructive or ‘unbridled’ quality that creative activity may have. It also tends to romanticise and ‘aestheticise’ creativity, associating it with painting, music and drama (as opposed to engineering, product design or hairdressing, say), and to airbrush out of the picture its essentially awkward, challenging and emotionally-demanding qualities. Other cultures see ‘creativity’ in quite a different way, some judging ‘self-expression’, for example, to be worthless egotism if it is not underpinned by years of disciplined learning.

Then there are questions to do with the *processes* of creativity, rather than the products and judgements. One is: do ‘creative projects’ have characteristic phases and dynamics? A rather tired old formulation, attributed to Wallas (1926), sees creativity as proceeding linearly through four phases called preparation, incubation, illumination and verification. Though this skeleton still contains some truth, it has more recently been developed into a much more flexible and dynamic framework, in which a greater number of optional phases interweave in a more cyclical fashion (Sternberg 1999). Sometimes a creative project begins with the finding of a *seed* – a poignant or discrepant observation, perhaps - that does not fit the usual picture. There may be a protracted period in which such seeds sit at the back of the mind, sometimes completely forgotten, and then come back to the fore to be *refined*, puzzled over, and worked on. There may be one or several experiences of *impasse*, where deliberate effort is making no headway, and then, unpredictably, a more ‘magical’ process may occur which delivers an *inspiration* or an inkling that just ‘pops into your head’. At any stage the original seed or intention can be changed or reconstrued – indeed this openness to *opportunism* and reconsiderations seems characteristic of creative individuals (Getzels and Csikszentmihalyi 1977). And finally there may be a protracted process in which ideas are *elaborated*, critiqued,

shaped and communicated – and in which *intuition*, skill and deliberate decision-making are tightly interwoven (Claxton and Lucas 2004).

These more subtle chartings of the ‘natural history’ of creativity lead to the question of how creators use their minds, and whether they need to be able to use their mental and emotional faculties in a variety of different ways, appropriate to the different phases and modes of the creative journey. Thus arise the truly psychological questions: What are creative people like? What goes to make up a creative mind? And can those attributes be cultivated? To an extent, these can be tackled independently of the sociological and philosophical questions sketched above, and it is on these that the rest of this paper focuses.

Creativity lite

Before outlining the lineaments of the creative mind, it is worth distinguishing three ways in which the concepts ‘creativity’ and ‘education’ are commonly juxtaposed (only one of which I am going to pursue here). The first is ‘creative teaching’, which involves the teacher in attempting to behave in ways that are more entertaining or imaginative. Whether this is a good thing or not – potentially recruiting the interest of the disaffected, perhaps, but at the same time serving to encourage hard-pressed teachers to set themselves ever higher and more demanding standards – it need have nothing to do with teaching *for* creativity. ‘Creative teaching’ can be used to sweeten a very traditional content-focused curricular pill, for example.

Secondly, creativity, as I have noted already, sometimes tends to be associated with special kinds of events that allow young people an enjoyable breather from the rigours of the National Curriculum for a few days, and to engage in longer-term projects that involve more composition and activity than is usually allowed: ‘mediaeval week’ and the like. Again, while these breaks from routine are to be welcomed, the fact that they *afford* and *invite* such artistic activities does not at all entail that any lasting change to their skills and dispositions will accrue. Just as there are all kinds of (worthwhile) physical activity that do not lead to any increase in all-round fitness, so many enjoyable mental activities do not necessarily result in fitter minds (Claxton and Carr 2003). The question we focus on here is whether there are ways of moving beyond artistic set-pieces that are fun, but disconnected from the rest of young people’s educational experience, to build long-lasting creative attitudes and capabilities.

