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Centre for Excellence in Enquiry-Based Learning

Enquiry-Based Learning and Enlightenment

A Keynote lecture given at the First Annual Symposium for Project Holders, Centre for Excellence in Enquiry-Based Learning, University of Manchester, 30 June 2006 by Dr Bill Hutchings

A. Enlightenment and Education

Today's symposium is a celebration of the completion of the first year of projects funded by the Centre for Excellence in Enquiry-Based Learning at the University of Manchester. Our project-holders have worked hard and creatively in a range of enquiry-led areas; and by the end of the day we shall have been enlightened about their achievements.

In this light, it is appropriate that it was the period of *the* Enlightenment (say 1660 to the end of the eighteenth century) that defined most clearly a philosophy that animates what we mean by enquiry as the stimulus to learning. The key figure in this process is the English philosopher John Locke, whose codification of psychological empiricism exercised, and still exercises, a profound influence on European thought and principles. The crucial effect of his ideas on general epistemology (how we come to understand and to know) and on politics was, by locating inductive reasoning as the key principle, to liberate individuals from the entrapment of pre-conceived or pre-ordained ideas, and to release them into the light of freedom and autonomous responsibility for thoughts and actions.

This basic principle is also evidenced in Locke's comments on the process of education.

(i) In *Some Thoughts on Education* (paragraph 195; 1693), he defines the educator's business as "not so much to teach [the student] all that is knowable, as to raise in him a love and esteem of knowledge; and to put him in the right way of knowing, and improving himself, when he has a Mind to it." He here strikes a note that is congruent with our perception that, in a world where knowledge and ideas are rapidly developing and constantly moving, it is impossible to teach "all that is knowable". Thus the key aim of education should be to infuse students with "a love and esteem of knowledge" that provides them with the means and the mental attitude to inspire them with the dynamic of what we today would – a little clumsily – call life-long learning.

(ii) Locke's *Some Thoughts on the Conduct of the Understanding* (1697) was originally intended as an additional chapter for his major philosophical treatise, the *Essay Concerning Human Understanding*, but was in the event not published until 1706, two years after Locke's death. Section 19 ("Universality") advocates learning a broad range of areas of knowledge so that interrelationships may be perceived: "the end and use of a little insight in those parts of knowledge, which are not a man's proper business, is to accustom our minds to all sorts of ideas, and the proper way of examining their habitudes and relations. This gives the

mind a freedom, and the exercising the understanding in the several ways of enquiry and reasoning, which the most skilful have made use of, teaches the mind sagacity and wariness, and a suppleness to apply itself more closely and dextrously to the bents and turns of the matter in all its researches." This argues that learning should not be narrowly focused, but should be expansive enough to allow the perception of "relations", of inter-relationships. It should free the mind from the limitations of mono-thematic learning and into the variety of "ways of *enquiry* and reasoning" [my emphasis], so developing a mental "suppleness", a flexibility to be able to research issues in their multifarious and complex manifestations.

(iii) Section 19 of *Some Thoughts on the Conduct of the Understanding* goes on to assert that "The business of education … is not, as I think, to make them perfect in any one of the sciences, but so to open and dispose their minds, as may best make them capable of any, when they shall apply themselves to it. If men are for a long time accustomed only to one sort or method of thoughts, their minds grow stiff in it, and do not turn readily to another. It is therefore to give them this freedom, that I think they should be made look into all sorts of knowledge, and exercise their understandings in so wide a variety and stock. But I do not propose it as a variety and stock of knowledge, but a variety and freedom of thinking, as an increase of the powers and activity of the mind, not as an enlargement of its possessions." Learning, that is to say, is about "opening" minds, and so should focus not simply on content, on the "stock of knowledge", but on developing the "powers and activity of the mind", on mental processes.

These quotations provide a rich set of progressive ideas:

- The advocacy of freedom over restriction (the word "freedom" occurs three times in our second and third quotations), leading to what we would today rather inelegantly call interdisciplinarity.
- The advocacy of a process of thinking rather than, or in addition to, a set body of knowledge, as inculcating a method that can be applied to future situations and challenges.
- The development of enquiry as the motivation for, and key agent of, intellectual activity.

The essence of Enquiry-Based Learning is that it incorporates all these principles. Enquiry-Based Learning is thus defined by the great philosophical codifier of the Enlightenment. John Locke is our patron saint, and Enquiry-Based Learning *is* Enlightenment, the opening up of new approaches to, and areas of, knowledge.

