

# XV. Education in a Decadent Age: The Place of Process Philosophy in the Curriculum

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In *The Aims of Education* Alfred North Whitehead argued that:

Any serious fundamental change in the intellectual outlook of human society must necessarily be followed by an educational revolution. [... T]he law is inexorable that education to be living and effective must be directed to informing pupils with those ideas, and creating for them those capacities which will enable them to appreciate the current thought of their epoch.<sup>1</sup>

Whitehead wrote this at a time when access to education was on the rise and traditional education based on the classics was on the wane, being displaced by technically oriented education based on mathematics and science. Education would no longer be for an exclusive elite; it would be extended to all. At a crucial turning point in the education systems in Britain and USA, Whitehead was charting a path that would foster a society in which people, no longer governed by necessity, would enjoy their work. He accepted that workers required a technical education, but argued that technical education ‘must be conceived in a liberal spirit as a real intellectual enlightenment in regard to principles applied and services rendered.’<sup>2</sup> The assumed antithesis between a technical and a liberal education he rejected as fallacious: ‘There can be no adequate technical education which is not liberal, and no liberal education which is not technical’ he proclaimed. There can be ‘no education which does not impart both technique and intellectual vision.’<sup>3</sup> Whitehead also sought to avoid what C.P. Snow later lamented as the division between two cultures: science and the humanities. He was concerned to overcome the nihilistic reductionism of ‘scientific materialism’ with a new metaphysics and philosophy of nature that gave a place to philosophy, mathematics, science, the humanities and art in the quest to comprehend the world. The

justification for a university in this new world, Whitehead argued, is ‘that it preserves the connection between knowledge and the zest for life, by uniting the young and the old in the imaginative consideration of learning.’<sup>4</sup> Considering the role of the university more broadly Whitehead proclaimed: ‘The task of a university is the creation of the future, so far as rational thought, and civilized modes of appreciation, can affect the issue.’<sup>5</sup> Almost eighty years later we are in a position to judge the significance and value of Whitehead’s proposals, and also consider their relevance for the present.

We now can see more clearly the situation to which Whitehead was responding. The challenge of mathematics and science and technical education to an education in the classics taking place in Britain in the early Twentieth Century was testimony to the conservatism of British culture. The fundamental challenge to the intellectual outlook of human society which placed mathematics and science at the core of culture occurred in the Eighteenth Century with the Encyclopaedists in France.<sup>6</sup> It was they who responded to the growing fragmentation of culture by using mathematics as the organizing principle for all knowledge in place of Aristotelian logic. The full implications of this were appreciated in Britain in the second half of the Nineteenth Century by the member of ‘X Club’—Thomas Huxley (1825-1895), Herbert Spencer (1820-1903), John Tyndall (1820-1893) and others who argued that science should take the place of religion, that scientists should take the place of priests, and that science should be at the core of education.<sup>7</sup> It was Tyndall who in 1865 coined the term ‘scientific materialism’ to characterize this new world-view.<sup>8</sup> Whitehead was responding to the triumph of these scientific materialists.

Responding to conflict between the classicists and scientific materialists Whitehead was aligning himself with and advancing a different tradition of thought. Reductionist materialism had engendered a much more sustained and creative reaction in Germany than in Britain. Rather than upholding the classics, the Germans in the late Eighteenth and early Nineteenth Centuries struggled to develop a new philosophy that would incorporate and advance Renaissance humanism while providing the foundation for a different kind of science, a science based on a dynamic, evolutionary view of nature. While to begin with, this philosophy took the form of Idealism, it was also formulated as a form of naturalism by Johann Gottfried Herder (1744-1803), Johann Wilhelm von Goethe (1749-1832) and Friedrich Schelling (1775-1854) and the *Naturphilosophen*. The development of this new philosophy was associated with the emergence of the Humboldtian model of the university. Laying out the principles of the new university of Berlin (founded in 1810), Humboldt characterized the function of higher

institutions as ‘places where learning in the deepest and widest sense of the word may be cultivated’. To attain their purpose,

the inward organization of these institutions must produce and maintain an uninterrupted cooperative spirit, one which again and again inspires its members, but inspires without forcing them and without specific intent to inspire. [...] It is a further characteristic of higher institutions of learning that they treat all knowledge as a not yet wholly solved problem and are therefore never done with investigation and research. [...] In the higher institutions, the teacher no longer exists for the sake of the student; both exist for the sake of learning. Therefore the teacher’s occupation depends on the presence of his students.<sup>9</sup>

The Arts Faculty was elevated to the university’s core, teaching was combined with research and the university was granted autonomy from governments to engage in research and pursue the truth. Philosophy became the crowning discipline of the university, providing an integrated perspective on all the other disciplines.<sup>10</sup> Science was to be developed in close relationship to philosophy.