Creative mentalities

This section attempts to sketch out a map of the creative mind. It is based on evidence from a variety of sources, and of differing degrees of robustness. Some comes from ethnographic studies of creative individuals and their working practices as revealed both by observation and by self-report through interview and questionnaire (e.g. Getzels and Csikszentmihalyi 1976, Csikszentmihalyi and Sawyer 1995). Some stem from the reflective writings of acknowledgedly creative individuals (e.g. Ghiselin 1952, Barron, Montuori and Barron 1997). Some derive from experimental studies of creativity (e.g. Isen, Daubman and Nowicki 1987, Claxton 1997). While other clues emerge from neuroimaging studies such as those of Martindale (1995) and Howard-Jones et al. (2004)

First, we must allow that the creative mind comprises a range of different kinds of psychological entity. At the most specific end, people often use particular *techniques* to stimulate their imaginations or to support their concentration. (The poet laureate Andrew Motion sometimes takes a (medically unnecessary) cold remedy to try to ‘trick’ his system into an inward, slightly melancholic state which he finds conducive to writing poetry, for example). In some areas these become consolidated into what we might call the ‘*craft*’ of the creator: the working routines and methods which they habitually employ.

Then there are the more generic *habits* and *dispositions* of mind that seem to be supportive of creativity. It is necessary to use such terms – rather than the more common ‘skills’ - to emphasise that creativity relies not just on the *ability* to think, attend or reflect in certain ways, but on the *inclination* to do so, and to take *pleasure* in doing so. One must be *ready* and *willing* to note the intriguing detail, or to tolerate frustration, for example, as well as merely *able* to do so. And then, beyond habits and dispositions, I think we must also acknowledge the importance of the *interests*, *beliefs* and *values* that often lie behind them and motivate them. We shall explore these more in a moment.

Deeper still, we should note that creativity is also channelled and constrained by the more immutable structures and processes that are often the focus of attention for cognitive scientists: hard-wired capacities of working memory, or fundamental general-purpose routines of problem-solving, for example. Though much time and effort goes into elucidating these, I shall focus here on the intermediate layers of mind: the habits, values and attitudes which are at least potentially amenable to change.

Creative habits and dispositions

For purposes of illustration, let me group some of the dispositions which seem most supportive of creativity into six. Taken together, they form the acronym CREATE.

Curiosity. Creative people seem to have an appetite for questioning that sometimes borders on the obsessive. This bent may be general, though more likely the questioning disposition manifests most strongly in their particular domain of creative expertise. They enjoy wondering about things, and are inclined to question the known and the taken-for-granted as well as things that are more obviously problematic. Questions rarely come clear-cut, and often start off as a more intuitive sense of dissatisfaction, puzzlement or intrigue. The processes of living with the question, coming to know it better, and gradually seeing it more clearly, are all part of creativity. Thus, if young people are handed a creative project ready-made, they will be missing out on that preliminary stage of ‘problem-finding’ that is the wellspring of genuine creativity. If their normal school experience deprives them of the time and encouragement to find and shape their own questions, it will likewise be ‘creatocidal’ rather than ‘creatogenic’ (Claxton and Lucas 2004). And if this slow process of incubating questions is actually disdained, in favour of the quick, knowledgeable answer, then the creative disposition is likely to be further weakened.

Resilience. Genuine creativity is not quick and easy. It is not all fun. And it is certainly not the case that ‘anything goes’. Whether the sense of creative satisfaction derives from meeting an external challenge (designing a new gizmo) or from an inner need to capture and express something through an artwork, creative people have a strong feeling for what is ‘right’ which often prevents them from accepting easier solutions. Children too seem to have that sensitivity to what is ‘just right’, and what is not. Quick and easy encouragement and reassurance do nothing to strengthen their trust in this inner compass. The sense of ‘quality’, and of the tolerance for effort and frustration that the commitment to quality entails, is essential to creativity (Pirsig 1974). That ability to tolerate confusion and frustration, to relish a challenge, and not to give up prematurely, has to be a core attribute of creative people. An environment that routinely acknowledges and rewards the fast answerer, and which even uses the word ‘slow’ as a euphemism for ‘unintelligent’, is probably going to be creatocidal. Creativity requires patience – and the quality that John Keats referred to as ‘negative capability – that is when a man is capable of being in uncertainties, mysteries, doubts without any irritable reaching after fact and reason.’

