

Centre for Excellence in Enquiry-Based Learning

Essays and Studies

The philosophical bases of Enquiry-Based Learning

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This essay attempts to set out the philosophical bases of Enquiry-Based Learning. It argues that the true sources of EBL are to be found in Enlightenment thought, in its epistemology and in its aesthetics. This essay will be of no use to those looking for practical guidance for the implementation of EBL. For such guidance, please refer to Dr Hutchings's *Enquiry-Based Learning: Definitions and Rationale* and other resources on CEEBL's web-site. The present essay, which is intended as a theoretical complement to *Enquiry-Based Learning: Definitions and Rationale*, may, the author hopes, be of some value to those interested in the intellectual history of EBL.

The author is aware that the essay's accounts of philosophical ideas suffer from the limitations of space and the shallowness of his knowledge. When Samuel Johnson (one of the heroes of the essay) was asked why he had wrongly defined "pastern" as "the knee of a horse" in his *Dictionary*, he replied "ignorance, madam, pure ignorance". The rest is silence.

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1. Induction

Enquiry-Based Learning is philosophically aligned with the concept of induction.

- Induction is the “process of inferring a general law or principle from the observation of particular instances” (*Oxford English Dictionary*, “induction” 7). Induction is fundamentally the principle that valid conclusions (or conclusions that are open to validation) can be drawn only from observation of evidence. It is only the aggregation of specific individual examples that may be taken to amount to sufficient evidence for the assertion of a general conclusion.
- Induction is the inverse of deduction, which defines a process of deriving individual examples from a general truth or assumption. Deduction is also known as *a priori* argument, that is arguing from cause to effect, from abstract laws to specific instances of them. Conversely, inductive arguments are also known as *a posteriori*.
- Induction is the philosophical principle central to the scientific method and to **empiricism** (see section 2).

In Enquiry-Based Learning, the presented stimulus (in the form of a scenario, a question, a proposition, a topic, a picture, or whatever) provides the initial object for observation and analysis. This stimulus leads to the search for missing evidence, sources of knowledge or ideas that are in turn tested for their validity and relevance. The initial scenario does not present us with an *a priori* truth from which we may deduce logical consequences. Rather, it acts as the spur to a sequence of additional examinations. Out of these particulars we derive conclusions that, we hope, provide an appropriate response to the initial stimulus.

2. Empiricism and John Locke

2.1. Locke’s Essay Concerning Human Understanding

John Locke’s *Essay Concerning Human Understanding*, which was published at the end of 1689 with 1690 as the date on the title page, provided the British (and to no small degree the whole European and American) Enlightenment with its key epistemological statement. Locke, who was born in Somerset in 1632, lived a busy public life in the worlds of politics

and diplomacy and pursued a variety of intellectual interests in the spheres of science (he was a friend of Robert Boyle, a founder member of the Royal Society, to which he was himself later elected), theology, medicine, economics and general philosophy. Although he spent a number of years at Oxford, his philosophical theories were developed outside the scholastic atmosphere of the university. His *Essay* was written over many years, with early drafts dating from 1671, and Locke's thought continued to evolve after its first publication. He was still adding to the work at his death in 1704. The *Essay* is itself the product of continuing examination and revaluation, rather than an absolute single statement.

In the short first book of the *Essay*, Locke rejects the concept of innate ideas, that is, the theory that human beings are born with pre-existing ideas, received before consciousness. Locke's principal immediate object of disagreement is Descartes. For Descartes, mathematics is the ideal form of all knowledge as it provides us with an *a priori* and absolute system. Locke distinguishes between such a deductive system and "the gradual attainment of empirical knowledge, by the inductive procedures of observation and experiment" (A. D. Woozley, ed., *John Locke: An Essay Concerning Human Understanding*, London: Fontana, 1964, introduction, p.11). This is not to deny the validity of mathematics (nor that of ethics, which Locke thought, at least at one stage, as being equally open to demonstrative proof), but to refuse to accept that it provides a valid model for the acquisition of knowledge.

Having rejected the notion of innate ideas, Locke proposes that the mind at birth is a *tabula rasa*, a white sheet of paper on which nothing is printed:

"Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas; how comes it to be furnished? Whence comes it by that vast store which the busy and boundless fancy of man has painted on it with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from *experience*. In that all our knowledge is founded, and from that it ultimately derives itself. Our observation employed either about external sensible objects, or about the internal operations of our minds perceived and reflected on by ourselves, is that which supplies our understandings with all the materials of thinking. These two are the fountains of knowledge, from whence all the ideas we have, or can naturally have, do spring." (*Essay Concerning Human Understanding*, ed. Woozley, Book two, chapter one, paragraph 2)

Knowledge, for Locke, is gained firstly and most importantly by the accretion of physical sensations:

“First, our senses, conversant about particular sensible objects, do convey into the mind several distinct perceptions of things, according to those various ways wherein those objects do affect them. And thus we come by those *ideas* we have of *yellow, white, heat, cold, soft, hard, bitter, sweet*, and all those which we call sensible qualities; which when I say the senses convey into the mind, I mean, they from external objects convey into the mind what produces there those perceptions. This great source of most of the ideas we have, depending wholly upon our senses, and derived by them to the understanding, I call SENSATION.” (Book two, chapter one, paragraph 3)

Knowledge is primarily the product of the senses, which send their messages to the mind. So knowledge is entirely the product of experience. Then, the mind receives these varied sensory stimuli, which it then processes, compares, combines and abstracts from. New sensations are received into a rapidly expanding set of experiences, as the human being grows, develops and matures. These are what Locke goes on to call complex ideas, the result of combinations of initial simple ideas. In this process, the mind no longer remains passive, but is itself an agency. Thus it follows that the mind is conscious of its own actions:

“Secondly, the other fountain from which experience furnisheth the understanding with ideas is the perception of the operations of our own mind within us, as it is employed about the ideas it has got; which operations, when the soul comes to reflect on and consider, do furnish the understanding with another set of ideas, which could not be had from things without. And such are *perception, thinking, doubting, believing, reasoning, knowing, willing*, and all the different actings of our own minds...” (Book two, chapter one, paragraph 4)

This type of knowledge Locke calls reflection, the mind’s observation of its own operations.

Locke’s theory is of an entirely human-centred epistemology, conceptually empiricist and reflecting that tradition as it dates from, to look no earlier, Aristotle, for whom inductive reasoning based on observation was the foundation of our knowledge of the physical world,

of the scientific method. Locke's *Essay* attempts to codify empiricism, laying it out as a complete system of thought.

2.2 Locke and Enlightenment

These ideas affected whole areas of cultural and philosophical ideas in the Enlightenment, and have continued to exercise immense influence on major lines of philosophical thought and major thinkers, such as J. S. Mill in the nineteenth century, the pragmatism of Charles Peirce and William James, the logical positivist movement associated with the Vienna circle and English philosophers such as A. J. Ayer, and the instrumentalism of John Dewey.

The effects of Locke's ideas were far-reaching and immensely powerful. They release human beings from the potential tyranny of pre-conceived ideas, providing them with the basis for an intellectual autonomy of the kind associated with the scientific revolution. For, if knowledge is the result of human experience, the individual human being is its test and its guardian.

In his essay, "Was ist Aufklärung?" ("What is Enlightenment?"), written in 1784, nearly a hundred years after the publication of Locke's *Essay*, the Prussian philosopher Immanuel Kant wrote:

"Enlightenment is the human being's emergence from his self-incurred minority [= immaturity]. Minority is inability to make use of one's own understanding without direction from another. This minority is self-incurred when its cause lies not in lack of understanding but in lack of resolution and courage to use it without direction from another. Sapere aude! [= dare to know] Have courage to make use of your own understanding!" (An answer to the question: What is enlightenment?, in Immanuel Kant, *Practical Philosophy*, translated and edited by Mary J. Gregor, Cambridge: Cambridge University Press, 1996)

As A.C. Grayling puts it, "Kant and his fellow leaders of the Enlightenment were opposed to hegemonies, whether intellectual or political....In essence, the Enlightenment was a call to individuals to stand up for themselves in the light of reason." (*RA Magazine*, Winter 2006; <<http://royalacademy.org.uk/ramagazinewinter2006/features/the-age>. Accessed 19.01.2007>).

2.3 Enlightenment empiricism: two literary examples

(a) Samuel Johnson, *Rambler* 114

Just such a call can be found on the title-page of Samuel Johnson's *The Rambler*. Johnson's *Rambler* essays were published twice-weekly, Tuesdays and Saturdays, during 1750-52. Their popularity, at least in terms of status, is demonstrated by the rapidity with which they were collected in book form. These essays were highly influential (on contemporaries and later writers such as Jane Austen) and gained for Johnson the renown of being England's great moral writer, and therefore the great moralist of the Age of Enlightenment. On the title-page of the collection Johnson quotes as a motto two lines from the first of Horace's *Epistles*, book one:

"Nullius addictus jurare in verba magistri,
Quo me cunque rapit tempestas, deferor hospes."

(Samuel Johnson, *The Rambler*, ed. W. J. Bate and Albrecht B. Strauss, New Haven and London: Yale University Press, 1969; 'I am not bound to swear by the words of any master; wherever the storm drives me, there I seek for shelter.')

