

Whitehead's Contribution  
to Education

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Philosophy is the study of principles that cause, control or explain facts and events. Philosophies are men's attempts to reason things out. Quite early in his development man began to inquire into the truth, and to teach what he had found. The Greeks, for example, were the first people who learned to think abstractly and with exactness. This was the beginning of philosophy in a technical sense, in the Western World about 600 B.C. As a consequence, the Greeks gave to the world the science of mathematics, which has been the basis of other sciences.

However, prior to this, in the middle of the 8th Century B.C., Hebrew written literature began to appear with inspiring examples of character which future generations would strive to emulate. The Old Testament contains the traditions, customs, history, religion and basic philosophy of the ancient Hebrews.

So it has been with all peoples; eventually a philosophy evolves from their experiences that thereafter serves as a guide for future actions, thus shaping the history of the future. And when these philosophies address themselves to a particular field, we refer to it as that special kind of philosophy; for example, when such men as Charles S. Pierce, William James, Josiah Royce, John Dewey, Bertrand Russell, Alfred N. Whitehead, Herbert Spencer, and others, including even Plato, directed their discussion to education, we refer to it as their philosophy of education. It

is their critical evaluation of the principles that underlie the practices in education. When organized into a system, these principles serve as a guide to intelligent practice. The following presentation is an attempt to relate the critical or philosophic ideas of Alfred North Whitehead on education. This is no reliable detailed analysis -- merely something said of his critical thinking which constitutes "a most valuable set of data for use in the contemporary consideration of the theory and practice of education."<sup>1</sup> Of course, his principles refer to the educational system in England. "The failures and successes of the system in that country are somewhat different from those in America. But such references are merely illustrative: The general principles apply equally well to both countries."<sup>2</sup>

#### Biographical Sketch

Alfred North Whitehead (1861-1947), "The most important of the contemporary English philosophers"<sup>3</sup> was born of educators; his grandfather and father were teachers. He was privately educated by his father until he was 14, when he was sent to Sherborne, then one of the best, although not one of the most prestigious of England's public schools. There he received the usual predominantly classical education. His advanced formal education as a student at Trinity College, Cambridge, was entirely in mathematics; instruction in the humanities came from his own reading.

Soon after he got his degree, he was appointed to the staff at Cambridge, followed by a professorship in The Imperial College

of Science and Technology at The University of London. In both institutions he taught and researched the foundations of mathematics culminating in his Three-Volume Principia Mathematica (1910-1913), written with his former pupil, Bertrand Russell. This "is considered the greatest single contribution to logic in the two thousand years since Aristotle."<sup>4</sup> At the same time, he wrote three highly technical, but also philosophical books on the foundations of physical science.

His preeminence as a philosopher of science led to an invitation to migrate to the U.S. and to join the Harvard faculty at the age of 63 when his interest turned to the philosophy of metaphysics and the problems of education. That he is eminently qualified to grapple effectively with educational problems is borne out from the foregoing sketch of his educational environment which literally commenced with his birth. As he states in his autobiographical notes, he grew up in a family which was vitally interested in education; this educational environment was further stimulated because influential men in this field frequently visited his home.<sup>5</sup>

#### General Educational Policy

Various aspects of Whitehead's general philosophy are especially suggestive for his educational policy; but, most of his explicit educational theory is contained in a simple book wherein there is so much to be learned from its pages that it justifies repeated readings. This book is titled The Aims of Education, published in 1929.

Professor Whitehead offers no formal definition of the educative process. Perhaps the statement closest to a definition is "Education is the acquisition of the art of the utilization of knowledge."<sup>6</sup> He did not value knowledge for its own sake!

Pedants sneer at an education which is useful. But if education is not useful, what is it? Is it a talent, to be hidden away in a napkin? Of course, education should be useful, whatever your aim in life. It was useful to Saint Augustine, and it was useful to Napoleon. It is useful, because understanding is useful.<sup>7</sup>

By "understanding" here is not meant "a mere logical analysis."<sup>8</sup> It refers rather to the comprehension of life by means of ideas in a sense which includes more than the intellectual grasp of ideas.

Also, there is a good deal of anger in Whitehead's attack on dead knowledge. In fact, he wrote that "The whole book is a protest against dead knowledge, that is to say, against inert ideas."<sup>9</sup> He explained that by inert ideas he meant "ideas that are merely received into the mind without being utilised, or tested, or thrown into fresh combinations."<sup>10</sup>

He also protested that such dead knowledge is not only useless but also harmful.