There is also a kind of social resilience that is required of creative people: the tenacity to stick with your questions, ideas and projects even though most other people can’t see the point or

think you're nuts. Creativity means thinking, acting and producing in ways that they don't, and that often takes a good deal of courage. You have to be willing to stand out from the crowd, and think for yourself – and there is always the real risk that you might indeed turn out to be wrong. Independence of judgement is one of the stand-out personality traits of creative people (Barron 1997).

Experimenting. Creative people like messing around with materials, ideas, actions and possibilities. Though their projects are dear to them, they have a playful approach to solutions, and are always on the look out for new angles and affordances. A four-year-old messing about with sand is not necessarily trying to realise a pre-existing idea; she is just as likely to be encouraging sand to reveal its possibilities, and more often than not her 'project' emerges from and capitalises on her serendipitous discoveries, rather than puts a predetermined plan into action. 'What if...' and 'Could be...' are guiding motifs of the creative mind. Adults who continually interact with young people on the basis that they always ought to 'know what they are doing', and should be able to explain 'what they are trying to do' may be asking them to damp down their disposition to experiment, and thus to foreclose on creative possibilities.

Attentiveness. The discoveries of experimenting cannot be harvested and put to good use if they are not noticed. Creative people seem to have a propensity for intense, effortless concentration. They are able to let themselves go into their experience (or into their imaginal worlds) whole-heartedly, and become rapt, engrossed and absorbed (what Csikszentmihalyi (e.g. 1990) rather unnecessarily dubs 'being in flow'). Though, again, they may have an important project on the go, they seem able to hold it, at least sometimes, at the back of their minds, and allow unexpected details and unanticipated patterns to emerge in perception. Where the earnest problem-solver is busily looking for things that she has already half-decided are going to be relevant, and is therefore half-blind to everything else, the creator lowers the intensity of that motivational magnetic field, and so is able to look more carefully at what is there – and thus to spot the small clue that may give her the insight she needs. Too much careful thinking, hypothesising and 'showing your working' can all dampen this receptivity (Melcher and Schooler 1996).

Thoughtfulness. How people make use of the private rooms and resources of their own minds strongly influences their creativity. And there are several forms of inward 'thoughtfulness' that are all involved. Pondering over questions and possibilities is one. Thinking carefully and methodically is another. Being sensitive to that inner sense of rightness is another. Allowing and enjoying the semi-autonomous play of images and metaphors that happens in states of

reverie (as you are waking up or falling asleep, or doing something repetitive and habitual like showering or driving, for example) is a very important one. Having an attitude of ‘respectful scepticism’ towards intuition – hunches, inklings, glimmerings, even inspirations – is also important. Knowing when to keep trying to figure something out, and when to give up and relax – being a skilful orchestrator of your own states of mind and mental modes – is very useful. (Colin Martindale’s (1999) EEG studies show that creative people are able to segue smoothly and intuitively between focused and dreamy thinking, as appropriate, while less creative people tend to get stuck in one mental groove and can’t get out). Organising school so young people have 12 weeks of straight thinking, and then one wacky week of fun and games, would not help them develop the mental suppleness that creativity requires.

Environment-setting. Finally, creative people seem to know that their physical and social environment can make a big difference, and that they need different kinds of setting, support (or challenge) at different points. As far as possible they regulate their social world so that it supports the kind of thinking that they need to do. Sometimes the artist will go and mooch about in the Tate; sometimes he locks himself away and immerses himself entirely in his self-made world of trial and error. Sometimes the scientist has her office door open, and welcomes casual chat; sometimes the door is closed and locked and the phone and email are off the hook. Creative people also seem to surround themselves with people who are going to support their creativity – whether emotionally, intellectually or practically. They steer away from the jobsworths and the cynics as far as possible. They know how to use the rhythms of time to balance different kinds of thinking. Their daily rhythms allow for both hard work and reverie; they know the worth of breaks and holidays. They know the places and the times of day that seem conducive to the muse (see Claxton 1997, Claxton and Lucas 2004).