Johnson's motto is a unilateral declaration of intellectual independence. Horace's lines – significantly placed at the beginning of the book – characteristically combine self-deprecation with principled self-assertion. His epistle establishes ethics as the principal topic of his work ("quid verum atque decens": 'what is right and proper'). Johnson's adoption of Horace's words suits a volume of essays that ranges in subject-matter and maintains throughout a rigorously independent and ethically aware approach, based on reasoned and justified arguments.

A good example of Johnson's independent enquiry is *Rambler* 114 (Saturday 20th April 1751), on the issue of capital punishment. At a time when the supreme punishment was available for a range of robbery offences, Johnson casts a cool eye on a situation in which "rapine and violence are hourly encreasing" while proposed solutions involve greater severity of penalties and implementation of the death sentence: "we can only be rescued from the talons of robbery by inflexible rigour, and sanguinary justice." Johnson observes that a fundamental problem in this legal system lies in the inequality of the punishment to

all the offences it covers. If robbery lays an offender open to the same ultimate penalty as does murder, the failure to retain distinctive degrees of offence will have the effect of belittling murder:

“To equal robbery with murder is to reduce murder to robbery, to confound in common minds the gradations of iniquity, and incite the commission of a greater crime to prevent the detection of a less.”

Johnson’s argument is not levelled against capital punishment per se, but against the moral confusion and consequent practical ill effects resulting from a failure to discriminate adequately within crimes. His enquiry into the problem of increasing violence produces an unfashionable, independent analysis of the facts, the logic of penal sentencing and the moral issues involved.

(b) Voltaire, *Candide*

A typically lively, iconoclastic and robust expression of the effects of empiricism on human thought is found in *Candide*, a philosophical tale (or, in French, *conte*) by Voltaire. Voltaire had visited England from 1726 to 1728, as a result of which he wrote his *Lettres philosophiques* or *Letters on the English* (1733). Admiring the scientific work of Sir Isaac Newton and embracing the philosophical liberty of English empiricism, Voltaire found a strong basis for his rejection of authoritarian forms of thought and politics. *Candide* is a witty, sparkling attack on the notion of pre-conceived ideas as specifically located in the Leibnizian principles of sufficient reason and pre-established harmony. As enunciated in Leibniz’s *Théodicée*, these ideas produced the theory of optimism, famously parodied by Voltaire in his ruthless exposure of the absurdity of the notion that all is for the best in the best of all possible worlds. This notion, rationally deduced from the concept and definitions of God, is put into the mouth of *Candide*’s philosopher, Pangloss, who valiantly tries to stick to his views as destruction, wars, earthquakes and general mayhem break out all around. *Candide* expresses a comic clash between abstract, rationalist theory and the observation of empirical reality.

3. Locke: from epistemology to education

Locke transported his ideas from general epistemology to specific areas such as politics, where his theories of property – that is, that which belongs to, is proper to the individual – fuelled Enlightenment notions of individual freedom and the rights of humankind. For our current purposes, the most relevant area of Locke's observations is, of course, that of education. Locke's view of education is remarkably modern. Or, rather, to put it another and more accurate way, modern views owe their origins to Locke's remarkable statements about education.

For example, in his *Some Thoughts Concerning Education* (1693), a treatise mainly concerned with detailed observations about the training of a young person, Locke proposes that the educator's business is "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." (*The Educational Writings of John Locke*, ed James L. Axtell, Cambridge: Cambridge University Press, 1968, paragraph 195, p. 307) In a neat sentence, Locke here crystallizes the idea that education is not about filling the pupil with ready-made knowledge, but about creating a disposition, a mode of thinking, by which the habit of seeking and acquiring knowledge can be ingrained. Locke's emphasis is on the person improving *himself* when it is the appropriate time for that process to be enacted. His concern is therefore with the teaching of process; but not, it should be emphasized, at the expense of content. The key point is that content, which is conceived as having existence separate from the learner, is *valued* highly enough for the individual to want, to need to acquire it for himself.

Locke's later *Some Thoughts on the Conduct of the Understanding* (1697) was originally intended as an additional chapter for the *Essay Concerning Human Understanding*, but was not published until 1706, two years after his death. In section 19 ('Universality'), he writes: "...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 ways of examining their habitudes and relations. This gives the mind a freedom, and the exercising the understanding in the several ways of inquiry 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 dexterously to the bents and turns of the matter in all its researches." This is not only an argument against excessive specialisation, but one that asserts that the

training of the mind through the perception of interrelationships produces mental agility. This Locke equates with freedom, the liberty to exercise autonomous investigation and judgement. In a word, and a word that Locke employs, the education process teaches, develops and empowers *enquiry*.

This passage proceeds: "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 of knowledge. 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." (*The Educational Writings of John Locke*, ed. John William Adamson, London: Arnold, 1912, pp. 215-16) Again, freedom is the touchstone (the word is repeated in successive sentences), the result of which is perceived as enabling people to take control of their own processes of thinking. The human mind is active, an agent for discovery. Education is not about accumulating knowledge like building blocks, solid, inert and unchanging. Rather, it is about expansion, activity and power as attributes of the mind.

4. Empiricism, provisional knowledge and Enquiry-Based Learning

4.1 Enquiry-Based Learning and the empiricist model

Enquiry-Based Learning, as we have sought to define and illustrate it in "Enquiry-Based Learning: Definitions and Rationale" (www.manchester.ac.uk/ceebbl/resources/essays), has at its heart the essence of both Locke's specific comments on education as active process and the general epistemology that underlies all of these observations. A new Enquiry-Based Learning scenario is examined in the light of existing knowledge, as all our new sensations are compared with and put into the context of our accumulated experience. The consequent awareness of gaps in our knowledge drives us to search for new experience and ideas. This search is motivated by decisions taken by individuals and agreements arrived at by groups of individuals. It is not dictated by a set hierarchy. Ideas can be presented through conventionally hierarchical structures, such as lectures; but these are,

like books and journals, resources, stimuli to autonomous enquiry, reaction, contemplation and application. Any process of enquiry works with whatever intellectual and practical materials it can, from whatever source. But enquiry must independently validate, test these ideas for their validity and truth. If it does not, the subsequent use of the ideas in the context of new challenges, new discoveries, will result in poor or just plain wrong conclusions. The freedom given to enquirers to discover for themselves brings with it the responsibility of producing valid, tested arguments. This responsibility ensures a process of increased understanding.

4.2 Enquiry-Based Learning, empiricism and open-ended knowledge

Where Enquiry-Based Learning is used for specific and self-contained tasks of information discovery, the process will have clear concluding points. But more extended and open-ended Enquiry-Based Learning tasks set up a process of continuing enquiry. See "Enquiry-Based Learning: Definitions and Rationale" (www.manchester.ac.uk/ceeb/learning/resources/essays) for further discussion and exemplification of this distinction. Such forms of enquiry reflect and exemplify a crucial and often overlooked quality of empiricism, its implicit acceptance of the open-ended nature of experience and therefore of knowledge. If knowledge is a product of the accumulation of experience, it follows that future experience will add to this accumulation. By definition, we do not know what this future experience will bring, and so we do not know how it will qualify, develop or alter our existing body of knowledge.

This is not to say that we remain in a constant state of uncertainty and refusal to come to conclusions. Empiricism teaches us to be ever receptive to new experiences and new ideas. But it also teaches us that existing knowledge, the accumulated experience of generations, is generally likely to be soundly based. Major revolutions in knowledge are few and far between, and most new experience either reinforces or adds to accepted conclusions. Empiricism should not be conflated with Scepticism in the form adhered to by Pyrrho and his followers, for whom real knowledge of any kind is unattainable.

However, the basic principle holds. 'Scepticism' derives from the late Latin 'scepticus', meaning enquiring, reflective, and may thus be identified with a properly open-minded attitude, no matter how its usage has developed in ways that reflect a more negative mindset. The true sceptic invites new experience, new knowledge, and refuses to be dogmatic.

This principle's connection with Enquiry-Based Learning rests in the iterative nature of the educational process. The sequence of events in a characteristic Enquiry-Based Learning process is described in section 4 of "Enquiry-Based Learning: Definitions and Rationale" (www.manchester.ac.uk/ceeb/resources/essays). While this sequence is not intended to be prescriptive, and should always be applied in a manner that is responsive to the immediacy of the experience, one element must remain essential: the new knowledge gained by the research undertaken should be examined in relation to the initial scenario in order to identify continuing or newly emergent areas of uncertainty. The process of research should therefore be reiterated to the extent allowed by the time available for completion of the task. New knowledge can modify and improve provisional answers; while respect must be given to existing knowledge, which, at some point, has to provide the basis for the response to the task (the essay, the paper, the presentation or whatever the designated outcome is).

