

Whitehead's curse?¹ [final draft]

And I may say in passing that no educational system is possible unless every question directly asked of a pupil at any examination is either framed or modified by the actual teacher of that pupil in that subject. (A. N. Whitehead, 'The aims of education', in *The Aims of Education and Other Essays*, London: Ernest Benn, 1950, first published 1932, henceforth AE, p 7)

The gift

I'll call it Whitehead's gift. In truth, I don't know who delivered it to the class. The contraption appeared one day in the science corner, perhaps another hare-brained initiative by the overambitious Depute. But once the time-machine began to operate, it became possible to teach according to Whitehead's ideals. Each pupil chose a destination suited to their favourite lesson. We devised experiments to test during the voyage. The subsequent lesson lived from the excitement of what we discovered through those one-way windows in our invisibility-cloaked machine: a dinosaur succumbing to fumes in a deep swamp; Roman galleys crossing the Channel; Washington leading his troops; Gandhi urging non-violence; the final preparations for an Apollo mission; joy around the Berlin wall; celebrations for the end of British rule in Hong Kong; bird species on the Galapagos. Some choices were of course ill-judged and had to be either curtailed or vetoed: Vesuvius erupting over Pompeii; the bombing of Coventry and Dresden. The thrill offered by second choices quickly made up for initial disappointment.

In his work on the rhythms of education, Whitehead calls the excitement of discovery the 'Stage of Romance'. Each pupil has a different potential for this romance. As we shall see, there is always great resistance to doctrines of equal capacities in Whitehead's work, since for him potential is different for each pupil, because each is a singular set of processes rather than a particular case of a general type: 'But for all your stimulation and guidance the creative impulse towards growth comes from within, and is intensely characteristic of the individual' (Whitehead, 'The rhythmic claims of freedom and discipline', 61). Once singular promise is unlocked, for instance in witnessing the glory days of Rutherford's Cavendish laboratory or peering over Woolf's shoulder as she allows a sentence to unfold, then each pupil is given a different romantic energy for other more arduous stages. Some initial knowledge must prepare for this excitement and in return romance saves knowledge from a dusty and wasteful barrenness of bare fact, condemned by Whitehead: 'Romantic emotion is essentially the excitement consequent on the transition from the bare facts to the first realisations of the import of their unexplored relationships.' ('The rhythm of education', AE 28)

For Whitehead, bare facts without live application are a step on the way to inertness, a dynamic property that spreads through education systems, destroying their worth: 'Education with inert ideas is not only useless: it is, above all things, harmful – *Corruptio optimi, pessima*. Except at rare intervals of intellectual ferment, education in the past has been radically infected with inert ideas.' ('The aims of education', AE 2) Whitehead's impressionistic yet wise historical approach informs his work on education, as does his related sense of the historical struggle between living vibrant processes and inert dying ones.² This explains his selection of the metaphor of infection. Living

¹I thank audiences at the Warwick Philosophy Graduate Seminar and Dundee AHRI lecture series for their questions and suggestions on earlier versions of parts of this chapter. In particular, remarks by Martin Warner, Miguel Beistegui, Stephen Houlgate, Keith Ansell Pearson, Nicholas Davey, Rachel Jones, Andrew Roberts and Jim Tomlinson helped to shape my ideas on the problems of Whitehead's critique of standard objectives and outcomes in education.

² Though the style of Whitehead's work on education is often impressionistic, it is backed by many years of engaged activity as a teacher, education administrator and advisor and chair on many committees over his career at Cambridge, London and Harvard. Thus Brian Hendley refutes claims by Harold Dunkel about Whitehead's relative lack of practical

processes are dynamic through the progress or retreat of infection and health. Like Derrida, in his work on infection and immunity for democracies or religions, Whitehead denies purity to either movement: 'The host is never immune from being scathed' (O'Connor, Patrick, Derrida: Profanations, London: Continuum, 2010, p 127). There is no health without infection and decay. There is no decay independent of health. Time-machines and other innovations in education such as video or computers are thus neither mere tools for gaining attention or achieving short-cuts, nor technical expressions of an ideal form of learning. They are instead necessary moments of creative novelty and, as such, also subject to a necessary waning of their own, always on the edge of the next invention and excitement.

Even the processes of infection are double-edged, since infection can have a positive effect on later health. Thus, one of the highest values identified in university education by Whitehead is imagination, which is itself contagious: 'Imagination is a contagious disease.' ('Universities and their function', AE 145)³ It is only through contact with teachers in the grip of an imagination virus that the students will themselves contract imagination. The rhythms of education and the duty to nurture romance hence apply as much to the teachers as to the taught. This is a lesson in the process of being lost in the recent drift to separation of teaching from research in university contracts and roles. Division is fostered and welcomed by administrators for ideological and financial reasons, for instance through the greater distinction of teaching and research funding, and greater focus on specific projects and outcomes of research funding over successive rounds of research assessment in the UK: 'The binary divide between research active and research inactive staff and institutions in England has widened with a greater separation between teaching and research following the implementation of the Higher Education Act of 2004. Those institutions and departments regarded as largely 'research inactive', as measured by a low output of publications in high quality peer-reviewed research journals, face the pressure of severe cuts in external funding.' Chris Holligan, Michael Wilson & Walter Humes (2011): 'Research cultures in English and Scottish university education departments: an exploratory study of academic staff Perceptions', British Educational Research Journal, 37:4, 713-734, p 717-18).