In the Nineteenth Century Germany became the intellectual centre of the world and had a significant, if fragmentary influence on British thought. The British Romantics, most notably Wordsworth and Coleridge, were strongly influenced by the German Romantics, particularly Schelling. Michael Faraday (1791-1867) and James Clerk Maxwell (1831-1879) advanced their dynamic view of the physical world. Evolutionary theory was taken up by the British, although it was only deemed acceptable after efforts had been made to reformulate it to accord with reductionist materialism which justified a brutal social order based on the struggle for survival rather than promising to overcome it.<sup>11</sup> Whitehead’s point of departure for the development of his philosophy was the physics of Maxwell, the mathematics of the Schellingian mathematician Hermann Grassmann (1809-1877), evolutionary theory in its original form and the poetry of Wordsworth. Whitehead’s ideas on education can be interpreted as an effort to revive and reformulate the educational project of von Humboldt after it had been largely undermined by the fragmentation of disciplines in Germany. He was trying to do this when the difficulties of achieving such an integrated understanding of the world were greater because advances in mathematics and science had led to more specialization, and there was a corresponding greater specialization of roles in society. It was in the spirit of the quest to revive this tradition that Whitehead’s Humboldtian sentiments were evident in Chapter 1 of *The Aims of Education* where he proclaimed:

Culture is the activity of thought, and receptiveness to beauty and humane feeling. [...] What we should aim to produce is men who possess both culture and expert knowledge in some special direction. Their expert knowledge will give them ground to start from, and their culture will lead them as deep as philosophy and as high as art. [...] In training a child to activity of thought, above all things we must be aware of what I will call 'inert ideas' [...]. Every intellectual revolution which has ever stirred humanity into greatness has been a passionate protest against inert ideas.<sup>12</sup>

So, what is the situation almost eighty years after Whitehead's essays on education were first published? In the English speaking countries, under the influence of Taylorist managerialism, which involves concentrating all knowledge and decision-making in the hands of managers and reducing the managed to manipulated cogs in the production process, craftsmanship and professionalism are being undermined, and all fulfillment in work eliminated.<sup>13</sup> Work is now seen by employees purely as a means to make money in order to be able to consume more. Correspondingly, education is being reduced almost entirely to training people for such work, enabling them to make more money. Within academia there has been far more specialization. Mathematics and science have fragmented and the humanities have followed suit. There are now 4000 disciplines within universities and many more definable knowledge fields.<sup>14</sup> Whitehead's ideas were marginalized in philosophy by analytic philosophers who proceeded to give up any ambition to achieving a general perspective on all knowledge and fragmented philosophy itself into a multiplicity of sub-disciplines. Those who have struggled against this fragmentation, whether disciples of Whitehead's process philosophy, proponents of Ludwig von Bertalanffy's systems theory, or proponents of C.S. Peirce's semiotics, have had to struggle to be taken seriously. While systems theorists bolstered by the development of complexity theory have had more success than semioticians and process philosophers, generally proponents of such transdisciplinary perspectives have been dismissed as 'dilettantes' who cannot possibly contribute anything worthwhile to the growth of knowledge. 'Culture', which Whitehead assumed to be associated with the broader perspectives of properly educated people, has been reconceived as part of the entertainment industry. There is no demand for the kind of people Whitehead thought our education institutions should be producing. And it appears that there has been a general dumbing down of the population, with adult illiteracy in the United States now well over 20%,<sup>15</sup> while a study in Britain in 2006 found that eleven and twelve year olds had the cognitive development of nine year olds of only fifteen years earlier.<sup>16</sup>

As John Taylor Gatto noted after thirty years teaching in New York schools, pupils now have

almost no curiosity, [...] a poor sense of the future, [...] are ahistorical [...] cruel [...] uneasy with intimacy [...] materialistic [and] [...] timid in the presence of new challenges.<sup>17</sup>

This fragmentation has resulted in a crisis of universities, of society and of civilization. As Bill Readings argued, the university is in ruins.<sup>18</sup> Universities are being transformed into transnational business corporations run for profit. Business Faculties are replacing Arts Faculties as the core of universities, the humanities dominated by academics opposed to everything that the humanities originally stood for, are slowly being eliminated, and science is being transformed into nothing more than a means to develop technology. Opposing such tendencies has become increasingly difficult. Although there are signs of reaction against this, 'nations' have ceased being recognized as communities united by a culture which fosters a commitment to the common good of their members and are looked upon as collections of economic actors. Consequently, ethics and political philosophy have lost their cognitive status to neo-classical economists who have identified practical rationality with egoism. This is associated with the abandonment of the quest for democracy and the transformation of the institutions of the State into instruments for imposing market relations on all facets of life. This new world-order, dominated by transnational corporations and the institutions of States they now control is moving inexorably towards the destruction of ecological conditions for civilization and humanity, which, if James Lovelock's prognostications are right, will leave only 200 million people left alive at the end of this century.<sup>19</sup> While Stanley Salthe has characterized this state of fragmentation as senescence,<sup>20</sup> a situation where excessive differentiation has undermined the possibility of communication, it can more simply be described as a state of decadence.

## 1. Confronting the Roots of Decadence

This decadence in the face of a looming global ecological crisis has given a new lease of life to efforts to overcome the fragmentation of culture. While it is evident that Whitehead was not successful in his quest to overcome scientific materialism in his lifetime, it has become increasingly clear that scientific materialism is at the root of the decadence of modern culture. Furthermore, appreciating this has been associated with greater appreciation of what scientific materialism stood for from its origins in the Seventeenth Century to the present, both for nature and society. What this

has shown is that we need to develop an education system that straightforwardly sets out to incorporate process philosophy into the curriculum.