4.3 Hume: absolute truth and experiential truth

Within Enlightenment empiricism, it is the work of the Scottish philosopher David Hume that most directly and challengingly confronts the implications of the provisional nature of experiential knowledge. In his major philosophical work, *A Treatise of Human Nature* (1739-40), and later in his shorter *An Enquiry concerning Human Understanding* (1748), Hume radically observed that crucial aspects of how we try to make sense of the world are inherently and inevitably not open to absolute proof. There are *deductive* absolute truths, such as those of pure mathematics, but these are absolute only because they are deducible from a clear given and exist within a self-enclosed and self-referential system. But when it comes to experience, all our knowledge comes through induction. Hume calls this the "experimental method", by which we derive "general maxims from a comparison of particular instances" (*An Enquiry concerning the Principles of Morals* (1751), section 1; *Enquiries concerning Human Understanding and concerning the Principles of Morals*, ed. L. A. Selby-Bigge, 3rd edition revised P. H. Nidditch, Oxford: Clarendon Press, 1975). The final paragraph of the *Enquiry concerning Human Understanding* presents the consequences of this philosophical method with a rhetorical flourish:

"When we run over libraries, persuaded of these principles, what havoc must we make? If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, *Does it contain any abstract reasoning concerning quantity or number?* No. *Does it contain*

any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion." (*An Enquiry concerning Human Understanding*, section XII, part III).

Any statement we can make about the world comes from our prior experience. But can prior experience predict *absolutely* future experience?

The problem that Hume identifies as lying at the heart of this question is that of causality. Hume refers to causality as "necessary connexion", the proposition that one event (the 'cause') is *necessarily* linked to another (the 'effect') so that *any* juxtaposition of the two events *must* produce the same result. Necessary connexion is, clearly, not an *a priori* truth since it belongs to the world of experience rather to rational argument. However, experience cannot, Hume says, establish necessary connexion:

"When we look about us towards external objects, and consider the operation of causes, we are never able, in a single instance, to discover any power or necessary connexion; any quality, which binds the effect to the cause, and renders the one an infallible consequence of the other." (*An Enquiry concerning Human Understanding*, section VII, part I)

Hume's celebrated example is that of the impact of one billiard-ball upon another. Our 'natural' expectation on observing the white ball heading towards a red is that the motion of the former will lead, upon impact, to the latter being propelled (unerringly towards a pocket). But this expectation is based solely on previous observation of similar juxtaposed events:

"We only find, that the one does actually, in fact, follow the other. The impulse of one billiard-ball is attended with motion in the second. This is the whole that appears to the *outward* senses. The mind feels no sentiment or *inward* impression from this succession of objects: Consequently, there is not, in any single, particular instance of cause and effect, any thing which can suggest the idea of power or necessary connexion." (*An Enquiry concerning Human Understanding*, section VII, part I)

Hume's conclusion is that the appearance of an object can never, of itself, lead us to an absolute conviction of the effect it will produce. We may observe what seems to be a

regular conjunction, such as that of heat with fire, and we may, on that basis, conjecture the effect fire will produce if we approach it. But we cannot divine from this observation in what force or power lies the actual connexion between 'cause' and 'effect':

"It is impossible, therefore, that the idea of power can be derived from the contemplation of bodies, in single instances of their operation; because no bodies ever discover [= reveal] any power, which can be the original [=source] of this idea." (*An Enquiry concerning Human Understanding*, section VII, part I)

Why, then, is it that we 'normally' experience no difficulty in making predictions based on observation? When we observe one billiard ball being propelled in the direction of another, we automatically assume that the resultant collision will have the effect of propelling the second billiard-ball. We acquire *by habit* an assumption. That is, we convert past observation into a general principle, that of *causality*: it is *because* the first ball strikes the static ball that the latter moves. But the fact that this has been the result every time we have witnessed a similar event in the past does not mean that this *must of necessity* be the result next time. It is logically false to extract an absolute principle of causality from repeated examples. All we can do is to appeal to the accumulation of past experience and propose that it is *probable* that the same succession of events will result (see section 4.8). But, although we all in effect live by this assumption, this is really just circular reasoning: because something happens once, we assume it will happen again. But there is nothing apart from the fact that it did happen once, then twice and so on, upon which to base one's assumption.

The key consequence is that we have to accept that all experiential knowledge is provisional, always open to revision as a result of new experience. No matter how many times we see white swans – to use Karl Popper's famous example – we can never actually say that all swans are white. And, indeed, black swans lie in wait for our discovery.

Hume's rigorous development of empiricism represents the most dangerous problem deriving from the Enlightenment project. For it would at least *appear* to cast doubt over the intellectual validity of scientific procedures; ironically, since Enlightenment thought has its roots in the scientific method as enshrined in the Royal Society and Newtonian physics. Hume also presents the most *intractable* problem, so much so that most modern

philosophers accept that his arguments are irrefutable, and the best we can do is to ignore them or regard them as irrelevant for all practical purposes:

“What these arguments prove – and I do not think the proof can be controverted – is, that induction is an independent logical principle, incapable of being inferred either from experience or from other logical principles, and that without this principle science is impossible.” (Bertrand Russell, *History of Western Philosophy*, London: Allen & Unwin, 1946, p. 647)

Before we address possible responses to the challenge thrown down by Hume and their relevance for Enquiry-Based (or experiential) Learning (see, in particular, section 4.8), we should take note of the other key problem that eighteenth-century empiricist philosophy identified.

4.4 Empiricism: Berkeley, subjectivity and objectivity

If knowledge, as Locke argues, is the product of entirely individual sensory perceptions, then how can we ascertain that an objective, external world corresponding to these perceptions actually exists? Does the argument lead us to a radical form of subjectivity, by which all that I can be certain of is that I have perceptions or sensations. Because these are subjective, internal, I can never prove anything more than that I have these sensations.

Even if I can find a way of demonstrating that there is an outside world corresponding to my sensations, how can I prove that this ‘objective’ world is the same as that experienced by other people? If experience is individual, how can we demonstrate equivalence or identity of experience?

These questions are posed by the Irish writer and divine George Berkeley in his *The Principles of Human Knowledge* (1710) and *The Dialogues of Hylas and Philonous* (1713). Berkeley argues that we cannot prove the external existence of matter. All we can assert is that we have *perceptions* of matter. Existence lies in being perceived: *esse est percipi*. If matter is not the object of perception, we cannot assert that it exists.

A limerick, usually attributed to the twentieth-century theologian and humorist Ronald Knox, succinctly states Berkeley's arguments:

There was a young man who said, "God
Must think it exceedingly odd
To think that the tree
Should continue to be
When there's no one about in the quad.

It may be that Berkeley "thinks he is proving that all reality is mental; what he is proving is that we perceive qualities, not things, and that qualities are relative to the percipient." (Bertrand Russell, *History of Western Philosophy*, p. 624) For our purposes, the result of either proposition amounts to the same. How can enquiry, which pre-supposes the external existence of something to be enquired into, and Enquiry-Based Learning as a group activity, which pre-supposes that it is possible to share enquiry, be sustained in the context of the proposition that perception is radically subjective?

4.5 The appeal to externals (a): God

There are two principal ways in which the epistemological problems noted above have been answered. The first is by recourse to an external point of reference, such as the idea of a God, or of some notion of universals that exist beyond the limitations of individual experience.

The limerick cited above is answered by another that provides an equally succinct version of Berkeley's answer to his own problem:

Dear Sir: Your astonishment's odd:
I am always about in the quad.
And that's why the tree
Will continue to be
Since observed by, Yours faithfully, God.

The notion of a God – all-seeing and eternal and so free from the limitations of human perception – may be regarded as a necessary, or at least a convenient, means of validating the truth of external reality and as a guarantee of the identity of individual and several human perception. If existence depends on being the object of some perception, then continual existence depends on the possibility of there being a continual being to do the perceiving. No human being could do this, for obvious reasons, and so there must be an entity that possesses the qualities that human beings lack for sustained perception. Hence there must be a God.

Or, looking at it from the other angle, it may be that the absurdity, or at least unacceptability, of Hume's undermining of causality and of Berkeley's potential solipsism requires us to invoke the idea of a God in order to maintain our mental equilibrium. We do not go around wondering whether our next experience of physical phenomena will replicate our previous experiences, nor do we wonder whether our colleague continues to exist when we return to our office after a shared cup of coffee. We simply make these assumptions automatically in order to carry on meaningfully with life. If we did not, we would go mad. This may not be a *rational* argument for the existence of God, but it may constitute a valid *psychological* argument.

4.6 Samuel Johnson as Enlightenment spokesman

The most articulate English spokesman of the Enlightenment, Samuel Johnson, was a practising – if troubled – Christian. Intriguingly, however, he is reported by Boswell as having remarked of the famously sceptical Hume, "Every thing which Hume has advanced against Christianity has passed through my mind long before he wrote." (*Boswell's Life of Johnson*, ed. George Birkbeck Hill, revised L. F. Powell, 6 vols., Oxford: Clarendon Press, 1934-1950, vol. 1, p. 444) The same Johnson famously, or infamously, commented on Berkeley's denial of the existence of matter, "I refute it thus", while, says Boswell, "striking his foot against a large stone, till he rebounded from it" (*Life of Johnson*, ed. Hill, I, 471). Johnson also, according to Boswell, made fun of "a gentleman who thought fit to maintain Dr. Berkeley's ingenious philosophy, that nothing exists but as perceived by some mind". As he was about to depart, Johnson said to him, "Pray, Sir, don't leave us ; for we may perhaps forget to think of you, and then you will cease to exist" (*Life of Johnson*, ed. Hill, IV, 27).