The process and rhythms of infection determine varied and often long time frames, so one of the profound aspects of Whitehead's philosophy is its setting of organisms within history, itself defined according to the rhythms of short and long dynamic historical periods and cycles. For example, given immense advances in biological research, it is a temptation to detach the organism from its history and from the history of its environment except where relevant to the development of the code. The genetic code can hence be seen as self-sufficient, or at least primary, in questions of health and disease. Against this lure, Whitehead is attuned to the deep connections between organic vibrancy and subsequent decay *over many resonating historical ages*, including in education: 'In the history of education, the most striking phenomenon is that schools of learning, which at one epoch are alive with a ferment of genius, in a succeeding generation exhibit merely pedantry and routine.' (AE 2)⁴ This is why the time-machine felt such an apt device to bring Whitehead's ideas into the

activity in education: 'Dunkel ignores the fact that Whitehead took an extraordinary number of educational and administrative duties while he worked in London, serving as Chair of the Department of Applied Mathematics at the Imperial College of Science and Technology at Kensington, governor of the Borough Polytechnic Institute at Southwark, member of the Senate and Dean of the Faculty of Science at the University of London, chair of the Academic Council that managed the internal affairs concerning education in London, and chair of the Delegacy administering Goldsmiths College, one of England's major institutions for the training of teachers. (Brian Hendley, 'Whitehead and business education: a second look' Interchange, Volume 31 2/3, 179-195, 2000, esp. p. 180) For Whitehead's comments on this academic work, see Lucien Price, Dialogues of Alfred North Whitehead, New Hampshire: Nonpareil, 2001, p 247

³ Attention is drawn to imagination as contagious by Ronald F. Blasius in his 'Alfred North Whitehead's informal philosophy of education', however, this connection is interpreted more as a poetic moment than one consistent with Whitehead's ideas on rhythm and organisms. (Ronald F. Blasius, 'Alfred North Whitehead's informal philosophy of education', Studies in Philosophy and Education, 16: 303-315, 1997, esp. p. 309)

⁴ For a far-reaching study of this broad, inclusive and connective approach to biology and evolution, see Isabelle

future. Time-travel, done well, is not only an exercise in retrieval and learning from the past. It is a lesson from the past about an ineluctable decay in each present. For those pupils it was also an instruction on how to counter this passing, thanks to their singular revaluation of the past.

Thus Whitehead echoes Hume, another philosopher dedicated to learning from history and seeing life as essentially historical, in using the Latin phrase 'the corruption of the best for the worst' to capture the negative dynamism of some historical processes: 'From the comparison of theism and idolatry, we may form some other observations, which will also confirm the vulgar observation that the corruption of the best things gives rise to the worst' (Hume, David, The Natural History of Religion, 38http://files.libertyfund.org/files/340/Hume_0211_EBk_v6.0.pdf). In bare facts, the will to learn of youth is wasted. Worse than this, though, because all events occur in dynamic systems, this waste contributes to further negative energy and even more destruction of potential growth and enjoyment; a destruction Whitehead calls 'evil'. Following from the inevitable mix of health and corruption, evil is relative. The judgement of evil can hence be ascribed to an apparent good, if later potential is destroyed: 'This evil path is represented by a book or a set of lectures which will practically enable the student to learn by heart all the questions likely to be asked at the next external examination.' ('The aims of education', AE 7)

The contemporary success of hand-outs and aide-memoires, of lecture notes and slide-show presentations, of online tutorials and fact-sheets, repeated by students to the relief of teachers rewarded with high feedback marks and external assessment, is then partly an illusory good when viewed from Whitehead's philosophy of education. These small victories are defeats over time, because they will be undone by the rapid fading of memory allied to the failure of life and history to repeat or to conform to exact learning: 'Whatever be the detail with which you cram your student, the chance of his meeting in after-life exactly that detail is almost infinitesimal; and if he does meet it, he will probably have forgotten what you taught him about it.' ('The rhythm of education', AE 41-2) So no matter how great your technical tools, even those permitting jumps through time, if assessment remains anchored to bare repetition, then Whitehead's lessons on rhythm and romance will have been betrayed. It is not about the technique, or the experience, but about the later event of reanimation of learning in novel situations.