The present state of culture manifests the triumph of scientific materialism. The embodiment by society of scientific materialism, particularly in English speaking countries, underlies the tacit acceptance that the only claims to knowledge that should be taken seriously are those concerned with how to control the world, including other people. The best way to achieve this is by making research and the dissemination of its results more specialized. What people desire is pleasurable stimuli and avoidance of pain. There is no value in the world apart from these. All discourses other than techno-science, giving orders or forming agreements, preferably in the form of contracts, are merely forms of amusement. The best way to allocate resources is to allow people who know what gives them pleasure or pain to buy and sell what they want on the market. Consequently, wherever possible (apart from institutions of coercion such as the military and police) relations between people and organizations, including universities and governments, should be based on market principles.

If this results in an education system that dumbs down the population, this is good, since it makes people less able to resist efforts to control them. While unrestrained markets concentrate wealth and impoverish people, this is the natural order of things, part of process of selection through the struggle for survival by which nature has evolved. That we are now entering a phase of this struggle for survival that might leave only a few hundred million of the fittest people left alive is a natural process that cannot be avoided. Even if humanity becomes extinct, this is of no great significance since humans are nothing but the arrangements of matter that happen to have won out in past struggles for survival. While sentimental reactions to the Great Depression and the Second World War had clouded people's grasp of reality, scientific materialists, best represented by neo-classical economists, are now firmly back in control of our belief systems.

Dissatisfaction with these conclusions and their implementation has provoked a reaction, revealing more clearly both the source of these ideas and the tradition of thought opposed to it. The mechanistic world-view of the Seventeenth Century was developed to combat the influence of the democratic republicanism of the Renaissance Civic Humanists, that is, those people educated in the humanities, and even more emphatically, the radicalization of civic humanism by Giordano Bruno (1548-1600) and the Nature Enthusiasts. The Civic Humanists upheld a view of humans as free, creative agents whose creative powers should be fostered as the condition

for prosperity and liberty. Bruno and the Nature Enthusiasts rejected the view of nature as hierarchically ordered and celebrated it as essentially creative, situating humans as creative participants within a creative nature and upholding the goal of reconciling humanity with a divine, living nature. Marin Mersenne (1588-1648), a lifelong friend of René Descartes (1596-1650), characterized Bruno as ‘one of the wickedest men whom the earth has ever supported [...] who seems to have invented a new manner of philosophizing only in order to make underhand attacks on the Christian religion.’<sup>21</sup> He initiated the quest to develop an alternative system of thought. That alternative system—the mechanical philosophy upholding the goal of society as the total domination of nature—was provided by Descartes.<sup>22</sup>

Thomas Hobbes (1588-1679), another friend of Mersenne and a fierce critic of the Civic Humanists and Nature Enthusiasts in Britain, also took up the project of developing this mechanical philosophy. As Quentin Skinner has shown, Hobbes strove to transform language to render the ideal of liberty as it had been understood in the Renaissance, as the condition where people were active participants in a self-governing community, unintelligible, and thereby to show that its converse, slavery, the situation where one can be harmed by another, is the unavoidable condition of social existence.<sup>23</sup> He redefined liberty as not being hindered from acting according to one’s powers.<sup>24</sup> Justice he redefined as simply that which is lawful, whatever the laws happen to be. He denied any connection between freedom and participation in the public life of an autonomous society. In society people are free, Hobbes argued, when through fear of the consequences of disobeying laws they acquire a will to obey the laws.<sup>25</sup> Freedom therefore is compatible with rule by tyrants, the form of absolutist rule Hobbes was defending. Assuming that people are always egoists, he gave no place to the cultivation of virtues. Both Descartes and Hobbes dismissed the Renaissance system of education based on the humanities, dismissing history, poetry and every other discourse not concerned with how to control the world, make agreements or give orders, as mere amusements.<sup>26</sup>

Stephen Toulmin aptly characterized Descartes’ work and influence as the ‘*counter-Renaissance*.’<sup>27</sup> A feature of this counter-Renaissance was the claim to absolute truth through the application of a method, the origin of what later came to be known as ‘scientism’, while denigrating narratives, metaphors and other literary tropes cherished by Renaissance thinkers. Isaac Newton (1643-1727) and John Locke (1632-1704) developed a diluted version of the mechanistic philosophies of Descartes and Hobbes to promote what C.B. MacPherson called ‘possessive individualism.’<sup>28</sup> This

formed the core of the economic theory of Adam Smith (1723-1790) and later, of the neo-classical economists, who in turn provided the metaphors for Darwinism and Social Darwinism. From the perspective of this world-view, art, dealing with 'secondary qualities' existing only in the minds of perceivers rather than in reality, can be nothing but a form of amusement. Ultimately, it is on this basis that the central place given to the arts in the Renaissance has been replaced by the view that 'aesthetics concerns matters of mere taste, and the arts are a luxury (rather than conditions of human flourishing).'<sup>29</sup>