It must never be forgotten that education is not a process of packing articles in a trunk. Such a simile is entirely inapplicable. It is, of course, a process completely of its own peculiar genus. Its nearest analogue is the assimilation of food by a living organism: and we all know how necessary

to health is palatable food under suitable conditions. When you have put your boots in a trunk, they will stay there till you take them out again; but this is not at all the case if you feed a child with the wrong food.<sup>11</sup>

Inert ideas, scraps of information, mere knowledge have nothing to do with education. "A merely well-informed man is the most useless bore on God's earth."<sup>12</sup>

Hence, the importance of knowledge is in its use. This we call wisdom.<sup>13</sup> It is the effective, selective use of knowledge.

Of course, for an accurate picture of the total work of education, we must also take into account the institution. The institutionalization of education does dictate to a considerable degree what education shall be. And to this end Whitehead argues for freedom in relation to this professional organization.<sup>14</sup> He begins by tracing the notion of freedom back to a speech of Pericles as reported by Thucydides and onto Plato's views of the spiritual elements in the universe.

It puts forth the conception of the organized society successfully preserving freedom of behaviour for its individual members. Fifty years later, in the same social group, Plato introduced deeper notions from which all claims for freedom must spring. His general concept of the psychic factors in the Universe stressed them as the source of all spontaneity, and ultimately as the ground of all life and motion. The human psychic activity thus contains the origins of precious harmonies within the transient world. The end of human society is to elicit such psychic energies. But spontaneity is of the essence of soul. Such in outline is the argument from Platonic modes of thought to the importance of social freedom.<sup>15</sup>

In the paragraphs that follow, he gives a most compact and inspiring account of the idea of freedom of thinking.

A Barbarian speaks in terms of power. He dreams of the superman with the mailed fist. But ultimately his final good is conceived as one will imposing itself upon other wills. This is intellectual barbarism. The Periclean ideal is action weaving itself into a texture of persuasive beauty analogous to the delicate splendor of nature.<sup>16</sup>

And how this new form of liberty is achieved is outlined further in the development of self-organized professional groups, "the autonomous institution limited to special purposes."<sup>17</sup>In the course of his argument he refers specifically to the professional organization of education.<sup>18</sup>

We now take a look at the techniques by which education is achieved. Whitehead suggested that if the schoolroom teaching of a subject is to be as successful as the process of learning one's native language, for example, it should begin with free exploration with guidance and discipline provided but not systematized or allowed to become dominant. This is known as "The Stage of Romance;" "it is a process of discovery, a process of becoming used to curious thoughts, of shaping questions, of seeking answers, of devising new experiences, of noticing what happens as the result of new ventures."<sup>19</sup>It is marked by wonder.

Mental growth then proceeds to the disciplined mastery of a body of precise, detailed knowledge that has been carefully limited to essentials. Traditional teaching recognized only this stage known as "The Stage of Precision." "You had to learn

your subject, and there was nothing more to be said on the topic of education."<sup>20</sup>

The final stage of the learning process, "The Stage of Generalisation," concludes with the enjoyment of the power of knowledge in use. "The pupil now wants to use his new weapons."<sup>21</sup>

Whitehead is quick to point out that the sharp distinctions of this analysis are not to be unduly stressed. The three stages are in phase and out of phase with each other. For example, the stage of precision in language studies may occur while the study of science is still in the first, romantic stage. As a matter of fact, romance must be present in every stage, or interest dies. Whitehead attributed the success of the Montessori system to its recognition of the dominance of romance in early childhood.<sup>22</sup>

In defining the role of the teacher in the educational situation, Whitehead points to his responsibility as being "immense."<sup>23</sup> There is no one method that can be learned and then applied on schedule by any teacher on any group of children. The individual teacher must have an intimate awareness of the progress of the pupils. A teacher who cannot elicit enthusiasm for the essential ideas and techniques of the subject, and who does not make the class glad they are there is not worth his pay. But Whitehead was not so foolish as to assume that the good teacher must have genius.