In place of this detail, Whitehead emphasises the learning of principles. Again, there is a Humean and Deleuzian bent to this definition and use of principles. A principle is a contracted habit of mind: 'A principle which has thoroughly soaked into you is rather a mental habit than a formal statement. It becomes the way the mind reacts to the appropriate stimulus in the form of illustrative circumstances.' ('The rhythm of education', AE 42) There is an important symbiosis of principles, knowledge and the romance of practical encounters, because for Whitehead the acquisition and even application of principles and knowledge becomes unconscious and habitual.⁵ Principles and lasting knowledge therefore depend on intense and engaged practical experience: 'But the growth of knowledge becomes progressively unconscious, as being an incident derived from some active adventure of thought.' ('The rhythmic claims of freedom and discipline', AE 59) Principles formed through habitual contraction prepare us for the unforeseen, for the event. This is a double process since in order to form principles below or within conscious assimilation the learning has itself to be

Stengers, Penser avec Whitehead: une libre et sauvage création de concepts, Paris: Seuil, 2002, 131-2. Stengers is commenting the extraordinary passages on perception and objects in The Concept of Nature where Whitehead demonstrates the necessarily connective quality of perception within a complex nature: 'Nature appears as a complex system whose factors are dimly discerned by us.' (A.N. Whitehead, The Concept of Nature, New York: Prometheus, 2004, 163)

⁵ This concern with the relation of freedom and discipline in education, as countering tendencies to chaotic indifference or decay in each other, can also be found in the closing sections of Process and Reality: 'Another contrast is equally essential for the understanding of ideals – the contrast between order as the condition for excellence, and order as stifling the freshness of living. This contrast is met with in the theory of education. (A.N. Whitehead, Process and Reality, New York: The Free Press, 1978, p 338)

an event; that is, a novel experience demanding activity and transformation alongside this derived unconscious preparation.

In this role of preparation through the unconscious, we can see the skill of divination and the demands of risk and experimentation in learning through principles. Were the time-machine only used to reinforce factual recollection, then the unconscious and risk would play but minor parts associated with mistakes. You took them to the wrong battle. The exam failed to ask a question about that slightly shocking scene with Cleopatra. However, when shaping pupils for tests by the unknown, by novel event, the selection of principle and preparatory event is subject to unavoidable chance and, sometimes, disaster. You might have selected travel through peaceful realms, for a class that would know another world-war. Or maybe this was the right test, where only exposure to past efforts for peace could prepare pupils to try for a new peaceful event amidst conflict and hatred.

It is this adventure that Whitehead's gift brought to the classroom. Careful preparation could then be secured and challenged through exploration and encounter: 'Ideas, facts, relationships, stories, histories, possibilities, artistry in words, in sounds, in form and in colour, crowd into the child's life, stir his feelings, excite his appreciation, and incite his impulses to kindred activities.' ('The rhythm of education', AE 34) It had to be a sensual physical gift, not necessarily one devoid of words, but one where the senses played an essential part in infusing ideas with sensual urgency and relevance, against what Whitehead called the danger of recondite knowledge in mathematical education: 'The science as presented to young pupils must lose its aspect of reconditeness. It must, on the face of it, deal directly and simply with a few general ideas of far-reaching importance.' ('The mathematical curriculum', AE 119) Recondite does not mean difficult here. It means detached from relevance and urgency: 'By this word I do not mean difficulty, but that the ideas involved are of highly special application, and rarely influence thought.' ('The mathematical curriculum', AE 117) The gift would have been wasted, then, had we travelled merely for distraction or escapism. Each adventure needed to bring us back to a novel reflection on pressing modern problems.

A radical education

It could be claimed that our age has learned Whitehead's lessons about romance well. The best modern curricula pay close attention to group and individual learning through engaged experiences and activities, rendering knowledge live and even imparting it in live situations, as opposed to rote-learning. For instance, active participation in lectures and laboratories has become a standard recommendation, if not always a fact on the ground, for science teaching at university level: 'Scientific teaching involves active learning strategies to engage students in the process of science and teaching methods that have been systematically tested and shown to reach diverse students.' (Jo Handelsman et al, 'Scientific teaching', Science, New Series, Vol. 304, No. 5670 (Apr. 23, 2004), pp. 521-522). Of course this standard is not universally upheld and, even where the curriculum advocates romance, this is often countered through other pressures and doctrines, for instance with regard universal examination of pupils and objective-based monitoring of teachers and schools, or through the 'ultimate' goal of economic growth as set by narrow and dogmatic views about which disciplines and practices benefit growth, competitiveness and well-being.

Against all these dampers to romance, Whitehead is much more radical than modern orthodoxy. As shown in the exergue, above, he is opposed to general examinations and returns assessment to individual teachers, who must in turn bend it to individual pupils: 'every question directly asked of a pupil at any examination is either framed or modified by the actual teacher of that pupil in that subject'. This is the language of a radical progressive, a believer not only in the singular promise of each pupil ('that pupil') but also the singular capacity and judgement of each teacher ('the actual teacher'). Yet he is even more radical than shown in this attention to individual pupils and educators. He is radical about each teaching and assessment *event*: 'every question ... is either framed or

modified’.