Thus Johnson strongly positions himself against both the philosopher who denies God's existence on the grounds that there is no valid *a priori* or experimental argument for such belief and the philosopher who accepts God's existence on the grounds that otherwise matter would not exist. However, there is a difference. Berkeley's idealism is, for Johnson, simply an object of mockery, an idiosyncratic theory to be dismissed by straightforward 'common sense'. Johnson is still too often ignorantly regarded as a forthright moralist lacking real intellectual weight or subtlety; a man who substituted rhetorical bluster for genuine reasoning. His dismissal of Berkeley is frequently cited as evidence of this: it is a superficially impressive gesture that ignores the true point about Berkeley's argument. For Berkeley does not deny that we have sensory *perceptions* of the solidity of a stone; his proposition is that the experience lies within our perception, not in external reality. So Johnson's kicking the stone proves his own ignorance rather than Berkeley's error.

But Johnson's joke at the expense of the gentleman demonstrates the real basis of Johnson's refutation: there *are* objects that are not in a state of being directly experienced by anyone's senses. "Each of us knows of the past existence of many material objects by means of memory; we remember the existence of objects which we are no longer perceiving by any of our senses." (G. E. Moore, *Selected Writings*, ed. Thomas Baldwin, London: Routledge, 1993, p. 45) Passengers in a train cannot see the wheels and so a Berkeleyan idealist must believe that wheels only exist when the train is in a station and the passengers can get off and see them. This, of course, is to leave aside for the moment that eternal train-spotter, God. But the existence of the wheels when the train is in motion is actually a logical *inference* from our having seen them as we boarded, as well as common sense and a substitute for a miracle. Immediate perception is not the *only* means by which existence is validated. Indeed, inference can be applied to objects that nobody has ever seen. G. E. Moore, writing before the age of space exploration, adds: "we know also, we suppose, by means of inference, of others [other objects] which nobody has ever perceived by his senses: we know, for instance, in this way that there is another surface of the moon, different from that which is constantly turned to the earth." (pp. 45-46)

Returning to miracles, it was Hume's essay on that topic (section X of *An Enquiry concerning Human Understanding*) that was the most overt and notorious of his anti-theological writings. Johnson has himself, he says, thought of Hume's argument. In brief, this is that the evidence for miracles will always, by definition, be less convincing than the

evidence for the 'laws of nature' (that is, the operation of the natural world as described by current scientific knowledge). A miracle is defined as an *exceptional* suspension of the laws of nature. But if that exception is in fact validated by enough people over a long enough period to become credible, it will not constitute a miracle, but will become a new law of nature or a qualification to an existing law. New laws of nature are always open to discovery because knowledge is provisional. If the event remains exceptional, of limited validation (say, a one-off event that a small group of people claim to have witnessed), then the weight of evidence must remain against it. It is more probable that the people were mistaken, or are deliberately seeking to deceive, than that the event happened.

When it came to 'miraculous' events, Johnson kept an open mind. His curiosity about the phenomenon known as 'second sight' - that is, the power of seeing things distant or future as if they were present - among the highlanders of Scotland led to his being exposed to the mockery of some of his contemporaries. He wrote in his record of his voyage to Scotland, "I could never advance my curiosity to conviction; but came away at last only willing to believe." (Samuel Johnson, *A Journey to the Western Islands of Scotland*, ed. Mary Lascelles, New Haven and London: Yale University Press, 1971, p. 110). Boswell reports that Johnson's willingness to believe in second sight "seemed to excite some ridicule" at his Literary Club (*Boswell's Life of Johnson*, ed. George Birkbeck Hill, revised L. F. Powell, Oxford: Clarendon Press, 1934, II, 318).

But Johnson always wanted to investigate, to test such events for their validity; and he was rigorous in his examination. His account of second sight in the *Journey* is in fact thorough and investigative, and he fully accepts the presence of arguments against it: "Strong reasons for incredulity will readily occur", he writes (*Journey*, ed. Lascelles, p. 109). His discussion concludes that there is no evidence for second sight: his curiosity remains just that, reflected in a willingness to believe should sufficient evidence emerge.

One of the celebrated 'cases' of miraculous events in eighteenth-century London was the affair of the Cock-Lane ghost, which Johnson, with the instincts of the professional writer that he was, followed up, leading to reports of his credulity. Boswell clearly puts the record straight. Johnson thought that the story "should be investigated" because of its popularity. He did so, and wrote an account of it in the *Gentleman's Magazine*, a well-known periodical (volume 32; 1762). His article concludes that the girl who claimed to be visited by a spirit

had herself “some art of making or counterfeiting a particular noise”. The “knocks and scratches” that had been the signs of the ghost’s presence, Johnson noted, strangely ceased when the girl was required to “hold her hands out of bed”. (*Life of Johnson*, I, 407-8)

So Johnson remained rigorously committed to empirical testing, even when engaged in what we would call investigative journalism. This is entirely consistent with keeping an open mind. Indeed, it is the combination of these two qualities that defines him as an Enlightenment man. His direct comment on Hume’s arguments against miracles demonstrates this careful, non-dogmatic approach. Boswell reports him as saying, “Why, Sir, the great difficulty of proving miracles should make us very cautious in believing them. But let us consider; although God has made Nature to operate by certain fixed laws, yet it is not unreasonable to think that he may suspend those laws, in order to establish a system highly advantageous to mankind.” (*Life of Johnson*, ed. Hill, I, 444-45) The key difference between Hume and Johnson is not that Johnson sees miracles as proof of the existence of God. It is, rather, that Johnson is willing to believe in God in the absence of evidence, whereas Hume regards the absence of evidence as proof that God does not exist. Given Johnson’s willingness to believe in God, the possibility of miracles follows.

Johnson’s faith was a matter of psychological necessity. When told that Hume approached his own death with equanimity, as a state to be feared no more than his non-existence before birth, Johnson simply could not accept that Hume was telling the truth. For Johnson, it is *contrary to human experience* not to fear death. Boswell tells Johnson that Samuel Foote, when ill, had said that he was not afraid to die. Johnson replied: “It is not true, Sir. Hold a pistol to Foote’s breast, or to Hume’s breast, and threaten to kill them, and you’ll see how they behave.” (*Life of Johnson*, ed. Hill, II, 106) Fear of death is, for Johnson, a part of the human condition. Consciousness of our mortality demands belief in a God for the sake of our mental equilibrium.

Johnson also had a deep-rooted respect for tradition, as representing the collective human experience of a society. Ideas that have stood the test of time, that have served a society well, should not be thoughtlessly cast aside. This attitude characterizes Johnson’s political thought, underlying, for example, his opposition to the American revolution of 1776. His distrust of what he termed ‘cant’ - fashionable phraseology lacking genuine substance - led

him to distrust sanctimonious expressions of belief. This distrust informed his attitude to political declarations. "How is it that we hear the loudest yelps for liberty among the drivers of negroes?" he asked of the American colonists (*Taxation No Tyranny*, in *Samuel Johnson: Political Writings* ed. Donald J. Greene, New Haven and London: Yale University Press, 1977, p. 454). A similar attitude led him to distrust claims to special religious insight:

"Speaking of the *inward light*, to which some methodists pretended, he said, it was a principle utterly incompatible with social or civil security. "If a man (said he,) pretends to a principle of action of which I can know nothing, nay, not so much as that he has it, but only that he pretends to it; how can I tell what that person may be prompted to do? When a person professes to be governed by a written ascertained law, I can then know where to find him." (*Life of Johnson*, II, 126)

Thus Johnson remained committed to the traditions and rites of the Church of England as embodying a structure of belief inherited by an eighteenth-century Englishman, respected by general society and based on scriptural texts.

The central principles of Johnson's thought reflect Enlightenment convictions:

- respect for human experience
- rigorous examination of evidence
- respect for existing knowledge: new knowledge needs to be located within the context of the body of knowledge attested to by accumulated human experience

The processes of Enquiry-Based Learning are upheld by similar principles:

- learning is human-centred
- enquiry demands evidence
- enquiry needs to respect and understand the body of current knowledge

4.7 The appeal to externals (b): Kant and universals

The most concerted and influential philosophical response to the epistemological problems identified in empiricism is that of Immanuel Kant, whose remembrance of reading Hume, as he wrote, interrupted his "dogmatic slumber" (*Prolegomena to any future metaphysics that will be able to come forward as science*, translated by Gary Hatfield, in *Immanuel Kant, Theoretical Philosophy after 1781*, ed. Henry Allison and Peter Heath, Cambridge: Cambridge University Press, 2002, p. 57; see Sebastian Gardner, *Kant and the Critique of*

Pure Reason, London: Routledge, 1999, p. 11). Kant's *Critique of Pure Reason* (1781) accepts the central tenets of eighteenth-century empiricism, but crucially qualifies them. The opening words of the Introduction to the *Critique of Pure Reason* set out Kant's proposition:

"There is no doubt whatever that all our cognition begins with experience; for how else should the cognitive faculty be awakened into exercise if not through objects that stimulate our senses and in part themselves produce representations, in part bring the activity of our understanding into motion to compare these, to connect or separate them, and thus to work up the raw material of sensible impressions into a cognition of objects that is called experience?...But although all our cognition commences *with* experience, yet it does not on that account all arise *from* experience....It is therefore at least a question requiring closer investigation, and one not to be dismissed at first glance, whether there is any such cognition independent of all experience and even of all impressions of the senses."