This is a crude sketch of some of the more plausible dispositions and habits of mind of creative people. There are many nuances and personal differences to which it is not possible to do justice here. But CREATE serves to make the general point that ‘being creative’ is more than being able to do ‘mind maps’ and indulge in a bit of brainstorming every so often. And this leads immediately to the last question: what is the appropriate model for thinking about the cultivation of creative mentalities?

Creatogenic cultures

Like any other habits, creative habits of mind don’t appear overnight. They can’t be directly taught, though some explicit discussion supports their development. Neither can they just be practised for a day or two, and then be assumed to be established. Habits of mind reflect the day-to-day values and practices of the communities in which people spend a lot of time. To

begin to see how creative mentalities might be developed, it looks as if we have to attend to the *cultures* that operate in schools and classrooms, and to a process of *cultivation* that is slower than ‘teaching’ or ‘training’, but possibly more effective in the longer run. For creative mentalities to be developed, the mental habits of CREATE have to become familiar, enjoyable and ‘second nature’. And that takes time and, as a friend of mine once said of dealing with her teenage son, effective kinds of ‘gentle pressure relentlessly applied’.

Thus it seems highly likely that fine words, good intentions, new policies and sporadic excitement will not be sufficient. Crudely, a culture is ‘the way we do things round here’, and it embodies a set of often tacit beliefs and values that underpin our consensual judgements about what is ‘normal’, ‘good’, ‘naughty’, ‘dangerous’ – and ‘creative’. In cultural terms, *what we act as if we believed and valued* has much more impact on young people’s development than what we *say* we believe and value – and there is sometimes a significant disparity between the two (e.g. Bruner 1996). So culture change – towards genuine and more effective cultivation of creative mentalities, for example – has to change what actually happens on a daily basis, and has to connect those alterations, which in themselves might seem quite small, with the underlying shift in priorities. And, as we said before, those changes have to contribute to establishing not just a climate that *affords* or even *invites* creative thinking, but one that stretches and thereby *strengthens* the creative habits and dispositions.

‘The way we do things around here’ has a variety of different facets, and culture change is more likely to be effected (and effective) if several of those aspects change together, in ways that instantiate the shift in values-commitment. These facets include:

- The materials and resources that are made available
- The activities that are offered, encouraged or allowed
- The way time is organised and demarcated
- The way space and the visual environment are used
- The language that is used to comment on students’ actions, achievements and products (as well as what passes without comment, and is therefore tacitly sanctioned and ‘normalised’)
- What is formally and informally assessed
- The jokes, memories and stories that are habitually told
- What is modelled (approvingly, or without explicit comment) by ‘seniors’ (older students) and ‘elders’ (teachers and other adults)

It is our hypothesis that it is sustained changes to these aspects of ‘the way we do things round here’ that makes a difference to young people’s creative mentalities. By implication, we suggest that

- free-standing lessons on ‘creative strategies’ or ‘thinking skills’
- teaching hints and tips (mind-mapping, brainstorming etc.) and
- aesthetic ‘away-days’

unless underpinned by a more thorough-going culture change, may be enjoyed by students, but will be less likely to produce changes in mind-set that are robust, lasting, or spontaneously applied in new settings.

Cultivating creativity in Cardiff

For the last four years, groups of teachers in Cardiff schools have been attempting to cultivate the mental habits of creative learning in their students, and to document and evaluate their effects through action research projects. Around 150 teachers across all phases have carried out at least one such project (see Cardiff Schools Service 2002, 2003, 2004). Let us illustrate the approach with just two examples from this extensive body of data.

In Roath Park Primary School, Year One teacher Victoria Scale-Constaninou noticed that her children did not seem to value ‘creativity’ in their learning, nor, she realised, did she actually encourage it. In her research report, she writes: ‘Whilst my approaches to teaching and conveying information were, at times, certainly creative, the actual activities [I] designed for the children, and the mode in which they were instructed to approach them, tended to be linear and prescriptive...None of the children saw imagination or creativity as...a significant aspect of learning’.