In later works such as *Adventures of Ideas* and *Process and Reality*, Whitehead will define events as nexūs of actual occasions (*Adventures of Ideas*, 231; *Process and Reality*, 73). The event is a relation and sometimes a very distant one. It is also a feeling and oneness, with a given date, yet it is open to connection to other events in another nexus. This feeling and relation through a mutual transformation in a singular situation, as opposed to any abstract universal or general concept is at the core of Whitehead’s description of learning and teaching. It is also at the core of his educational principles, because the event is essentially singular yet also essentially a relation. This then conditions education in all its manifestations because general concepts cannot be applied alone legitimately without running counter to the singular nature of each event, not only at the point of learning, but also at the points of testing and application. Moreover, since each event is a relation and process with no final boundaries there are no final legitimate barriers or distinctions to be drawn once and for all on the basis of abstract generalising theory. This applies not only to history, for instance, against the notion of a pure golden age, or perfect state of education in a given epoch. It also applies to subjects, where Whitehead’s philosophy of education stresses the interrelation of subjects in learning events.

Each event, each encounter of teacher and pupil is a difficult challenge with no simple solutions or straightforward prescriptions or guidelines. This explains his appeal to a novel definition of principles as unconscious and habitual, and hence individual, due to differences in individual circumstances, potential and habit-forming patterns and events. It also explains why the application of those principles must itself involve romance and adventure, because that unconscious work of principles and ideas needs experienced intensity for its release.⁶ The rhythms of education form a circle and not a ladder. Each stage must be present in all the others. Whitehead therefore appeals to individual and necessarily imperfect teaching, balancing exciting initiative and dulling training, as a response to ineluctable difficulty: ‘It is not a theoretical necessity, but arises because perfect tact is unattainable in the treatment of each individual case. In the past the methods employed assassinated interest; we are discussing how to reduce the evil to its smallest dimensions. I merely utter the warning that education is a difficult problem, to be solved by no one simple formula.’ (‘The rhythmic claims of freedom and discipline’, AE 56)

Against the conclusion that this tact shows Whitehead pulling back from radical claims, it is very important to pay attention to Whitehead’s prose in the exergue, and more generally in his more accessible writings, whose conversational and humorous style can lure the reader into an impression of slightly forced common sense or wisdom. The underlying philosophy belies these impressions. It is as original as it is extreme. He does not view the matter of education as a choice between educational systems and forms of assessment, but instead makes the much more sweeping point - almost nonsensical one - that ‘no education system is possible’ unless it follows his position on assessment. Yet, there have been and are still education systems based on standardised national and international tests, as well as national and international league tables based on these tests (as shown, for instance, by UNESCO’s International Standard Classification of Education http://www.uis.unesco.org/Education/Documents/UNESCO_GC_36C-19_ISCED_EN.pdf or through the Bologna process in European Union higher education <http://www.ehea.info/>). Such general testing, standardisation and ranking is in fact the norm rather than the exception. Indeed, Whitehead was writing against such forms of assessment at the same time as he was denying their possibility. How can such an extreme contradictory and counter-empirical claim be defended? Is this not a rhetorical misuse of ‘possible’, and by a philosopher to boot?

⁶ For a rich practical study of the stage of romance in relation to Whitehead’s theory of prehensions, see Adam Scarfe ‘Selectivity in learning: a theme in the application of Whitehead’s theory of prehensions to education’ *Interchange*, Volume 36/1-2, 9-22, 2005, esp. 13es.

The answer to this puzzle is in Whitehead's feel for dynamic processes over time. His deep thesis is that there is no *deep and lasting* learning where teaching lacks romantic adventure, tailored to individual pupils.⁷ It is also that there is no such teaching where assessment destroys the ambition and practice of singular attention to the thrill of discovery in practice. Finally, it is that each event plays a part in this dynamic struggle and unfolding. Education, indeed any process, is a continuous process affecting and affected by all events. There are no independent discrete parts. There is no legitimate compartmentalisation of, say, learning and assessment, or assessment and development, or development and well-being, or well-being and social and economic goods.

This continuity is reflected in Whitehead's doctrine of rhythm which defines rhythmic movement in terms of manifold scales and stretches.⁸ There are therefore many interrelated rhythms, interacting with one another and forming complex patterns of dynamic growth based on emerging differences:

Life is essentially periodic. It comprises daily periods, with their alternations of work and play, of activity and of sleep, and seasonal periods, which dictate our terms and our holidays; and it is also composed of well-marked yearly periods. These are the gross obvious periods which no one can overlook. There are also subtler periods of mental growth, with their cyclic recurrences, yet always different as we pass from cycle to cycle, though the subordinate stages are reproduced in each cycle. That is why I have chosen the term "rhythmic", as meaning essentially the conveyance of difference within a framework of repetition. ('The rhythm of education', AE 27)

The role of singular difference and variation over cycles is of course reminiscent of Leibniz's Monadology and Vico's New Science. It is also a forerunner to Deleuze's Difference and Repetition and of his study of Leibniz in The Fold: Leibniz and the Baroque. Closer to Whitehead in epoch and explicit commitment to the analysis of rhythms, there is also Bachelard (and then Lefèbvre) and Bachelard's interest in Pinheiro dos Santos' work on rhythm (Bachelard, La dialectique de la durée, Paris PUF, 1950, pp. 129-50).⁹