This counter-Renaissance was not entirely successful, however. It provoked a reaction by a number of thinkers who attempted to preserve and develop Renaissance ideas. These were the proponents of what has come to be known as the Radical Enlightenment; really, the original, authentic Enlightenment.<sup>30</sup> There has been a struggle between these two traditions, the Radical Enlightenment upholding the Renaissance tradition of thought, and the Moderate or Fake Enlightenment, upholding a Newtonian cosmology and possessive individualism, opposed to it, ever since.<sup>31</sup> Late eighteenth century and early nineteenth century German thought that engendered the idea of education as *Bildung*, 'the rising up to humanity through culture' as Herder defined it,<sup>32</sup> and the Humboldtian University with its privileging of the humanities, along with the post-mechanistic view of nature of the *Naturphilosophen*, was really the surfacing and revival of the Radical Enlightenment. While Herder was uncompromising in his defence of democracy, in the Nineteenth Century most of those influenced by him were less radical. Education in the humanities was not seen by Wilhelm von Humboldt as an education for the general population but education for those who would enter the civil service. These would be the aristocracy of educated people who could ensure the market, in which people were motivated by egoism, was constrained to work for the common good. However, more radical German thinkers did continue to defend democracy, and for these an education in the humanities was the condition for making democracy possible. And if the humanities were to be sustained, it was clear that nature had to be conceived in a way that concurred with the vision of humanity as creative social beings purveyed by the humanities. This was the project of the process philosophers. Process philosophy, striving to transform science to uphold a conception of nature as creative becoming and thereby align it with the humanities, is the most rigorous development and defence of the Radical Enlightenment.

## 2. Revitalizing the Radical Enlightenment Through Education

With this historical perspective the importance of Whitehead's efforts to redefine the aims of education can be better appreciated. It should also be clear what is at stake, and by virtue of this, what is required to revive and advance Whitehead's project.

To begin with, the quest to overcome scientific materialism and the purely technical education that has since come to prevail must be seen as part of the quest to defend liberty and genuine democracy. Whitehead's call for an education that produced people 'who possess both culture and expert knowledge in some special direction' should not be seen as merely a quest for a more civilized society but as the necessary condition for achieving and maintaining liberty and democracy. In a democracy the people themselves are ultimately the governors to whom parliamentarians and civil servants are responsible, and they need to be educated as such. They need a comprehension of the world and their place within it in order to understand the ultimate ends most worth striving for, to be able to participate in planning for the future, and to participate in making decisions.

It is for this reason that democracies in the past have generated the quest for a coherent world-orientation. This occurred in Ancient Greece. Cornelius Castoriadis pointed out:

[A]utonomy, social as well as individual, is a *project*. [...] The questions raised are, on the social level: Are our laws good? Are they just? Which laws *ought* we to make? And, on the individual level: Is what I think true? Can I know if it is true—and if so, how? [...] Autonomy [...] is the unlimited self-questioning about the law and its foundations as well as the capacity, in light of this interrogation, *to make, to do and to institute*.<sup>33</sup>

It was this autonomy, involving the population in decision-making, which led to the birth and flourishing of philosophy, drama and history as the citizens of Athens grappled with the problems raised by this freedom of how to make decisions, how to evaluate actions, how to live and how to organize society. The notion of the common good emerged as both a goal defining the political order and as a topic for investigation. All decision-making was expected to be for the common good. Some of the most important questions to emerge in this environment were, What is the good life? How can society be organized to enable people to live the good life? Answering this question required the development a conception of the nature of humans and of society, which in turn depended on a conception

of life as such, and the nature of the cosmos. It is not so important what conception of the cosmos was developed, but to appreciate that the autonomy of people engendered the quest for a cosmology, even by those who for whatever reason were opposed to democracy. Greek democracy finally produced the integrated cosmology of Aristotle.

What is less clearly appreciated is that such autonomy was also associated with the rise of history, and that although it has tended to be denigrated by philosophers as dealing with particulars and with what is changing, history is more fundamental to democracy than philosophy. In fact philosophy and all abstract inquiry is only made possible through history. History originally meant inquiry. It was the investigation into the past to reveal the causes of conflicts, failures and achievements, to identify those responsible for these and to commemorate their deeds. Above all it was to hold people responsible for their actions, and in this way to constitute people with the character to take responsibility for their actions. The results of such enquiries were cast into a narrative form, and this related such inquiry immediately to the way people defined themselves and oriented them to create the future. In recent years it has been shown how all action, particularly complex cooperative action, has a narrative form.<sup>34</sup> It is living out stories. It is through history and fictional narratives that these lived narratives, inherited from the past, are brought to consciousness, reflected upon, criticized and reformulated. Narratives play a central role in constituting communities, and for communities to survive these narratives must be passed on from generation to generation.

While this narrative form is most obvious in political activities, enquiries of all kinds, including philosophical inquiry, mathematical inquiry and scientific inquiry are engaged in as lived stories. Passing on the projects of these enquiries from generation to generation, to reveal and commemorate what has been achieved and to define the problems that need to be addressed requires the recounting of histories of these enquiries. More than this, it has been shown that narratives are central to the evaluation of new contributions to these enquiries, particularly when these contributions radically challenge past ways of thinking. It is only through the ability to make intelligible the achievements and failures of past enquiries through such narratives that these contributions are validated and recognized as advances over preceding ideas.<sup>35</sup> The recounting of these narratives is required to capture the imagination of potential participants within these fields of inquiry, orienting them to advance extent programs of research or to overthrow existing ideas and create new research projects. Finally, histories are required for history itself, and literature and art, to sustain and advance these.