(*Critique of Pure Reason*, translated and edited Paul Guyer and Allen W. Wood, Cambridge: Cambridge University Press, 1998; introduction, from the second edition)

Experience is "a necessary condition of the possibility of knowledge, but it is not a sufficient condition" (D. W. Hamlyn, *A History of Western Philosophy*, London: Viking, 1987, p. 218). Hume had divided knowledge into *a priori* truths (that is, truths independent of experience, such as those of mathematics) and ideas derived from experience (see section 4.3). Only *a priori* truths have absolute status. Kant's aim was to show that experience can furnish objective truths. He argues that experience *already* contains within it elements whose status as truth is not dependent on experience itself. These are conditions *within which* our experience takes place, these being time, space and causality. The inclusion of causality is essential because, as Hume had demonstrated, causality cannot be proved by empirical means. These qualities are inseparable from *how* we perceive the world. Roger Scruton explicates: "Experience can provide the grounds for the application of a concept, because it already contains a concept....Sensation, or intuition, contains no concept, and provides grounds for no judgement. Until transformed by mental activity, all sensation is without intellectual structure, and therefore provides grounds for no belief. If we understand experiences, then it is because they already contain within themselves the concepts which we supposedly derive from them." (Roger Scruton, *Kant*, Oxford: Oxford University Press, 1982, p. 26)

Of course, the issues here raised go far beyond the limits of our present aim, that of establishing the philosophical bases for Enquiry-Based Learning. But the proposition that it is *possible* to combine assertions of truth with experimental methods does provide a broad justification for processes of enquiry. The idea of universals will have importance for the principles of aesthetics which, section 5 will argue, provide a significant parallel for, and validation of, Enquiry-Based processes. Equally important for aesthetics is the idea of consensus, and it is with this that we shall conclude section 4.

4.8 Social consensus: Johnson, Hume, probability and Enquiry-Based Learning

Enquiry-Based Learning is consistent with the belief that learning, as a *human* event, is essentially a social activity. This is manifested in the group process that is a feature of most forms of Enquiry-Based Learning, at least at undergraduate level. Even in those disciplines where more advanced research traditionally takes place in the study of the solitary scholar, learning still has a social dimension. The researcher needs to become acquainted with the pre-existent work of the scholarly community in order to base his or her research securely; and the test of the validity of work produced by research lies in its reception by the scholarly community, whether in the form of colleagues at a research seminar, a conference audience, the readership of academic journals, or examiners of a thesis. Undergraduate Enquiry-Based Learning replicates research methods by having similar external tests and by having the peer group as the community of learners. (See W. Hutchings, *Enquiry-Based Learning: Definitions and Rationale*, sections 3.5 and 4; www.manchester.ac.uk/ceebbl/resources/essays.)

This method of learning is appropriate because 'knowledge' is inseparable from our 'knowing' it: it is a process, not just a set of discrete products. Knowledge is a continually evolving body of ideas acknowledged by the social community of which each of us is a part. No idea is an island, entire unto itself.

The Enlightenment was deeply conscious of the social nature of human existence, and so of learning, and of the dangers of attempted isolation. Samuel Johnson provides a trenchant fictional exemplification of these in his prose fiction *Rasselas* (1759), which narrates the futile pursuit of a choice of life that is guaranteed to bring absolute happiness. Late on in

the book, Rasselas declares to his older companion, Imlac, that he has come to love learning and so has decided to “devote himself to science [i.e. to knowledge], and pass the rest of his days in literary solitude” (Samuel Johnson, *The History of Rasselas, Prince of Abyssinia*, ed. J. P. Hardy, Oxford: Oxford University Press, 1988, chapter 40). Imlac warns Rasselas of the dangers of such a resolve by telling him about a learned astronomer he has met. This man has, in the course of his solitary researches, come to believe that he has gained the power to regulate the weather and control the seasons. This species of madness, Imlac argues, is an extreme manifestation of the tendency we all have to allow our imagination to dominate our reason. “No man will be found in whose mind airy notions do not sometimes tyrannise, and force him to hope or fear beyond the limits of sober probability. All power of fancy over reason is a degree of insanity” (chapter 44). This tendency is exacerbated by solitude, by the absence of externals to divert our minds from their own internal processes. The astronomer is gradually brought back to sanity, first by conversation with Nekayah, Rasselas’s sister, and her servant Pekuah, and then by socialising with Imlac and his companions. In the book, Rasselas, Nekayah and Pekuah all confess that they too have indulged their imagination in what Imlac calls “visionary schemes”, such as – in the case of Rasselas – setting up a system of perfect government. We are all subject to this human tendency: even the wise Imlac dreams of being a poet despite never actually producing any poetry, and it is not unknown for academics to produce works claiming ideal solutions, such as defining the philosophical bases of Enquiry-Based Learning.

Johnson’s fable of the dangers of intellectual isolation is a fictional version of the potential consequences of Hume’s sceptical philosophy. Hume’s demonstration that ideas cannot be absolutely verified by empirical methods would appear to lead to the nihilistic conclusion that nothing can be truly known. Hume does, indeed, think that this is the case; but, crucially, he is entirely aware that human lives cannot be conducted according to a strict interpretation of such a conclusion. As James Sambrook neatly puts it, by the end of the first book of the *Treatise*, “Hume is convinced that scepticism is logically irrefutable; nevertheless, he is convinced also that scepticism is psychologically untenable.” (*The Intellectual and Cultural Context of English Literature 1700-1789*, London: Longman, 2nd ed., 1993, p. 74) Hume writes that “nature...cures me of this philosophical melancholy and delirium, either by relaxing this bent of mind, or by some avocation, and lively impression of my senses, which obliterate all these chimeras. I dine, I play a game of back-gammon, I

converse, and am merry with my friends." (*A Treatise of Human Nature*, ed. L. A. Selby-Bigge, 2nd ed., revised P. H. Nidditch, Oxford: Clarendon Press, 1978, book 1, part IV, section 7) It is in social activity that we can resolve and normalize our thinking.

As far as Hume's epistemology is concerned, the equivalent of this social relaxation is the notion of probability. Although it is only custom or habit that leads us to transfer our experience of the past to anticipation of the future, there are degrees of probability that provide us with signposts to sanity. In some instances, collective human experience of the past has been, as far as we can judge, entirely uniform and constant. Fire has always burned and gravity has always produced motion. These, then, are validly termed universal laws. In Enquiry-Based Learning terms, the equivalents of such laws are the truths that past research has found to be universally constant and which constitute the knowledge that a group needs to acquire as a sound basis for work on the task. Other experiences, however, have been less regular in producing constant results. It is here that judgement of probability depends upon analysis of the situation. "Where the past has been entirely regular and uniform, we expect the event with the greatest assurance, and leave no room for any contrary supposition. But where different effects have been found to follow from causes, which are to *appearance* exactly similar, all these various effects must occur to the mind in transferring the past to the future, and enter into our consideration, when we determine the probability of the event. Though we give the preference to that which has been found most usual, and believe that this effect will exist, we must not overlook the other effects, but must assign to each of them a particular weight and authority, in proportion as we have found it to be more or less frequent." (Hume, *An Enquiry concerning Human Understanding*, section VI, 'Of Probability')

In Enquiry-Based Learning, we have to assess the task to determine the degree to which there are 'universal laws' that allow no sane disagreement and probabilities that require judgement and discrimination. This process is carried out by each individual, but within the context of a peer group. The need for a group to agree upon the final response - the essay, the presentation, the report - means that a consensus must be reached. The more open-ended the task, the greater the degree to which that consensus has to be arrived at through discriminating joint examination of probabilities. Such social learning should prevent us from concluding that we control the seasons or have produced the final word on Shakespeare's plays.

Probability provides a working hypothesis that allows for pragmatically successful living, in both the ordinary day-to-day sense of social intercourse and the specialist scientific and technological activity that characterizes modern society. An enlightened society, the product of Enlightenment consensus and progress, is marked by social harmony, scientific development *and also a concern for the arts*. This same period of Enlightenment thought, in which we have been locating the springs of enquiry, also saw the development of an aesthetic which strongly parallels the underlying epistemology.

5. Aesthetics

What is the experience of art? This section begins by outlining the Enlightenment view, as articulated by, for example, Samuel Johnson in his treatment of literary aesthetics in his *Preface to Shakespeare*, an essay prefixed to his edition of the plays of Shakespeare published in 1765.

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. Johnson writes that “works tentative and experimental must be estimated by their proportion to the general and collective ability of man, as it is discovered in a long succession of endeavours” (*Johnson as Critic*, ed. John Wain, London: Routledge & Kegan Paul, 1973, p. 150). 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, “To works ...of which the excellence is not absolute and definite, but gradual and comparative; to works not raised upon principles demonstrative and scientific, but appealing wholly to observation and experience, no other test can be applied than length of duration and continuance of esteem.” (p. 149)

When Johnson was writing, the plays of Shakespeare had been written and performed 150 years before, as had the plays of 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 friend of Johnson's, David Garrick, made his name in the great Shakespearean roles, such as Macbeth and Hamlet, and, as theatre manager, staged major productions of nearly all Shakespeare's plays. Today, of course, Shakespeare's plays continue to be living experiences through the work of the Royal Shakespeare Company and hundreds of theatre companies around the world.

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.