In order to try to change this, Vicky modified her use of space, resources and language. With the aid of a black sheet she transformed the ‘home corner’ into a ‘creative corner’: a quiet tent with some dim lights and music playing inside. The children were encouraged to make use the creative corner when they wanted to use their imaginations. Whole-class imagination sessions were also held in which they got used to closing their eyes and letting ideas ‘bubble up’ into their minds. The children decided they would like to record their imaginings so each designed their own ‘imagination book’, and time was regularly found to use them.

Importantly, says Vicky, ‘I made it clear to the children that I would not mark these books and that the content was their choice’. Each child also made their own ‘imagination badge’ that they were entitled to wear whenever they felt they had used their imagination in their

day-to-day work. And talking about the value of imagination in learning became a more routine part of the classroom environment.

Individual interviews were conducted with all the children both before and after these changes were implemented. These revealed an increase in the number of children who said they regularly used their imaginations (from 16 to 22), and a very significant increase in those who said they made use of their imagination to help them learn (from 4 to 19). Asked to elaborate on the latter, typical comments from the children included: 'Sometimes when I need help I don't need it because I use my imagination', 'It gives you ideas because it gives you a chance to think more', and 'It makes my sentences more exciting'. Vicky was surprised to discover that a high proportion of the 'middle-ability' boys in the class had responded particularly well: 'they were the pupils who seemed to value the use of imagination most and articulated it best'. There is evidence that the development of the *disposition* to make use of imagination in the course of routine learning had been strengthened, and that it had become second nature to many of the children. 'Quite a few of the children now ask to go into the creative corner of they are stuck in their work, or if they feel they want to improve their work'.

Meanwhile, down the corridor at Roath Park, Louise Edwards was aiming to develop her Year Six's ability to enjoy focusing on the depth and the detail of what they were doing, so that they would feed their creativity by asking their own questions. She had specially noted that her class got reasonably good results, but did so by skimming over the surface of their learning. When she observed her classroom culture, she found that 'my instruction to set them working of "Off you go!" sounded like a starting pistol in the heads of a large number of children, who immediately became competitors in a race to be the first to my desk with their work.'

Louise took a baseline tally of the number of times a day she heard 'Miss, I've finished, what shall I do now?' First thing was to present the results of this back to the children and use it to stimulate a discussion of their attitudes towards 'learning'. 'We then discussed ways in which we could make understanding and learning the most important features of our work, and the children's own suggestions evolved into the following strategy...' Henceforth, the description of every activity would be accompanied by a suggestion for a 'Nail Point' that was the learning focus behind the activity. Then, when children finished the activity, it became *their* job to use 'Hammer Time', in which, singly or in groups, they designed their own extension activities that would help them 'hammer in the nail point' – and explore its nuances and possibilities in more detail. It is worth quoting Louise's account of what happened in some detail.

As with any change to classroom practice or organisation, it took some time and patience to implement the strategy... Initially, it was necessary to brainstorm ideas for Hammer Time activities and provide suggestions... However, as the project progressed, whole class 'coaching' like this became less necessary as not only children's habits but their ways of thinking altered, and they became able to be more independent in devising their own learning strategies and activities... It took very little time before I noticed a marked decrease in rushing work... In addition, I found that the quality of work increased and that children were implementing their learning in subsequent work much more. A further, unexpected outcome was that I experienced a far greater number of requests for help, with children becoming more willing to share their difficulties in learning and understanding. I found this extremely encouraging, as I've often felt concern over children's reticence to ask for help in the class.

Louise concludes her report by explicitly noting that it was not the activity *per se* that had the effect, so much as the way it functioned as a 'carrier' of a change in her own values. 'This project has been extremely valuable, not only in extending children's metalearning but in developing my own. It has provided me with the opportunity to gain insight into the messages that I can give children through the features of their work and the classroom activities which I choose to value'. Whereas previously there was some dissonance between her professed interest in deepening children's understanding and the way she organised the classroom, now that gap had been genuinely narrowed. Her desire that they should learn the pleasure of taking time, digging in, asking questions and challenging themselves was being more effectively communicated to the children – and they were responding.