It is for this reason that periods of striving for democracy, of defending existing democracy and of striving to revive democracy after it had been undermined are characterized not only by advances in philosophy and the quest for a coherent cosmology, but above all by the flourishing of history. This was true of Ancient Greece, in Rome and then in the Renaissance, particularly Renaissance Florence. But these histories transcend particular societies. The Germans, and particularly Hegel, cast the whole history of humanity as the history of the struggle for freedom, and cast the history of philosophy in relation to this. Insofar as philosophy, science and mathematics have been aligned with the quest for democracy, they have upheld cosmologies consistent with the ontology of historians. What is the ontology of the historians? Historians focus on actions, processes and events above all, treating 'objects' in relation to these. Implicitly they are committed to an ontology of process metaphysics. Insofar as philosophy is aligned with history, it must be committed to some form of process metaphysics. This was the case with Anaximander, the first truly great Greek philosopher, and it was true of Bruno in the Sixteenth Century, Herder in the Eighteenth Century and Charles Sanders Peirce, Henri Bergson, Whitehead and John Dewey in the late Nineteenth Century and the early decades of the Twentieth Century.

From this analysis it should be evident that educational change cannot simply follow fundamental changes in intellectual outlook, as Whitehead suggested. The field of education will always be the site of contested intellectual outlooks. In the present situation changes in education are called for to combat growing decadence which is undermining democracy and paralyzing humanity in the face of the greatest crisis in its history, the global ecological crisis. What is called for is a much more active role for education in reviving the Radical Enlightenment and thereby fostering the development of this intellectual vision required for democracy. It is necessary to openly promote the development of a new world-orientation based on process metaphysics, and set out to incorporate process metaphysics into the curriculum. However, to mobilize people for this, education should first and foremost be advanced as the education for liberty and democracy. This education will have at its core the teaching of history, in particular, the history of the struggle for freedom, revealing successes and failures and commemorating not only achievements, but the major innovations in institutions and ideas that have advanced democracy. Along with this, it will be a history of philosophy, but a history of philosophy told from a particular perspective. It will be a history that celebrates efforts to make intelligible the place of humanity and its history within the cosmos, showing how the evolution of nature and society have engendered the potential of humans to struggle for and achieve liberty. The philosophical

work which should be most celebrated is that which has advanced the possibility and actuality of human freedom, guiding people in their struggle for freedom and democracy. This would be a history of philosophy looked at from the perspective of process metaphysics. Then, rather than such metaphysics being taught as an adjunct to other fields of inquiry, it should be presented as the framework for achieving an integrated understanding of the world, for putting in perspective all the different domains of inquiry and human endeavor and for understanding the place of human history in the cosmos. It should be presented as the philosophy required for people to orient themselves in their efforts to achieve or maintain their liberty, and to live democratically.

### 3. Education for Democracy and the Environment

With all this in mind we can now consider what kind of education is called for under existing circumstances, that is, a decadent society facing ecological disaster. As noted, this situation is not only one in which the Humboldtian model of the university is being discarded and education within schools is being reduced to training people for jobs. It is a situation where work has been debased and people rendered politically powerless. It is a situation in which, as Gatto put it, pupils have almost no curiosity, a poor sense of the future, are ahistorical, cruel, uneasy with intimacy, materialistic and timid in the presence of new challenges. Like the Romans after the overthrow of the Republic and during their period of decay into the Dark Ages, young people lack interest in history, let alone philosophy and the rigors of thought required to understand, let alone develop, a coherent cosmology.<sup>36</sup> In the modern world where a much more complex history is required to put in perspective the history of humanity and to make sense of recent developments in the sciences, all of which are required to confront the global ecological crisis confronting us, it is difficult to know where to start. However, growing decadence has highlighted the need to make the ultimate focus of education a development of the sense of responsibility for the future and to consider education at all levels.

Given the relationship between cultural vitality and democracy, the logical place to start is holding individuals responsible, first of all for their own actions and lives, then for their communities and the broader communities of which these are part, ranging from towns, cities, countries and civilizations to the whole of humanity and the global ecosystem. Young people need to be treated as future governors of society and told that

they need to prepare for this. The proper attitude was displayed by a former teacher of the US presidential aspirant, Andrew Jackson. As Jackson recounted:

When I was in the sixth grade and our family had just moved up to the housing projects, we went to Mrs. Shelton's class, and she was writing these long terms on the board. We kept saying, 'This is the sixth grade, not the eighth.' And she turned around and said 'I know what grade this is. I work here. These are no longer big words, they are polysyllabic terms, and over here's a dictionary and a *Roget's Thesaurus*, and right down the hall is a library, and there's something called the Dewey Decimal System. I will never teach down to you. One of you little brats might run for governor or president one day, and I don't want to be found guilty.'<sup>37</sup>

Young people need to be inculcated with a sense that the development of their knowledge and understanding is part of their own self-creation and self-formation, which is part of the self-creation and self-formation of their communities, both social and natural. It is part of the process by which nature is becoming conscious of itself and its problems and potentialities and forming itself in response to these problems and potentialities. It is part of the process by which life on Earth is being augmented.