It would be false to conclude from the disparity between contemporary economic and social erosion of living rhythms and Whitehead's insistence on the importance of lived rhythm that Whitehead is somehow behind the times or, worse, reactionary. On the contrary, his concern with rhythm and more widely with progress in and through education is explicitly aimed at modernity and at the

⁷ This use of the idea of adventure as counter to decay is also found in the sections on Adventures of Ideas where Whitehead discusses business and technology ('Foresight'). In that book philosophy has the coordinating role allowing adventure to counter decadence: 'But when civilization culminates, the absence of a co-ordinating philosophy of life spread through the community spells decadence, boredom, and the slackening of effort.' (A.N. Whitehead, Adventures of Ideas, Harmondsworth: Penguin, 1933, p 121)

⁸ It is interesting to see the continued importance of this complex idea of rhythm in contemporary research inspired by and developing Whitehead's philosophy. Brian Massumi's elegant and sensitive work on dance, art and music gives an exceptionally tactile and sensual rendering of Whitehead's aesthetic event as essentially rhythmical. Massumi also explains well why Whitehead insists on the bodily and sensual, precognitive, aspect of the stage of romance in education: 'The effect wells up from below the threshold of human experience. It comes to pass the threshold in *its* way, following its own rhythm, when it is ready to set in. *It* – the event-nexus – expresses its own coming together, as it passes through its human channelled bringing-itself-into-perceptual-focus. This makes the experience integrally ecological.' (Brian Massumi, Semblance and Event: Activist Philosophy and the Occurrent Arts, Cambridge, Mass: MIT, 2011, p 165)

⁹ Luciana Parisi and Steve Goodman discuss Whitehead and Bachelard on rhythm in 'Extensive Continuum Towards a rhythmic anarchitecture' http://www.senselab.ca/inflexions/volume_2/nodes/Inflexions_Goodman_Parisi.pdf. They argue that Whitehead's later work on the extensive continuum goes further than Bachelard and his critique of Bergson: 'For us, Whitehead's extensive continuum moves beyond the Bergson and Bachelard deadlock because it accounts for the continual potential relations between discontinuous actual occasions.' p 4). Irrespective of these distinctions, it is notable how far modern lives have drifted from many senses of natural or created rhythms through our technological control over nature, our nefarious effect on the very seasons, the capitalist drive to deny cycles of rest and recuperation in the name of competitive advantage and the ceaseless demands of the production of surplus-value.

roles of science and technology in the modern world: ‘The key to modern mentality is the continued advance of science with the consequential shift of ideas and progress of technology.’ (‘The place of Classics in education’, AE 112) So when he defends the continued teaching of Latin, or when he argues for the importance of the arts in education, it is not a nostalgic argument or a claim to superior values, but rather to their importance for scientific and technological education and for the advancement of technological and scientific societies: ‘The antithesis between a technical and a liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical: that is, no education that does not impart both technique and intellectual vision.’ (‘Technical education and its relation to science and literature’, AE 74)

The value of art and literature is two-fold.¹⁰ On the one hand, they complete and intensify our relation to the world around us. So though science has its romance and imaginative passions, these are completed by the way in which the arts enrich and deepen our senses in relation to the world around us: ‘Art exists that we may know the deliverance of our senses as good. It heightens the sense-world.’ (‘Technical education and its relation to science and literature’, AE 74) Literature completes a scientific approach to language by sharpening our senses around language and allowing for greater ‘aesthetic appreciation’, not for some abstract reason but because this will allow for the ‘successful employment of language’.¹¹ (AE 75) More broadly, Whitehead associates this development of the senses and of appreciation through the idea of ‘vision’.

This definition of vision must not be confused with a current managerial use of the term, where it is identified with an aim (*the vision of this university is to be an international leader in biotechnology*). Vision is instead a faculty associated with imagination and the senses, beyond specific outcomes and aims. Vision, then, is an ability to sense what is not directly at stake in an activity and not directly at hand. It is a cultivated capacity to imagine and feel the dynamic and emotional promise and threats around an activity. It is a form of foresight rather than sight-setting: ‘Art and literature have not merely an indirect effect on the main energies of life. Directly, they give vision. The world spreads wide beyond the deliverances of material sense, with subtleties of reaction and with pulses of emotion. Vision is the necessary antecedent to control and to direction.’ (‘Technical education and its relation to science and literature’, AE 91) This antecedence is what is missed when, for instance, managers define vision as an imagined final state. Vision occurs prior to this and stands in a critical relation to it.

On the other hand, the arts and literature matter for moral reasons, which are in turn defended for their moral *and practical* worth. Work and the management of work require a counter to their tendency to drudgery and exploitation: ‘[...] the essential idea remains, that work should be transfused with intellectual and moral vision and thereby turned into a joy, triumphing over its weariness and its pain.’ (‘Technical education and its relation to science and literature’, AE 68) For Whitehead, this moral vision only follows from a passionate experience of the arts and of literature.