B. Enlightenment and Science

And speaking of newly developing areas of knowledge, another event crucial to the establishment of the Enlightenment was the founding of the Royal Society. Its first Royal Charter of incorporation received the Great Seal in 1662. The Royal Society at its outset was an inclusive society, embracing men who had been aligned on both sides of the savage divide of the Civil Wars between king and parliament, but also men whose central activities would not be defined by 'science' in the modern sense. For example, the poet Abraham Cowley was among a group of 40 invited to become members by the founders. And it was Cowley who wrote the poem, "To the Royal Society", which prefaced Thomas Sprat's 1667 history of the Royal Society, itself addressed to "Inquirers into truth".

In this period of the enlightenment, there was no separation of areas of knowledge. The word science means etymologically, and meant then, 'knowledge' pure and simple. The root of the word is the Latin word 'scire', which simply means 'to know'. Cowley's poem is about the historical development of "philosophy" – the very first word of his poem – which etymologically (Greek this time) means love of wisdom.

Because of this holistic view of the pursuit of knowledge, there were no two cultures, no separation between areas of learning. So, in expression, poetic language and scientific language could effortlessly sit side by side, as in James Thomson's rainbow passage in "Spring":

> *Meantime, refracted from yon eastern cloud,*
> *Bestriding earth, the grand ethereal bow*
> *Shoots up immense; and every hue unfolds,*
> *In fair proportion running from the red*
> *To where the violet fades into the sky.*
> *Here, awful Newton, the dissolving clouds*
> *Form, fronting on the sun, thy showery prism;*
> *And to the sage-instructed eye unfold*
> *The various twine of light, by thee disclosed*
> *From the white mingling maze.*

(James Thomson, "Spring", lines 203-212, from *The Seasons*,1730-1746)

See how the precise language of scientific description ("refracted"; "prism") and the traditional language of poetry ("yon"; "thy") exist in the same phrases; and how the principles of Newton's *Opticks* (1704) are transformed into an eloquent hymn to the magnificence and harmony of nature ("Bestriding earth, the grand ethereal bow"; "in fair proportion") and the magnificence of human intellect ("awful Newton"). For anyone puzzled by this last phrase, I should add that the word "awful" has its original encomiastic meaning of 'inspiring awe, reverence', and not its modern derogatory meaning, which is a nineteenth-century derivation!

C. Enlightenment and aesthetics

And, talking of poetry, it was in the Enlightenment that issues of aesthetics, the science of beauty, of the function of art, were addressed in a systematic way.

What is the experience of art? The Enlightenment view, as articulated by, for example, Samuel Johnson in his treatment of literary aesthetics in his *Preface to Shakespeare* (1765), goes something like this:

- Literary value is not inherent in the text. There is no a priori quality of aesthetic value. Why? Because value is human-referential: it is an effect of the continued esteem of a text among its readers. Hence there is no *absolute* formula for aesthetic value: it is relative to human responses, human recognition. We all bring to the appreciation of a work of art our own several experiences and therefore responses. We have artistic freedom. Conclusions about aesthetics have to be inductive.

- But it is (empirically) the case that some works of art over time achieve a status and a degree of 'permanence' (not absolutely so, of course, since humans are not themselves endowed, individually or generically, with permanence) while others disappear. Thus it seems that humans do, broadly, discriminate and attribute value to art. And the test, the sole test, is the test of time. Johnson writes, "no other test can be applied than length of duration and continuance of esteem." When Johnson was writing, the plays of Shakespeare had been written and performed 150 years before, as had the plays of, say, Beaumont and Fletcher. But it was Shakespeare's plays that were still living experiences. The greatest actor of the age, and a former school pupil and then (uneasy) friend of Johnson's, David Garrick, made his name in the great Shakespearean roles, such as Macbeth, and, as a theatre manager, staged major productions of nearly all

Shakespeare's plays. And today, what is happening? The Royal Shakespeare Company is currently presenting a Stratford season in which all of Shakespeare's plays are being performed.

- The test of time demonstrates, empirically, that Shakespeare's plays contain qualities that appear to speak to human beings over the wide arch of time that separates us from their genesis. That is, a *consensus* over time emerges. This is not an absolute 'solution' to the problem of literary value, because time is constantly moving and so conclusions have to be drawn in the knowledge that they are provisional. But, when it comes to the here and now, the present moment provides enough evidence for us to be able to come to some conclusions.

- Why is this the case? What is it about Shakespeare's depiction of, say, Othello's frightening descent from eloquent love to incoherent and destructive jealousy that makes it still so powerful an experience for the audience? That audiences *do* so react to Othello demonstrates that great art (defined as art that lasts) is that which, rather than playing on our differences (the century or country in which we live, our age, our gender, our occupation), expresses the core of what binds us together in shared feeling. It frees us from the limitations of temporary or partial distinctions into a holistic perception of our generic humanity. Great art, we might say, is inherently interdisciplinary. This argument rests strongly on the idea that it is possible – indeed, it is necessary – for social animals such as we are to move to a form of consensus. Consensus is a necessary condition for fellow-feeling, and hence for the objectified representation of fellow-feeling that is art.