To achieve such a sense of responsibility it is necessary to combat the fragmentation of knowledge so that individuals can orient themselves in history and in the nature to take responsibility for their actions. This is what should inspire efforts to revive the Humboldtian idea of philosophy as a trans-discipline, along with history charged with responsibility for putting all other disciplines in perspective. In light of recent work on the nature of history referred to above we can now see that genuine philosophy is inseparable from history, since it is only through historical narratives that we come to properly understand philosophical problems, and it is only through historical narratives that new philosophical ideas can be fully defended. Process philosophy can both be presented as the solution to the philosophical problems philosophy itself and civilization are now facing, while the history of civilization and philosophy can now be interpreted through the new perspective opened up by process philosophy.

It is necessary to uphold this central place of philosophy and history not only within universities, but through all levels of education. This should begin with the quest to develop a sense of responsibility. The best way to begin this development in pupils is by teaching in a way that holds them responsible for their own classroom. The classroom should be treated as a community with a project in which all members are participants, with a collective responsibility to prepare all its members to take responsibility for

the future. Education should come to be seen as a responsibility by and for all. This should be seen in a broader context as what is required of members of a democracy. As Walter Murdoch proclaimed in a civics textbook written for school children in 1903,

it is obviously our first duty as citizens to learn to govern [...]. [A] citizen's first duty is to get into the way of forming right opinions on matters that concern the welfare of the State. [...] Every boy or girl who puts whole-hearted diligence into school work is not only learning to be a good citizen in the future, but is a good citizen already.<sup>38</sup>

A central part of this education is simply acquiring essential knowledge and skills, which as E.D. Hirsch argued, is the condition for understanding anything.<sup>39</sup> Beyond this the evidence is that the cognitive development of children is rapidly advanced by having them engage in problem solving and reflecting on how they go about solving problems.<sup>40</sup> Philosophy can be introduced even to children in primary school to begin with as reflection on how to solve problems, as this will benefit everything else they do.<sup>41</sup> To be successful the classroom has to be converted into a community of inquiry.<sup>42</sup> Engaging in philosophical inquiry in the classroom requires the cultivation of a sense of the history of this inquiry, which then constitutes the class as a community. Pupils can then go on to consider the conditions which have made their classroom possible and what is required to maintain and augment these conditions. In this way it should be possible to induce pupils to reflect on their school as an institution among other institutions of government and society, and to reflect on the historical, and more broadly, the natural conditions that have made possible these institutions. Gradually, in this way it should be possible to enable pupils to appreciate the problems of maintaining and augmenting these conditions, and to consider their own responsibilities in this regard. This should be used to lead pupils to develop a sense not only of the history of the institutions of their society and their relationship to each other, but also of the history of the particular disciplines they are studying and thereby of the relationship between these to each other and to the institutions of society.

For the most part, philosophy that has been introduced into the school classroom has focused on epistemology and ethics, which reflects the fragmented state of recent philosophy. What is required to introduce pupils to the idea that their classroom is a community is, to begin with, the introduction of political philosophy, grappling with questions of how their community should be organized, and why, thereby highlighting such issues as What is the good life? What is democracy? and What is liberty? thereby relating the classroom to the broader community and to governance. Again,

Walter Murdoch provides guidance for what this should come to mean in a second text-book on civics for school children he first published in 1912:

Liberty—the only liberty worth fighting for—should be thought of, not as freedom *from*, but as freedom *to*; not freedom from this or that restraint, but freedom to do this or that thing that is worth doing. [...] [L]ook upon liberty as a positive thing,—as freedom to do, to be, to enjoy, to understand,—and you will find that, in innumerable ways, government sets us free. [...] The aim of the best government is to make the best kind of life possible to all.<sup>43</sup>

Pupils should never be inculcated in a particular philosophy, but through developing a sense of history it should be possible to foster an appreciation of the cultural heritage presupposed in all current intellectual activities. It should be possible to enable pupils to see that it is only in relation to the history of their cultural heritage that they can fully comprehend the practical problems facing them and their communities, and the relevance of philosophy to these problems. In particular it should be possible to reveal to pupils the roots of the destructive forces in modern civilization in the mechanistic view of nature and of humanity, how this view has been embodied in many of society's institutions, and the connection between these practical problems and the philosophical problems of the mind's relation to the body, of gaining knowledge of the 'external' world, and finding meaning in life. Putting all this in historical perspective should clarify what is required. The mechanistic view of the world should be seen as the legacy of the Seventeenth Century scientific revolution in physics and astronomy, the Eighteenth and Nineteenth Century revolution in chemistry and the Nineteenth and Twentieth Century revolution in biology, all these revolutions being legacies of the triumph of Pythagorean thought of Ancient Greek. The notions of liberty and democracy should then be seen as the legacy not only of the Ancient world, but also of the Renaissance and the Radical Enlightenment, and that the proponents of the mechanistic world-view were centrally concerned to oppose these notions. It can be pointed out that the main defence of the Radical Enlightenment, the arts and the humanities against the mechanistic world-view came from the Objective Idealism of the German Enlightenment, and that process philosophy, continuing the work of Herder, Goethe and Schelling, is now providing a stronger basis for defending the humanities by reconciling science with the humanities.