¹⁰ The reference to romance and to the importance of the arts is echoed in the discussion of the ‘Romantic reaction’ in *Science and the Modern World*. Romantic poetry was a plea for the organic connection of things and for values over and above, and essential to, matters of fact: ‘... the nature-poetry of the romantic revival was a protest on behalf of the organic view of nature, and also a protest against the exclusion of value from the essence of matter of fact.’ (A.N. Whitehead, *Science and the Modern World*, Harmondsworth: Penguin, 1927, p 115. These arguments are picked up towards the end of the book in a discussion of the importance of art in education that rates among some of Whitehead’s most lyrical and inspiring: ‘This fertilisation of the soul is the reason for the necessity of art.’ (*Science and the Modern World*, 234)

¹¹ For an exceptionally lucid interpretation of this understanding of the aesthetic in Whitehead, see Steven Shaviro’s *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics* (Cambridge, Mass: MIT, 2009). Shaviro emphasises the ubiquity of aesthetic ‘contemplation’ central to Whitehead’s argument for its necessary role in education: ‘Even the most utilitarian, result-and-action-oriented modes of perception remain largely receptive and involve a certain “affective tone” and a certain degree of aesthetic contemplation – and, Whitehead adds, “thus art is possible”.’ (pp. 68-9)

The moral side to education culminates in religious education, which can be given a secular bent given his emphasis on definitions of the principles of religious education free of theistic references (though these can easily be retraced, for instance to God, through eternity and the whole amplitude of time in the following passage).¹² The principles of 'duty' and 'reverence' stress our responsibility for the world and others, all of the world, over the whole of time, for all others: 'Duty arises from our potential control over the course of events [...] and the foundation of reverence is this perception, that the present holds within itself the complete sum of existence, backwards and forwards, that whole amplitude of time, which is eternity.' ('The aims of education', AE 23) In this highest stage, though not necessarily the most important one, since rhythm assigns import to all stages through their intertwined relations, we see Whitehead's radical demands and principles at their most extensive, but also most burdensome. Education carries the whole of time in each of its events.

The curse?

The gift was a curse. Perhaps the Depute knew the exam results would ruin my career. Few of my pupils did as well at the exams as expected, despite their new-found enthusiasm and dedication. Rote-learning fails the test of time, but deep learning and adventure fail fact-based questioning, just as Whitehead predicted. It was dangerous to adopt radical and innovative methods within a system maintaining counter-modes of assessment and evaluation. My innovations required a system capable of recognising them rather than one that tested for shallower knowledge and facts they sought to avoid.

Whitehead's philosophy can be accused of idealism in failing to adjust pragmatically to the demands of established practices and demands. His insistence on the rhythms of education lures pupils and teachers into patterns of learning that fail according to the systems already in place. For instance, these systems might require the comparison and assessment of schools and their students in ways inconsistent with his emphasis on individual learning. The idealism would not simply be a dream of an unattainable future state. It would instead be idealism, either, with regard the nature of the extent of the revolution needed to bring in a system consistent with the novel view of the rhythms of learning, or, with regard the difficulty of gradually introducing a radical programme.

The demands of Whitehead's radical model are such that it seems either to call for a violently rapid root and branch change, or, for a slower set of steps which necessarily sacrifice a vanguard for future benefits. In both cases of idealism, the deep problem is of time and dialectics. The rhythm of education, for all its complexity, does not seem to take account of the necessary compromises and mediations required over time to bring in a radical rhythm-based system. Whitehead is very convincing in constructing an ideal state of education, but his account looks like failing two practical demands. His system appears not to explain how we can move between the old and the new state. His philosophy also seems to lack an understanding of the necessity of mediation between these states, where mediation or dialectics remains conscious of the demands, validity and claims to truth, contradictions and syntheses of all intermediate stages.

These worries and accusations can be dispelled, though, if we turn to Whitehead's account of rhythm in education as depending on a profound reflection on time and practice. He frequently refers to time pressures in his essays on teaching. He also frames practice in relation to time. This is not only due to the concern with historical dynamics and cycles. That wide topic is underpinned by a more precise and detailed understanding of time on a smaller scale. This smaller scale determines

¹² For a comprehensive and rewarding discussion of this 'spiritual' side of Whitehead's work on education and its debt to William James, see Jack G. Priestley 'The essence of education: Whitehead and the spiritual dimension' *Interchange*, Volume 31/2 and 3, 117-33, 2000, esp. 122-28.

the broader cycles of rhythm and history, though they determine it in different ways in return.