The literary critic (or just the interested observer) will want to enquire further, to ask what it is in Shakespeare's language, metaphors, characterization that creates so powerful and general an effect. But we are now arguing on the basis of shared agreement: we have the structure of our formulated response and now we are enquiring into the details. Such an enquiry requires a serious, research-driven process. The Scottish empiricist philosopher, David Hume, in his *Essay on Taste* (1757) argues along similar lines for a consensus. But he emphasizes that such a consensus has to be based on serious enquiry by people prepared to spend the time and effort required to understand those artistic details. Judgements have to be informed judgements.

The history of Enlightenment aesthetics, from the coiner of the term 'aesthetics' (the German philosopher Alexander Baumgarten) through to Immanuel Kant, the Prussian philosopher whose study of aesthetics, his *Critique of Judgement* (1790), represents the

culmination of Enlightenment philosophy's reasoned and theoretical enquiry into the nature of artistic experience, is rooted in the need to reconcile two fundamental truths.

i) **The experience of art is profoundly personal, subjective**.

ii) **Yet the source of artistic pleasure lies *in* the art work itself and therefore has an objective existence.** No-one really believes that the beauty of a painting doesn't somehow exist in the lines, colour, texture of the painting itself.

The key to reconciling these apparently contradictory truths is consensus, our shared humanity.

In sum, aesthetic judgements are subjective judgements which aspire to objective validity because they are made within a social context.

D. Enlightenment and the process of Enquiry

What happens in the process of an Enquiry-Based Learning exercise?

- We are presented with a scenario, a task, a problem, whose defining quality – except in the case of the application of Enquiry-Based Learning to small-scale, limited problems - is that it is open-ended: there is no single, absolute, a priori 'solution' to it. We bring to the scenario our own several experiences, knowledge, from which we derive initially our own responses and possible ideas: knowledge is human-referential. The process is inductive.

- But the process of addressing a scenario does need to acknowledge the socially-constructed nature of learning. Learning does not take place within an entirely subjective space: it requires reference to (a) other people involved in the process of learning; (b) the 'objective' facts of the case in so far as they can be agreed. Knowledge is socially constructed. To accept this is to acknowledge the possibility, indeed the necessity, of coming to a consensus.

- We then identify the gaps in our knowledge, seek ways of increasing our understanding and relevant intellectual perceptions, in short we enquire into the nature of the case. In this way, Enquiry-Based Learning is profoundly research-driven. Judgements we make must be informed judgements.

- This knowledge and these judgements are set within a social context: if we are engaged in group activity, as is the case with most forms of Enquiry-Based

Learning at least at undergraduate level, our fellow-students are that immediate context. The pooling of ideas is part of the process of testing their validity, of refining their quality. At all levels of enquiry the context is the intellectual world of the discipline.

- The process takes place within an awareness that knowledge, because it is human-referential, is always provisional. Because of time, as Hume knew, nothing human can achieve the status of the absolute. All we can do is to seek as honestly and fully as possible to explain and argue for our response. We try to establish a consensus that meets the objective facts of the case as far as we can define them.

Thus the Enquiry process is closely aligned to the process of Enlightenment aesthetics. At its core lies a reconciliation of:

(i) The inevitable subjectivity of individual responses.

(ii) The acceptance of a need to relate those responses to the facts of the case in so far as they can be objectively defined after as rigorous research as time and resources allow, and to the responses and research findings of our fellow group members.

(iii) The need – for the purposes of coming to a conclusion, of presenting outcomes – to move to a consensus that accepts its inevitably provisional status.

In sum, our Enquiry-Based Learning outcomes are subjective judgements which aspire to objective validity because they are made within the context of social consensus.

E. Enquiry-Based Learning and Aesthetics

To invoke an aesthetic model for Enquiry-Based Learning may have a singular and crucial effect. It allows us to recognize Enquiry-Based Learning processes as powerfully creative, the educational equivalent of that creative surge which an insight into great art provides.