The philosopher David Hume, whom we have seen defining a radically empirical epistemology, addresses the issue of aesthetic judgement in his essay "Of the Standard of Taste" (1757; in *Essays: Moral, Political, and Literary* ed. Eugene F. Miller, revised ed., Indianapolis: Liberty Fund, 1985, pp. 226-49). It is clear to Hume that aesthetic judgements are empirical: "none of the rules of composition are fixed by reasonings *a priori*, or can be esteemed abstract conclusions of the understanding.... Their foundation is the same with that of all the practical sciences, experience". Thus general conclusions about aesthetics, like those about all empirical knowledge, emerge from the collective experience of humankind over time: "nor are there any thing but general observations, concerning what has been universally found to please in all countries and in all ages". In this way consensus about aesthetic status emerges: "The same Homer, who pleased at Athens and Rome two thousand years ago, is still admired at Paris and at London. All the changes of climate, government, religion, and language, have not been able to obscure his glory."

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. Johnson sums up magisterially: "Nothing can please many, and please long, but just representations of general nature." (*Johnson as Critic*, p. 151) By "general", Johnson means not the loose modern sense of 'vague', but the precise etymological sense of 'pertaining to the whole, to the race (Latin 'genus').

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.

Hume observes in his essay that, since aesthetic judgements are the province of human sentiment, we cannot expect that "on every occasion, the feelings of men will be conformable". All kinds of factors, such as our state of mind and the level of our attention, affect our capacity to be receptive to aesthetic stimulation. But this is not to say that randomly subjective judgements can claim validity. Hume draws a parallel between aesthetic taste and sensory taste to make the point: the apprehension of beauty, like that of sweetness, lies in human feeling, but "it must be allowed, that there are certain qualities in objects, which are fitted by nature to produce those particular feelings". Honey, say, is universally associated with sentiments of sweetness. We therefore validly locate the quality of sweetness in honey. Aesthetic judgements may be less automatically the subject of consensus, but it is equally valid to propose that, given the right conditions, particular qualities may be defined as existing within the poem, the painting or the symphony. Those conditions include length of time and variety of audience: "Authority or prejudice may give

a temporary vogue to a bad poet or orator; but his reputation will never be durable or general. When his compositions are examined by posterity or by foreigners, the enchantment is dissipated, and his faults appear in their true colours". It follows that the right to ascribe aesthetic judgement must be hard won. A consensus has to be based on serious enquiry by people prepared to acquire by practice and "frequent survey or contemplation", to spend the time and effort required to understand. "Before we can give judgment on any work of importance, it will even be requisite, that that very individual performance be more than once perused by us, and be surveyed in different lights with attention and deliberation". Further, experience of forms of art leads to the capacity to compare and contrast and build up a scale of judgement. Even relatively poor pieces of art contain some element of attraction – the colours of the "coarsest daubing", the harmony of a "vulgar" [that is, common] ballad. It is only when we have experienced the full range of artistic expression that we are able to locate such art objects as creative of relatively limited aesthetic pleasure. Judgements have to be informed judgements. Or, we might say in our context, judgements have to be research-informed.

The history of Enlightenment aesthetics, from the coiner of the term 'aesthetics' (the German philosopher Alexander Baumgarten) through Hume 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:

- The experience of art is profoundly personal, subjective. This is because aesthetic value and judgement are inductive. There is no *a priori*, intrinsic value in a work of art. Value is that with which we endow it through our experience of it.
- 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. Thus aesthetic qualities precede our individual response to them. As Roger Scruton puts it in his explication of Kant's aesthetic, "When I describe something as beautiful I do not mean merely that it pleases *me*: I am speaking about it, not about myself, and if challenged I try to find reasons for my view." (Scruton, p. 82)

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.

Great art is inherently inclusive. It is always possible to derive interpretations from particular subjective positions. But the essential power of an art work lies in shared qualities. We as human beings share more in common than we have dissimilar. "Nothing can please many, and please long, but just representations of general nature."

These key Enlightenment arguments may be perceived as having received tacit endorsement in various later aesthetic arguments. For example, T. S. Eliot's theory of the 'objective correlative' implies the notion of generality as employed by Johnson. Eliot's phrase describes how literary expression needs to find "a set of objects, a situation, a chain of events which shall be the formula of that *particular* emotion" ("Hamlet", in *Selected Prose of T. S. Eliot*, ed. Frank Kermode, London: Faber and Faber, 1975, p. 48). This external image has to be one that a general readership can associate with the emotion being represented. Our ability to understand and sympathise with the emotion is dependent on our recognition, and so experience, of the image.

To take another example, the distinguished twentieth-century American philosopher Susanne K. Langer argues in her book, *Feeling and Form* (London: Routledge & Kegan Paul, 1953) that works of art are 'symbols', or expressive forms, of emotions or ideas. Art is "the creation of forms expressive of human feeling" (*Feeling and Form*, p. 60). Art creates a 'virtual' reality that activates our responses through powerful recognition and sympathy. The act of the aesthetic critic is to explain how the artist achieves this through her or his use of available formal structures, such as types of language. Langer derives these ideas from her theory of symbols as vehicles for the conception of objects, set out in her earlier *Philosophy in a New Key* (1942).

Such ideas emerge directly from different sources, but are indirectly and essentially linked to the Enlightenment aesthetic. Art works through the creation of objects that the general consensus of experienced observers can recognize, understand, be moved by. It is thus a special, and especially valuable, form of the general epistemological recognition of human consensus as the agent for the establishment of valid ideas.

The particular power of the aesthetic model for our analysis of Enquiry-Based Learning is that it not only endorses the idea that human knowledge is a product of combined, agreed, consensual research, but also establishes the process as one of value. All experience is human-centred; all enquiry is about what it is to be human and to have human knowledge; all art is about the value of human experience.

6. A note on 'constructivism' and Enquiry-Based Learning

Constructivism is the modern pedagogic theory most commonly associated with Enquiry-Based Learning. Constructivism is most simply defined as the theory that we human beings 'construct' our knowledge. Any new experience we have is located within our existing stock of knowledge, so that what we learn is qualified and influenced by our prior understanding. Our knowledge is thus gradually built up, each new element of learning being added to an increasing 'foundation' for the processing of the next experience.

Thus, in this model, all our learning takes place within a complex context. Because knowledge is processed by our minds, what we learn is inseparable from how we learn it. How we learn involves such factors as the social situation within which the process takes place, the purposes we have in mind and our existing mental fabric formed by experience. Because these and other factors are particular to the person who is acquiring knowledge, it follows that understanding is individual. Because understanding is individual, it cannot be held in common by different people: "we cannot share understandings but rather we can test the degree to which our understandings are compatible" (John R. Savery and Thomas M. Duffy, "Problem Based Learning: An instrumental model and its constructivist framework", *Educational Technology*, 35, 1995, p. 31 (pp. 31-38)).

The roots of constructivism so defined lie, as ever, further back than we might at first imagine. The writings of the eighteenth-century Italian philosopher Giambattista Vico have been cited as an early example of 'constructivist' thought. (See Ernst von Glaserfeld, "An Exposition of Constructivism: Why Some Like It Radical", www.oikos.org/constructivism.htm. Accessed 19.12.2006) A key passage occurs in Vico's major work, the *Scienza Nuova*:

"But in the night of thick darkness enveloping the earliest antiquity, so remote from ourselves, there shines the eternal and never failing light of a truth beyond all question:

that the world of civil society has certainly been made by men, and that its principles are therefore to be found within the modifications of our own mind." (*The New Science of Giambattista Vico*, translated by Thomas Goddard Bergin and Max Harold Fisch, Ithaca and London: Cornell University Press, 1984, paragraph 331)

Vico is reacting against the Cartesian model of the possibilities of knowledge, according to which we can gain accurate knowledge only of that which is open to mathematical analysis, the physical world of nature. Certainty, for Descartes, could only be achieved by means of clear and distinct ideas, from which mathematical ideas could be postulated and the entire physical world reconstructed, of which there was then knowledge." (Richard Manson, *The Theory of Knowledge of Giambattista Vico*, Hamden, Conn.: Archon, 1969, p. 8). Attempts to claim knowledge of other areas, such as human history, are futile since these are areas not open to measurement. Vico inverts this Cartesian classification of what is knowable, claiming that "the principles of human society, the 'civil world' as he calls it, are actually more certain than the principles governing the natural world, because civil society is a human creation." (Peter Burke, *Vico*, Oxford: Oxford University Press, 1985, p. 78) We human beings made society; it is the product of our minds. The world of nature beyond is not our creation; it is the product of an agency outside our minds and therefore, in a radical sense, unknowable. What we would call the social sciences are the study of what humans have created and are therefore open to human learning. It may be objected that human society is the construct of past humans, not of ourselves, and is therefore not knowable by us. But Vico seeks to establish a link, through analogy, between the development of the individual human being and that of the human race as a whole. Vico is profoundly interested in such areas of knowledge as etymology, the sources and history of language, seeing the roots of words as evidence of the roots of human social thinking. Vico's ideas may be seen as leading on to modern constructivism, since both assert that that which is knowable lies only within our own minds. That which is the product of the human mind can be known by the human mind. In studies of Vico, this is known as the 'verum'/ 'factum' principle, the idea that truth can be ascribed only to what we have made. The "necessary condition for a thing to be known is that it must be made; if it cannot be made, it cannot be known." (Manson, p. 21)

These ideas underlying the constructivist project are closely connected to the key issues identified by eighteenth-century empiricist epistemology. According to Berkeleyan idealism

(see section 4.4), we can only have knowledge of our own perceptions of matter, not of matter itself. Knowledge is thus a factor of our mental make-up, not of an objective world. In Hume's scepticism (see section 4.3), the external world is unable to yield absolute, *a priori* truths. Experimental, or empirical, learning is our only means of acquiring knowledge of the physical world; and that acquisition is a continuing, never-ending process, always open to new and revisionary experience. Learning, then, appears to be indissolubly linked to the human perceiver. There is no knowledge independent of the knower.