At the beginning of 'The rhythmic claims of freedom and discipline' Whitehead reflects on the fading of Classical ideals in education in the shift from an education for wisdom to an education of subjects. But when we might have expected a full endorsement of this earlier ideal, Whitehead instead shows an awareness of the inevitability of these historical movements. His aim is not in fact a return to an ideal but rather how best to foster a different one that comprehends the pressures and logical dialectic that wed early ideals to their replacement by more prosaic approaches. The problem is then not how to return to an earlier state, or even to imagine a new one. It is rather to combine ideas and practice with an awareness of their destructive but also productive calls on one another: 'My point is that, at the Dawn of our European civilisation, men started with the full ideals which should inspire education, and that gradually our ideals have sunk to square with our practice.' ('The rhythmic claims of freedom and discipline', AE 45) Whitehead's position is indicated by his use of 'inspire', here. He seeks guidance and inspiration from ideals and principles in a practical environment tending to decay if it loses this direction.

The key to this combination is in the role of time as a double-headed pressure on practice. Shortness of time forces educationalists into ever more practical forms of education, for instance, when we emphasise specific knowledge or narrow disciplines for competitive economic reasons. Shortness is then not a comparative numerical property of time itself, where 60 minutes would be shorter than two hours. It is a property of the processes measured by time, where these processes tend to run out of time due to ever-increasing demands, such as making gains over others or the need to increase profits through productivity, even in education.

However, time is always short, not only because we lack time relative to external factors, such as the necessary decline of competitive advantage, but because pupils are themselves a source of a shortness of time. In their case, though, the lack of time is about the inherent value of events in time. Time is short because events come and go. We need to strike at the right time. So shortness of time is measured in missed opportunities to enhance wisdom, deep learning, imagination and excitement. There is certainly shortness of time in responding to a need to achieve a certain type of comparative national standard. There is a different and, for Whitehead, more important shortness of time when a stage of development is missed or damaged. One type of shortness can be used to exacerbate or even excuse the other, for instance when the curiosity and raw enthusiasm of youth is sacrificed to tedious reproduction.

The rhythms of education are not therefore solely historical, as in the decline and fall of systems, or solely natural, as in the life cycles of organisms. They are also, and most importantly, in the rhythmic and dialectical interaction of both types of cycle such that the overall rhythm is neither fully constructed nor natural. Neither is it fully ideal, or fully practical. Finally, it is neither fully cognitive nor fully sensual. Whitehead's philosophy of education is deployed as a hybrid of types and of contradictory pressures, based on a careful examination of the role of time across them.

There are two connected manifestations of this examination of time in Whitehead's philosophy of education. On the one hand, he deploys distinctions about processes in time as critical and interpretative tools. On the other, he tries to respond to them through positive principles for education caught in the contradictions, stresses and opportunities defined by time and process. I want to bring the main body of this chapter to a close through close study of two short passages exhibiting these aspects of Whitehead's thought. The point is not only to show the detail of his arguments and ideas, but to show the sources of his remarks on education beyond what some might see as his personal inclinations and intuitions.

Here is a case of the critical work on time and process in education. It brings together the attention

to dynamic process we studied in the opening section of this chapter, with the radical thresholds and critical points we presented in the second:

But when ideals have sunk to the level of practice, the result is stagnation. In particular, so long as we conceive intellectual education as merely consisting in the acquirement of mechanical mental aptitudes, and of formulated statements of useful truths, there can be no progress; though there will be much activity, amid aimless re-arrangement of syllabuses, in the fruitless endeavour to dodge the inevitable lack of time. ('The rhythmic claims of freedom and discipline', AE 45-6)

First of all, time here is not defined through movement, but in organic change: 'sinking' and 'stagnation', where to sink is not merely to change position but to change in nature, to fade as ideal. Second, the radical horizon of Whitehead's approach appears in the critical divide determined by the demand for 'progress' as distinguished from 'activity'. The difficult and very deep opposition between two ways of thinking about shortness of time supports this distinction.

Activity is 'fruitless' and 'aimless' because it fails to respond to an inevitable lack of time, where lack is not a property of activity itself. Instead, to run short of time is the result of a process independent of the activity, such as the way in which pupils grow up through different stages or the way systems and societies enter periods of decadence. So shortness here does not indicate a clock running down on an act within a specified time period. It is rather that the activity is knowingly or unknowingly in a struggle with a changing organism which can either enhance or resist the activity.

The opposition between knowing and not knowing is central to Whitehead's work on education because he writes to make us aware of the reasons for shortness of time so that we can alter our ways of learning and teaching to adapt to the proper rhythms of education. The problem with, for instance, 'formulated statements of useful truths' are that they are ignorant of the necessary reasons for their redundancy over time. It is not that truths should not be taught, it is that the timing of that teaching must pay attention to a multitude of rhythms governing the how, when, which and who of each teaching event: 'I am pleading that we shall endeavour to weave in the learner's mind a harmony of patterns, by co-ordinating the various elements of instruction into subordinate cycles each of intrinsic worth for the immediate apprehension of the pupil.' ('The rhythm of education', AE 33)

This critical side to Whitehead's work on time and education is complemented by a series of important principles based on time. In my view, the most significant of these concerns the 'insistence of the present'. Education is not about the preservation of past knowledge, or an aim at a future state of knowledge or ability, it is an attention to the specific demands of the present: 'I would only remark that the understanding which we want is an understanding of an insistent present. The only use of a knowledge of the past is to equip us for the present. No more deadly harm can be done to young minds than by depreciation of the present. The present contains all that there is. It is holy ground, for it is the past, and it is the future.' ('The Aims of Education', AE 3-4)