And part of the culture change was to involve the children more in what was going on. Instead of figuring all this out 'behind the scenes', and then delivering a polished set of changes, she talked with them about her intention, and involved them in coming up with strategies for putting it into effect. 'While encouraging children's learning and understanding has always been the focus of my teaching, the most important implication of this project for me has been the need to share this focus with the children. It has helped me to realise that making understanding a *joint goal and responsibility* can impact in a far more effective way on children's learning.'

Conclusion

These two projects are small-scale and preliminary. One focuses on encouraging and stretching children's ability and inclination to be *thoughtful*, in a variety of ways, about what

they are doing, and thus to strengthen the imaginative dimension of their creativity. The other aims to develop curiosity, resilience and to ability to create enjoyable learning challenges for themselves. Both seem to have been successful in shifting pupils' habits, dispositions and sources of pleasure – rather than just giving them some quick techniques. And both have found ways of embedding these changes in routine classroom life, without jeopardising either class management or levels of achievement. They remain illustrative rather than definitive, however.

References

- Barron, F., 1997, Introduction. In Barron, F., Montuoni, A. and Barron, A., (eds), *Creators on Creating*, Tarcher: New York.
- Barron, F., Montuoni, A. and Barron, A., 1997, (eds), *Creators on Creating*, Tarcher: New York.
- Boden, M., 1994 (ed), *Dimensions of Creativity*, Bradford/MIT: Cambridge, MA.
- Bruner, J.S., 1996, *The Culture of Education*, Harvard University Press: Cambridge, MA.
- Cardiff Schools Service, 2002, *Learning to Learn: Building Resourceful, Resilient and Reflective Learners, Vol. 1*, Cardiff.
- Cardiff Schools Service, 2003, *Learning to Learn: Building Resourceful, Resilient and Reflective Learners, Vol. 2*, Cardiff.
- Cardiff Schools Service, 2004, *Learning to Learn: Building Resourceful, Resilient and Reflective Learners, Vol. 3*, Cardiff.
- Claxton, G.L., 1997, *Hare Brain, Tortoise Mind: Why Intelligence Increases When You Think Less*, Fourth Estate: London, HarperPerennial: San Francisco.
- Claxton, G.L. and Carr, M.A., 2004, 'A framework for teaching learning: the dynamics of disposition', *Early Years*, 24, 87-97.
- Claxton, G.L. and Lucas, B., 2004, *Be Creative*, BBC Books: London.
- Csikszentmihalyi, M., 1990, *Flow: The Psychology of Optimal Experience*, HarperPerennial: San Francisco.
- Csikszentmihalyi, M. and Sawyer, K., 1995, 'Creative insight: the social dimension of a solitary moment'. In Sternberg, R.J. and Davidson, J.E., *The Nature of Insight*, Bradford/MIT: Cambridge, MA.
- Getzels, J.W. and Csikszentmihalyi, M., 1976, *The Creative Vision: A Longitudinal Study of Problem-Finding in Art*, Wiley: New York.
- Ghiselin, B., 1952, *The Creative Process*, University of California Press: Berkeley, CA.

- Howard-Jones, P.A., Collins, E., Blakemore, S-J., Summers, I and Claxton, G.L., 2004, 'Application of neuroimaging in the development of instructional strategy', in press.
- Isen, A.M., Daubman, K.A. and Nowicki, G.P., 1987, 'Positive affect facilitates creative problem-solving', *Journal of Personality and Social Psychology*, 52, 1122-31.
- Martindale, C., 1999, 'Biological bases for creativity', in Sternberg, R. (ed), *Handbook of Creativity*, Cambridge University Press: Cambridge.
- Melcher, J.M. and Schooler, J.W., 1996, 'The misremembrance of wines past: verbal and perceptual expertise differentially mediate verbal overshadowing of taste memory', *Journal of Memory and Language*, 35, 231-45.
- Pirsig, R., 1974, *Zen and the Art of Motor-Cycle Maintenance*, Bodley Head: London.
- Sternberg, R.J., 1999 (ed), *Handbook of Creativity*, Cambridge University Press: Cambridge.
- Wallas, G., 1926, *The Art of Thought*, Harcourt Brace: New York.