Once we realise that the problems of knowledge on which 'constructivism' is based are arguments that date from Enlightenment epistemology, we can also see that its proposed solutions are in line with Enlightenment solutions. The key point here is that notion of consensus that we identified in section 4.8 and saw as crucial in aesthetics (section 5). Savery and Duffy note, as we have seen, that "we cannot share understandings but rather we can test the degree to which our understandings are compatible" (pp. 2-3). Although we cannot share our minds, and so all knowledge remains fundamentally individual, experience shows us that societies come to agreements about most aspects of human knowledge. These agreements provide viable models for human activity. They may not be absolute truths, but they represent the most likely interpretation of the world as far as present knowledge allows. So, for radical constructivists such as Von Glaserfeld, knowledge is socially defined and confirmed: "Every individual's abstraction of experiential items is constrained (and thus guided) by social interaction and the need of collaboration and communication with other members of the group in which he or she grows up. No individual can afford not to establish a relative fit with the consensual domain of the social environment." (p. 7)

Occasionally, major shifts in our thinking about the world take place over time, as one theory (say, that the sun revolves round the earth) gives way in its general acceptance to another (that the earth revolves round the sun). That such shifts take place demonstrates that not all theories are equally viable. Rather, as additional information is communally gained, theories gather a greater or lesser degree of probability. Valid propositions are those which are based on the shared understanding (as a result of its levels of experimental knowledge) that a society has at any one time. In sum, "concepts that we call knowledge do not represent some ultimate truth, but are simply the most viable interpretation of our experiential world". In order to demonstrate (and improve) that

viability, “we must test understandings to determine how adequately they allow us to interpret and function in our world” (Savery and Duffy). This is what Hume means by experimental philosophy. Profoundly important, then, is a respect for the accreted experience of a society that defines its *modus operandi*. However, such respect does not mean that we should be closed to the possibility of new understandings emerging.

In Enquiry-Based Learning, at whatever level it takes place, there is a fundamental need for the student to become acquainted with the existing body of knowledge relevant to the scenario being enquired into. This is the essential research stage of an Enquiry-Based process. That this process takes place within a group of enquiring students allows for the principle of consensus to operate at every stage: the viability of our understanding of the current body of knowledge depends upon its being shared with others. This is a check upon the danger of our failing to grasp an issue through omission or misinterpretation of existing knowledge. (See section 4.8) We might note, as a parallel, that twentieth-century social constructivism – as represented by writers such as Vygotsky - sees social interaction as essential for the development of cognition. Savery and Duffy sum this up well:

“The social environment is critical to the development of our individual understanding as well as to the development of the body of propositions we call knowledge. At the individual level, other individuals are a primary mechanism for testing our understanding....We seek propositions that are compatible with our individual constructions or understanding of the world. Thus, facts are facts because there is widespread agreement, not because there is some ultimate truth to the fact....concepts that we call knowledge do not represent some ultimate truth, but are simply the most viable interpretation of our experiential world.” (Savery and Duffy, p. 2) All this is in Hume, save perhaps that he would want to put more value on the viability idea than that word “simply” offers.

In the light of these arguments, we need to qualify two propositions commonly made about constructivism. (i) Constructivism is regularly contrasted with a model of learning in which the principal assumption is that human beings receive information through transmission from other people. Reception and construction are located as the two opposites; (ii) constructivism is sometimes seen as in conflict with empiricism.

Proposition (ii) is simply wrong. A recent example of this error asserts that the “epistemological assumption of teacher-centred teaching is empiricist. Knowledge is obtained by observing the world, which is structured in terms of entities, properties and relationships. As the essential properties of objects in the structured world are relatively unchanging, knowledge is stable and can be passed on from one person to another.” (Ka-Ming Yuen and Kit-Tai Hau, “Constructivist teaching and teacher-centred teaching: a comparison of students’ learning in a university course”, *Innovations in Education and Teaching International*, 43 (2006), 279-89, p. 280) This conclusion is quite simply a misunderstanding of what empiricism means. It fails to take into account the capacity of empiricist theory to confront the uncertainties of knowledge.

Proposition (i) seems plausible, but requires careful qualification. A distinction must be made between *knowledge* and *understanding*. The proposition that understanding cannot be transferred is not the same as the proposition that knowledge (conceived of as a body of ideas or facts) cannot be transferred. The latter proposition denies the possibility of our being told anything by anybody, whether in speech or in writing, and is clearly contrary to common experience. I can ask someone for her or his telephone number. She or he can give me the number, which I can write down or memorize. This transaction does not involve my ‘understanding’ the information beyond the level of understanding that I had prior to the transaction: that is, of what a telephone number is for, what numerals designate etc. If I had not had that understanding, I could not have asked the question in the first place. To this extent my reception of the new piece of knowledge is consistent with the constructivist model: I accommodate it to my existing paradigms. But I have acquired new knowledge, the number itself, which I can translate into action should I wish. As it stands, the new number is simply an additional example of what I already know. It does not present me with ‘new’ ideas in the sense that they open up inconsistencies that necessitate a process. Thus it is an addition to my body of knowledge that does not bring with it the necessity of understanding.

Similarly, in a lecture, I can receive a statement from the lecturer and write it down or commit it to memory. But, unless the lecturer – for whatever reason - simply wishes to inform me of his or her telephone number, the statement will require me to undergo a process of comprehension if it is to enhance my learning. That process is the process of *understanding*, which only I can carry out and which may involve me in additional

intellectual activities. These may range from looking a word up in a dictionary to reading a number of supporting texts, or from re-visiting my earlier lecture notes to conducting an experiment of my own. Thus *knowledge* has been transferred; *understanding* follows as a necessary condition for activating knowledge as a part of my learning.

Thus all understanding is active. We apply our existing knowledge to the new idea rather than simply accepting it. If that new idea is inconsistent with our previous experience, then we undertake a process of judgement, comparison and reflection in order to estimate the validity of the new and the consequent status of the old. We move to modification of our existing knowledge, the result of which then becomes the foundation for judging future new ideas.

The method, then, by which we come to knowledge is, at a radical level, through introspection. We can know only through our consciousness. It therefore follows that learning *cannot* be passive. Any model of learning that rests on a merely receptive theory, that sees learning as gained through 'passive' transmission, is contrary to the 'true' nature of our minds. *This is important when we are tempted into making simple divisions between 'active' and 'passive' learning.* We cannot simply choose between 'active' and 'passive' learning (and argue that one is more effective than the other). Rather, *all* learning is implicitly active.

Lectures – or learning situations in which some form of transmission of ideas takes place – are, therefore, not inconsistent with Enquiry-Based Learning. However, since the process of understanding depends entirely on me as the recipient of the lecture, I have to be sufficiently motivated to pursue the tasks I need to in order to understand. I have to know how to pursue those tasks. I have to know what resources I need in order to do so. I have to know how to use those resources. I may have misunderstood what precisely the lecturer said. I may have missed a vital piece of information because I was trying to write down an earlier piece of information.

This is where Enquiry-Based Learning becomes essential. Although the educator cannot transmit understanding to a student, the educator can set up learning situations that are conducive to the development of students' understanding. Enquiry-Based Learning is fundamentally about establishing the conditions in which students can most effectively and

creatively construct their understanding. This is what it means to teach through Enquiry-Based Learning: the tutor has to set up situations that are likely to instigate students' discovery. By enabling the students to discover for themselves, the problem of motivation is tackled: the event itself, the Enquiry-Based Learning session, is the means of activating interest.

7. Enlightenment in action: two studies in Enquiry-Based principles in the eighteenth and nineteenth centuries

7.1 Joshua Reynolds

The Royal Academy of Arts was founded in 1768 under the patronage of George III as a national centre for the arts. It provided a space for annual exhibitions (still, of course, a significant social as well as cultural event in the London calendar), funding for poor artists and teaching for students. The Royal Academy and the British Museum (established in 1753) constituted the major representations – physically and symbolically – of the English eighteenth century's commitment to the cultural health and status of the nation.

The Royal Academy's first President, Joshua Reynolds, delivered a series of fifteen *Discourses* at its opening (2nd January 1769) and subsequently at prize-giving ceremonies until his retirement in 1790. These lectures were given to an audience of the socially and culturally aware, as well as to the Academy's pupils, and were an evident attempt to establish the status of art and artists in eighteenth-century Britain.