Great art is inclusive in its creativity. Gerard Manley Hopkins's *The Windhover* is one of a series of descriptive poems he wrote in the 1870s. The octet, the first eight lines of the sonnet, describes the movement of the bird, a kestrel, in flight. The sestet, the last six lines, describes the moment when the bird descends on its prey in an act of terrifying

sublimity, to which Hopkins compares moments when the ordinary world opens suddenly into something beautiful or terrifying as when a ploughed furrow ("sillion") shines out or falling embers gape open into dying redness:

I caught this morning morning's minion, king-
dom of daylight's dauphin, dapple-dawn-drawn Falcon, in his riding
Of the rolling level underneath him steady air, and striding
High there, how he rung upon the rein of a wimpling wing
In his ecstasy! Then off, off forth on swing,
As a skate's heel sweeps smooth on a bow-bend: the hurl and gliding
Rebuffed the big wind. My heart in hiding
Stirred for a bird, - the achieve of, the mastery of the thing!

Brute beauty and valour and act, oh, air, pride, plume, here
Buckle! AND the fire that breaks from thee then, a billion
Times told lovelier, more dangerous, O my chevalier!

No wonder of it: sheer plod makes plough down sillion
Shine, and blue-bleak embers, ah my dear,
Fall, gall themselves, and gash gold-vermilion.

How does Hopkins achieve the drama of this moment of apperception of the windhover in its frightening magnificence?

- Catch how a sense of movement is created by the dominance of –ing forms, foregrounded by stylistic devices such as the division of "kingdom" across the lines; and by making the octet's rhymes combine present participles ("riding", "striding", "gliding", "hiding": forms of the verb, that is, that render action as happening now, in the immediate present) and nouns in '-ing' that themselves suggest movement ("wing", "swing"). The sounds of the nouns are brought into line with the –ing that represents present motion.

- Catch how the whole poem is dominated by verbs, from the opening moment of apperception itself ("I caught"), to the climax at the moment of descent of "buckle" to the violent final sequence of "fall, gall … gash".

- Catch how a series of contractions concentrate the meaning into intensely powerful action. “I caught sight of” becomes the physical “I caught”. In the eighth line the summary word “achievement” is contracted to its verbal form “achieve”, the noun being translated into a verb. In this poem, everything aspires to the condition of verbs, to movement, to action.

- Catch how the windhover’s energy, and the poet’s equivalent energy of physically felt emotion, are conveyed by how the poem strains at its form. The poem is a sonnet, fourteen lines, but the lines are of varied lengths within which is maintained a regularity of stress, so that the entirely conventional first line (ten syllables, with five alternate stresses: “I *caught*, this *mor*, ning *mor*, ning’s *min*, ion *king*”) gives way to a dazzling variety, from the *extended* sixteen syllables of lines two and three where Hopkins is describing the windhover in its *extended* flight, to the short thirteenth line (just nine syllables) hastening the climactic image of a dying fire emerging into a final moment of violent beauty. The whole poem is a tension of regularity and irregularity, a tension of loveliness and danger.

Now it is possible to interpret the poem in many different ways, and critics – being critics - have done so. For example, if we read it in line with Hopkins’s own declared doctrinal position, the poem is about the perception of the divine in the natural world. Hopkins, a Jesuit priest, dedicates the poem to Christ our Lord, a Christ who is both “my dear”, my beloved, and the type of our mortal wound, gashing gold-vermilion (pain and value in one physical and symbolic act). Alternatively, if we read the poem in line with Hopkins’s probably undeclared position, as a man of tortured and repressed homosexuality, then the poem may be seen as incarnating a homoerotic and even masochistic identification with divine suffering.

These interpretations reflect particular subjectivities. But the essence of the poem, that which opens its energy to our shared humanity, lies in the objective qualities of the language that render it such a powerful embodiment of natural movement and action. The poem’s form is an incarnation of the windhover’s nature; and so objectifies (or, as Kant would say, universalizes) its essence.

F. Conclusion

Enquiry is nothing new; it is philosophically part of our inheritance as enlightened pursuers of science in its full sense. And it unites the three aspects of Enlightenment thought this talk has sought to outline:

(i) The pursuit of science is the open-ended pursuit of extending human knowledge. It is not conclusive or absolute, as twentieth-century revisions to Newtonian physics demonstrate. Yet it does provide us with specific knowledge that empowers technological achievement.

(ii) Aesthetics tells us that there are no absolutes in taste, but we still can come to some agreement because of our shared humanity.

(iii) Education tells us that learning is a process, is open-ended, the ability to think in ways that can be applied in new situations; but we recognise the necessity for responsibly shared and objective conclusions.

Enquiry, like the perception of beauty, releases creativity, different in kind but not in essence for different disciplines, and without which education becomes a dead, dull function. And without that creativity we cannot create the researchers of the future, on whose creativity we depend.

Our project holders who have given their time, effort and commitment to creative learning in so many different areas of knowledge are a tribute to that continuing spirit, and it is a humbling privilege to introduce a day for them to enlighten us with some of their remarkable achievements.