This claim for the present allows us to understand Whitehead's radical progressiveness better. It is radical not through a projected ideal, but through a pragmatic attention to the present as focus of the past and of the future. There is to be no sacrifice of the present for past values or for future outcomes. The 'insistence', that is, the intensity of callings and of values - the decision points - must come from present events. This is no bland tautology such that a present act must take place in the present. It is the realisation that the particular character of the present event as singular rhythmic collecting of the past and of the future must condition our acts of learning and teaching. Preservation of the past, and every future objective, must stem from attention to an insistent present, to an intense potential so easy to fail if we do not open our sense to it.

Radical enough?

When defending a progressive and liberal education, more so one as radical as Whitehead's, a final criticism must be addressed. Does his attention to individual pupils, teachers, classes and schools, against general syllabuses and knowledge not lead to a form of individualism incapable of registering the opportunities, fetters, conflicts and deep injustices that appertain to social groups and classes over and above individuals? Does this incapacity make a liberal and progressive education concurrent with a liberal and capitalist education system which, at its limit, in the destruction of centralised and egalitarian education, leads to an education market where the language of singular attention and multiple differences serves as a cover for the distribution of quality and access according to wealth?

Whitehead is well-aware of these questions and he provides some straightforward answers and some less conclusive indications.¹³ Straightforwardly, he is not opposed to general syllabuses and viewing society and pupils as a whole, so long as individual rhythms and particular events are not disregarded. He is not advocating an atomisation of education but rather dialectics between the singular and the general and, in his words, between individual 'freedom' and general 'discipline'.¹⁴ Equally straightforwardly, he is a strong critic of the sacrifice of education for greed and profit: 'Desire for money will provide hard-fistedness and not enterprise.' ('Technical education and its relation to science and literature', AE 69)

However, his argument against greed is moral and practical rather than based on social justice or a critique of capital: 'There is one - and only one - way to obtain these admirable results. It is by producing workmen, men of science, and employers who enjoy their work.' ('Technical education and its relation to science and literature', AE 68) In Dialogues of Alfred North Whitehead, Price reports him as setting this moral and practical role within the task of civilizing business or 'to get business men to civilize themselves' (Dialogues of Alfred North Whitehead, p 61). It would be accurate for Marxists to see this position as opposed to collectivist education associated with political revolution. This opposition to revolutionary upheaval through progressive liberal reform is explicit in Whitehead's works, for instance in his remarks on Marx and Das Kapital in Adventures of Ideas (47)

Whitehead's aim is for careful reform towards 'sympathetic co-operation' thanks to a fostering of a 'Benedictine'¹⁵ joy in labour in order to avoid a 'savage upheaval' ('Technical education and its relation to science and literature', AE 68)¹⁶ The one universal here is the potential for enjoyment. It

¹³ For a brief and rather anecdotal set of remarks by Whitehead on the extension of education beyond an elite in the nineteenth and early twentieth centuries, see Price, Dialogues of Alfred North Whitehead, p. 110

¹⁴ Howard Woodhouse makes a similar point regarding the dialectical rather than linear nature of the stages of education in response to critical remarks on the role of knowledge in Whitehead: 'By relating abstract principles to concrete facts emergent from human experience, the learner in the cycle of generalisation achieves an inclusive understanding connecting abstract principle and concrete experience.' Howard Woodhouse 'Overcoming tragedy' Interchange, Volume 31/1, 79-82, 2000, esp. p. 80. It is the cyclical and inclusive elements that show the dialectical movement, though I disagree with Woodhouse's characterisation of principles as abstract in Whitehead since they are not acquired or held in an abstract manner. It would be better to define them as immanent in the contemporary usage developed around work on Deleuze and others.

¹⁵ For a good account of this reference to Benedictine education, see Sandra Fidyk's article illustrating the potential of Whitehead's account of rhythm and romance, and the stages of education through many enlightening practical teaching examples and cases, many of which stem from the teaching of literature (Sandra Fidyk, 'Precision and craft in Whitehead's educational philosophy' Interchange, Volume 31/2 and 3, 301-17, 2000, esp. p. 313).

¹⁶ There is a deep and balanced discussion of the relation to market in Whitehead's philosophy of education by Howard Woodhouse. He argues that Whitehead's position is not compromised by its aim of civilizing business, but that nonetheless Whitehead underestimates the conflicts between education and market in terms of aims and values. Woodhouse's argument is not conclusive, though, and ends with exactly the kind of difficult questions and statements

can and should be released by education, but Whitehead does not see this potential as essentially limited by social and economic conditions assigned to groups and classes. The deep worry remains, though, that even if those conditions are not necessary fetters on the release of the potential of enjoyment in education, they remain practical ones with a social and political dynamic as powerful or perhaps more powerful than the proper rhythms of education.