## 4. Conclusion

In the process of revealing the sources of current modes of thinking and current institutions pupils can come to appreciate that they belong to a civilization with roots in the Ancient world, a civilization with achievements and failures behind it which has come to dominate the modern world. At the same time this should enable them to appreciate that there have been and are other civilizations which also have great achievements and failures behind them. In particular pupils can be introduced to the forms of thinking that developed in China. While China failed to develop the highly abstract analytical thinking that underlies much of what is great in European civilization, the conception of the world developed in Chinese philosophy as a world of dynamic processes is more in accord with process philosophy and modern physics than Newtonian cosmology, and through Leibniz it contributed to the development of the German Enlightenment and post-mechanistic science. What should become evident from this is that the challenge facing us is not simply the challenge of overcoming the failures of European civilization, but developing a new civilization drawing on the achievements of all civilizations and overcoming all their limitations, a post-Eurocentric civilization of humanity. This should clarify the challenge facing philosophy as developing a post-mechanistic conception of 'nature', reconciling the analytic thought of European civilization with the process thinking of the 'Chinese', through which the ethical and political ideals of the Idealists can be defended and further augmented, the dynamics of nature and the global ecosystem properly appreciated, and the threats to it addressed.

It is in the face of all these challenges that pupils can be introduced to process metaphysics as the tradition with the project of meeting these challenges. It is clear that the easiest introduction to post-mechanistic natural philosophy aligned with process metaphysics is systems theory. This presents an easily comprehensible and clear alternative to reductionist materialism with notable successes associated with the study of open systems and the development of complexity theory, including hierarchy theory. Furthermore, this is solidly grounded in thermodynamics, a core area of the physical and biological sciences that cannot be fully reconciled with mechanistic thought. Pupils should then be introduced to semiotics, and in particular, bio-semiotics, the study of the production and interpretation of signs in nature, showing how the development of signs has

been associated with the evolution and development of more complex forms of symbiosis and cooperation, leading to the development of multi-celled organisms, communities and complex ecosystems.<sup>44</sup> This should provide the foundation for appreciating on naturalistic grounds the notion of culture developed and defended by Idealist philosophers, contextualizing it within the ecosystems of which humans are part. Systems theory combined with semiotics should then provide a way for pupils and students to think of themselves, their communities, their education, their philosophizing and their developing sense of history as part of the world they are striving to understand. It is with the acceptance of the greater promise of systems thinking and semiotics over scientific materialism that maturing students should then begin to appreciate the importance of deeper metaphysical thinking, and making the Gestalt switch to see, or rather experience, the world as a creative process of becoming in which they are participants. With such schooling it should be possible to revive the Humboldtian form of the university, with process philosophy playing the role for philosophy prescribed for it by Wilhelm von Humboldt.

## Notes

<sup>1</sup> A. N. Whitehead, *The Aims of Education and Other Essays*, [1932] (Ernest Benn: London, 1962), p. 116.

<sup>2</sup> Whitehead, *The Aims of Education and Other Essays*, p. 70.

<sup>3</sup> Whitehead, *The Aims of Education and Other Essays*, p. 74.

<sup>4</sup> Whitehead, *The Aims of Education and Other Essays*, p. 139.

<sup>5</sup> Alfred North Whitehead, *Modes of Thought*, [1938] New York: Free Press, 1968, p. 171.

<sup>6</sup> See Michael E. Hobart and Zachary S. Schiffman, *Information Ages*, Baltimore: John Hopkins University Press, 1998, p. 161ff. on this.

<sup>7</sup> Ruth Barton, ‘“An Influential Set of Chaps”: The X-Club and Royal Society Politics 1864-85,’ *The British Journal for the History of Science*, Vol. 23, No. 1 (Mar., 1990): 53-81.

<sup>8</sup> Ruth Barton, ‘John Tyndall, Pantheist: A Rereading of the Belfast Address,’ *Osiris*, 2<sup>nd</sup> Series, Vol.3, (1987): 111-134

<sup>9</sup> Wilhelm von Humboldt, *Humanist Without Portfolio*, Detroit, Wayne State University Press, 1963, p. 132f.

<sup>10</sup> On this see M. István Fehér, ‘The Humboldtian Idea of a University: The Bond Between Philosophy and the Humanities in the Making of the Modern University,’ *Neohelicon*, XXVIII(2) (2001): 33-37.

<sup>11</sup> On this see Robert M. Young, *Darwin’s Metaphor*, Cambridge: Cambridge University Press, 1985.

<sup>12</sup> Whitehead, *The Aims of Education*, p. 1f.

<sup>13</sup> The principles of Taylorism, which dominates management theory, are laid out in Frederick Winslow Taylor, *The Principles of Scientific Management* [1911] New York: Norton, 1947.

<sup>14</sup> Julie Thompson Klein, ‘Disciplinary Origins and Differences,’ 2004 *Fenner Conference on the Environment, Conference Proceedings, Australian Academy of Science*, 2004, <http://www.science.org.au/events/fenner/klein.htm> (viewed 12th Sept, 2008).