Cultural historians frequently misrepresent these *Discourses* as embodying an establishment and classical viewpoint at the expense of creativity and individual expression. This is a false dichotomy. An attentive reading reveals that they demonstrate a view of learning as essentially experiential. They represent an enlightened establishment of aesthetic values. Reynolds argues for a creative and individual (what we might today call student-centred) learning process. This is how learners develop a rounded and intellectually valid approach to study and so becomes fit to take their place in the nation's cultural world.

The Royal Academy's permanent collection, Reynolds declares in the *Discourse* for the opening, would represent "the materials on which Genius is to work, and without which the

strongest intellect may be fruitlessly or deviously employed. By studying these authentick models, that idea of excellence which is the result of the accumulated experience of past ages, may be at once acquired" (*Discourses on Art*, ed. Robert R. Wark, New Haven and London: Yale University Press, 1975, p. 15). This testimony to the power of original resources (or what we today might call primary sources) leads Reynolds to assert that it is by contact with these actual experiences of art works within a community of students that learning is most productively achieved:

"Every seminary of learning may be said to be surrounded with an atmosphere of floating knowledge, where every mind may imbibe somewhat congenial to its own original conceptions. Knowledge, thus obtained, has always something more popular and useful than that which is forced upon the mind by private precepts, or solitary meditation. Besides, it is generally found, that a youth more easily receives instruction from the companions of his studies, whose minds are nearly on a level with his own, than from those who are much his superiors; and it is from his equals only that he catches the fire of emulation." (p. 16)

Or, as we might today less gracefully express it, peer discussion and teaching are powerful motors for the acquisition of knowledge.

Reynolds proceeds to elaborate a model of the progress of learning. Young students, Reynolds asserts, need to acquire knowledge of the rules of art derived from the works of the great masters (examples of which surround the student at the Royal Academy) before they can obtain the capacity for individual expression. The "great use of studying our predecessors is", he says in the sixth *Discourse* (1774), "to open the mind, to shorten our labour, and to give us the result of the selection made by those great minds of what is grand or beautiful in nature". This enlightenment, this opening of the mind, is best "learnt from the works themselves", rather than from "the precepts which are formed upon those works" (pp. 101-02). Again, Reynolds insists on the importance and value of primary sources.

This process reflects one of the essential elements of an Enquiry-Based Learning process: that obtaining basic knowledge is a necessary pre-condition for imaginative creativity. Reynolds's emphasis on the communal study of original works of art as the means of

gaining that fundamental knowledge is consistent with an Enquiry-Based Learning approach: it is by social engagement with actual scenarios or examples that we acquire the bases of our knowledge. This process of self-education is, Reynolds argues, far more effective than a hierarchical model of knowledge transmission. It is significant that this assertion is made as early as the second *Discourse*, that is, the first that accompanied a prize-giving:

“We all must have experienced how lazily, and consequently ineffectually, instruction is received when forced upon the mind by others. Few have been taught to any purpose who have not been their own teachers. We prefer those instructions which we have given ourselves, from our affection to the instructor; and they are more effectual, from being received into the mind at the very time when it is most open and eager to receive them.” (p. 32)

Later, in the sixth *Discourse*, Reynolds addresses the successful students thus:

“I consider you as arrived to that period, when you have a right to think for yourselves, and to presume that every man is fallible; to study the masters with a suspicion, that great men are not always exempt from great faults; to criticise, compare, and rank their works in your own estimation, as they approach to, or recede from, that standard of perfection which you have formed in your own minds, but which those masters themselves, it must be remembered, have taught you to make; and which you will cease to make with correctness, when you cease to study them. It is their excellences which have taught you their defects....We can teach you here but very little; you are henceforth to be your own teachers.” (p. 112)

Again, in the twelfth *Discourse* (1784), Reynolds asserts the inefficacy of “methods of study” – that is, of imposed models of analysis - in the context of mature art students studying authentic materials on site (which, for the eighteenth-century artist meant, in effect, in Italy). Better is it, he argues, to allow students to discover for themselves, to follow their own impulses, to refresh their minds with variety. (pp. 207-09)

7.2 John Henry Newman

In 1854, John Henry Newman took up the post of Rector of the new Catholic University in Dublin. As preparation for this role, he delivered a series of eight discourses which were published in 1852 under the title of *Discourses on the Scope and Nature of University Education*. Newman's reputation at Oxford was as an opponent of theological liberalism, reflected in his celebrated engagement in the Oxford Movement and subsequent movement from the Church of England to that of Rome in 1845. It may therefore be assumed that a set of lectures to a Catholic audience would demonstrate a hard-edged theological stance. But the actuality is very different. Removed from an Oxford where such a determined reaction was provoked by fears that a liberal rationalism would undermine the traditional teachings of Christianity, Newman was able to elaborate a sympathetic, forward-looking and liberal philosophy of university education.

At the opening of his preface to the volume, Newman roundly declares that the view which his discourses take of a university is that "it is a place of *teaching universal knowledge*. This implies that its object is, on the one hand, intellectual, not moral; and, on the other, that it is the diffusion and extension of knowledge rather than the advancement. If its object were scientific and philosophical discovery, I do not see why a University should have students; if religious training, I do not see how it can be the seat of literature and science." (*The Idea of a University*, ed. I. T. Ker, Oxford: Clarendon Press, 1976, preface, p. 5) Newman here makes two equally unequivocal points. He asserts the dominance of teaching as the aim of a university, and he separates university education from mere training. These principles are of vital importance to contemporary debates about university education. They counter the current dominant assumptions that research divorced from teaching is the principal role of a major university, and that education should be primarily vocational.

In the beginning of the Discourse, "Knowledge viewed in Relation to Learning", he briefly elaborates on these two principles. Lamenting that English has no word for general intellectual proficiency perfection (for, that is, the equivalent of German *Wissenschaft*), he defines the function of a university as "intellectual culture", rather than "moral impression" or "mechanical production". A university, that is to say, is not a place for a passive and narrow model of teaching such as the word 'training' might imply, nor for excessive specialisation: "It educates the intellect to reason well in all matters, to reach out towards

truth, and to grasp it." The aim of a university is general and valid within its own terms, without reference to a function beyond: "the cultivation of the intellect is an end distinct and sufficient in itself, and ... an enlargement or illumination" (pp. 114-15).

The Discourse, "Knowledge its Own End", is devoted to an argument for this kind of *liberal* university. Knowledge is an end in itself because of the nature of our minds. Newman cites Cicero as an authority for the declaration that the pursuit of knowledge is principally an end in itself. This is not to deny that "further advantages accrue to us and redound to others by its possession" (p. 97), but the fundamental motivation lies within our own need for knowledge. A spirit of enquiry, we might say, is conformable to nature. To put this in the language of twenty-first century education, knowledge and skills can indeed be useful, transferable, nor should we downgrade the practical benefits of knowledge; but to insist solely on the vocational as the justification and end of learning is to ignore a fundamental aspect of what it is to be a human being.

Newman interestingly links his argument to the fundamentals of the word 'liberal'. It derives from the opposite of 'servile', denoting freedom rather than slavery. Just as beauty is an end in itself, so learning is its own end, resulting in philosophy or - in the full and proper sense of the word - science. Thus it is more correct "to speak of a University as a place of education, than of instruction" (p. 105).

But, he adds in "Knowledge viewed in Relation to Learning", "the end of a Liberal Education is not mere knowledge, or knowledge considered in its *matter*" (p. 117). This is a crucial extension that gets to the heart of Newman's conception of the *process* of learning. He proceeds: "the communication of knowledge certainly is either a condition or the means of that sense of enlargement or enlightenment...it is equally plain, that such communication is not the whole of the process. The enlargement consists, not merely in the passive reception into the mind of a number of ideas hitherto unknown to it, but in the mind's energetic and simultaneous action upon and towards and among those new ideas, which are rushing in upon it. It is the action of a formative power, reducing to order and meaning the matter of our acquirements; it is a making the objects of our knowledge subjectively our own, or, to use a familiar word, it is a digestion of what we receive, into the substance of our previous state of thought; and without this no enlargement is said to follow....It is not the mere addition to our knowledge that is the illumination; but the locomotion, the

movement onwards, of that mental centre, to which both what we know, and what we are learning, the accumulating mass of our acquirements, gravitates" (pp. 120-21)

He goes on to develop the distinction between active and passive by noting the dangers of mechanistic models and applications of learning. The simple availability of knowledge, as demonstrated by, in Newman's time, the profusion of printed materials (in our age, we can add electronic forms of materials), may induce a spirit of passive accumulation. This is not true learning: we need "intellectual eyes" to make learning actively ours. "We must be parties in the work" (pp. 128-29). Learning, then, is a process of active engagement.

Newman concludes with a ringing assertion of the idea of a community of learning, which can encourage disinterested, intellectually independent scholarship: "Here then is a real teaching, whatever be its standards and principles, true or false; and it at least tends towards cultivation of the intellect; it at least recognizes that knowledge is something more than a sort of passive reception of scraps and details; it is a something, and it does a something, which never will issue from the most strenuous efforts of a set of teachers, with no mutual sympathies and no intercommunion, of a set of examiners with no opinions which they dare profess, and with no common principles, who are teaching or questioning a set of youths who do not know them, and do not know each other, on a large number of subjects, different in kind, and connected by no wide philosophy, three times a week, or three times a year, or once in three years, in chill lecture-rooms or on a pompous anniversary." (p. 131)