<sup>15</sup> On illiteracy in USA see John Taylor Gatto, *The Underground History of American Education*, 2<sup>nd</sup> ed. New York: Oxford Village Press, 2000, Ch.3.

<sup>16</sup> An investigation by Professor Michael Shayer of 10,000 11- and 12-year olds found that they are ‘now on average between two and three years behind where they were 15 years ago’ in cognitive and conceptual development (Joseph Crace, ‘Children are less able than they used to be,’ *The Guardian*, Tuesday, January 24, 2006).

<sup>17</sup> John Taylor Gatto, *Dumbing us Down: The Hidden Curriculum of Compulsory Schooling*, 2<sup>nd</sup> ed. New York: New Society Publishers, 2002, p. 27f.

<sup>18</sup> Bill Readings, *The University in Ruins*, Cambridge, Harvard University Press, 1996.

<sup>19</sup> James Lovelock, *The Revenge of Gaia*, New York: Basic Books, 2006, Ch.4.

<sup>20</sup> Stanley N. Salthe, *Development and Evolution*, Cambridge: MIT Press, 1993, p. 187.

<sup>21</sup> Marin Mersenne, *L’Impiété @@de deists*, (Paris, 1624), Vol. I, 230f. Translated and quoted by A.C. Crombie, ‘Mersenne,’ *Dictionary of Scientific Biography*, Ed. Charles Coulston Gillispie, 16 vols (New York: Scribner 1970-80) Vol. IX, 1974, p. 317.

<sup>22</sup> A.C. Crombie, ‘Mersenne,’ *Dictionary of Scientific Biography*, pp. 316-322.

<sup>23</sup> Quentin Skinner, *Visions of Politics, Volume III, Hobbes and Civil Society* (Cambridge: Cambridge University Press, 2002), p. 13.

<sup>24</sup> See Thomas Hobbes, ‘Of the Liberty of Subjects,’ *Leviathan* (Harmondsworth: Penguin Books, 1986), Part II, Chap. XXI, p. 261ff.

<sup>25</sup> Hobbes, *Leviathan*, p. 262f.

<sup>26</sup> Hobbes, *Leviathan*, p. 102.

<sup>27</sup> Stephen Toulmin, *Cosmopolis: The Hidden Agenda of Modernity* (Chicago: Chicago University Press, 1994), p. 24 and chap. 2.

<sup>28</sup> C.B. MacPherson, *The Political Theory of Possessive Individualism: Hobbes to Locke* (Oxford: Oxford University Press, 1962).

<sup>29</sup> Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding* (Chicago: The University of Chicago Press, 2007), p. xi.

<sup>30</sup> Margaret C. Jacob, *The Radical Enlightenment: Pantheists, Freemasons and Republicans*, 2<sup>nd</sup> ed. The Temple Publishers, 2003.

<sup>31</sup> See Jonathan I. Israel, *The Radical Enlightenment: Philosophy and the Making of Modernity 1650–1750*, Oxford: Oxford University Press, 2002.

<sup>32</sup> Quoted by Hans Georg Gadamer, *Truth and Method*, 2<sup>nd</sup> Edition, trans. Joel Weinsheimer and Donald G. Marshall, London: Continuum, 1989.

<sup>33</sup> Cornelius Castoriadis, 'Power, Politics, Autonomy,' in *Philosophy, Politics, Autonomy: Essays in Political Philosophy*, New York, Oxford University Press, 1991, p. 163f.

<sup>34</sup> The most thorough analysis of this is David Carr, *Time, Narrative and History*, Bloomington: Indiana University Press, 1991.

<sup>35</sup> On this see Alasdair MacIntyre, 'Epistemological Crises, Dramatic Narrative and the Philosophy of Science.' *Monist*, 60, (1977): 453-472.

<sup>36</sup> On the decay of culture in Ancient Rome see Charles M. Radding, *A World Made by Men*, Chapel Hill: The University of North Carolina Press, 1985, Part II.

<sup>37</sup> E.D. Hirsch, Jr., 'Why Traditional Education is More Progressive,' *The American Enterprise*, March/April 1997, p. 44.

<sup>38</sup> Walter Murdoch, *The Struggle for Freedom*, Melbourne: Whitcombe and Tombs Ltd, 1903, p. 236, 237 & 238f.

<sup>39</sup> E.D. Hirsch, Jr., *Cultural Literacy*, New York: Houghton Mifflin, 1987.

<sup>40</sup> Philip Adey and Michael Shayer, 'Accelerating the Development of Formal Thinking in Middle and High School Students,' *Journal of Research in Science Teaching*, Vol. 27(2) (Mar 1990): 267-85.

<sup>41</sup> On this, see Matthew Lipman, *Philosophy in the Classroom*, 2<sup>nd</sup> ed. Philadelphia: Temple University Press, 2000.

<sup>42</sup> Lipman, *Philosophy in the Classroom*, p. 45.

<sup>43</sup> Walter Murdoch, *The Australian Citizen: An Elementary Account of Civic Rights and Duties*, Melbourne: Whitcombe and Tombs, 1912, p. 208f.

<sup>44</sup> On this, see Marcello Barbieri (ed.), *Introduction to Biosemiotics: The New Biological Synthesis*, Dordrecht: Springer, 2008.