The disconnection of subjects in teaching was also a constant horror to Whitehead. He urged teachers to develop in their pupils a sense of the wide power of ideas by using the concepts of the variable of functions, and of rates of change to exhibit in graphs "The quantitative flux of the forces of modern society . . . The curves of history are more vivid and more informative than the dry catalogs of names and dates . . ." <sup>24</sup>

The need for curricular unity was presented in these words:

There is only one subject-matter for education, and that is Life in all its manifestations. Instead of this single unity, we offer children -- Algebra, from which nothing follows; History, from which nothing follows; a Couple of Languages, never mastered; and lastly, most dreary of all, Literature, represented by plays of Shakespeare, with philological notes and short analyses of plot and character to be in substance committed to memory. Can such a list be said to represent Life, as it is known in the midst of the living of it? The best that can be said of it is, that it is a rapid table of contents which a deity might run over in his mind while he was thinking of creating a world, and had not yet determined how to put it together. <sup>25</sup>

Unfortunately, the English system of uniform examination of school pupils, set by outside examiners, was an obstacle to Whitehead's approach. The essays he wrote in The Aims of Education are all peppered with denunciations of the examination system. "I suggest that no system of external tests which aims primarily at examining individual scholars can result in anything but educational waste." <sup>26</sup> He thought that better curricula and better teaching are possible only if teachers are free to attempt them. Since the school is "the true educational unit," outside authorities should examine the schools rather than the individual scholars.

### Some Specific Aspects

"Education should turn out the pupil with something he knows well and something he can do well." . . . (With this premise in mind, Whitehead lists) "Three main methods which are required in a national system of education, namely, the literary curriculum, the scientific curriculum, the technical curriculum."<sup>27</sup> He continually emphasizes the point that no one of these branches of education is adequate in itself, as an education for life. Hence every student should acquire all three types of knowledge, with varying degrees of emphasis -- depending on the individual needs and abilities.

Whitehead warned against viewing general education and special education as antithetical. "You may not divide the seamless coat of learning."<sup>28</sup> Although general purposes naturally have priority over special ones until the child reaches the age of about 16, general education itself requires alteration to special details, since only in this manner can the pupil learn to "see the wood by means of the tree."<sup>29</sup>

Whitehead usually speaks of general knowledge in terms of culture. "Culture is activity of thought, and receptiveness to beauty and humane feeling . . . What we should aim at producing is men who possess both culture and expert knowledge in some special direction."<sup>30</sup>

On the basis of his long and varied university experiences Whitehead admits "There is much failure in the work of univer-

sities. But if we take a broad view of history, their success has been remarkable and almost uniform."<sup>31</sup>

"The proper function of a university is the imaginative acquisition of knowledge."<sup>32</sup> Books are cheap and research can be done in institutes, so unless a university is dedicated to uniting the young and the old in the imaginative consideration of learning, its existence is not justified. He believed that the young are naturally imaginative, and he assumed that they are in college because they want to be there.<sup>33</sup>

A well-planned university course is a study of generalisations. Here I shall give an extensive quotation, because an attempt at a second-hand restatement of his uniquely vivid and effective exposition would only deaden his meaning and flavor on this subject.

The whole period of growth from infancy to manhood forms one grand cycle. Its stage of romance stretches across the first dozen years of life, its stage of precision comprises the whole school period of secondary education, and its stage of generalisation is the period of entrance into manhood. For those whose formal education is prolonged beyond the school age, the University course or its equivalent is the great period of generalisation. The spirit of generalisation should dominate a University. The lectures should be addressed to those to whom details and procedure are familiar: that is to say, familiar at least in the sense of being so congruous to pre-existing training as to be easily acquirable. During the school period the student has been mentally bending over his desk; at the University he should stand up and look around. For this reason, it is fatal if the first year at the University be frittered away in going over the old work in the old spirit. At school the boy painfully rises from the particular

towards glimpses at general ideas; at the University he should start from general ideas and study their applications to concrete cases. A well-planned University course is a study of the wide sweep of generality. I do not mean that it should be abstract in the sense of divorce from concrete fact, but that concrete fact should be studied as illustrating the scope of general ideas.

This is the aspect of University training in which theoretical interest and practical utility coincide. 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 really useful training yields a comprehension of a few general principles with a thorough grounding in the way they apply to a variety of concrete details. In subsequent practice the men will have forgotten your particular details; but they will remember by an unconscious common sense how to apply principles to immediate circumstances. Your learning is useless to you till you have lost your text-books, burnt your lecture notes, and forgotten the minutiae which you learnt by heart for the examination. What, in the way of detail, you continually require will stick in your memory as obvious facts like the sun and moon; and what you casually require can be looked up in any work of reference. The function of a University is to enable you to shed details in favour of principles. When I speak of principles I am hardly even thinking of verbal formulations. 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. Nobody goes about with his knowledge clearly and consciously before him. Mental cultivation is nothing else than the satisfactory way in which the mind will function when it is poked up into activity. Learning is often spoken of as if we are watching the open pages of all the books which we have ever read, and then, when occasion arises, we select the right page to read aloud to the universe.

Luckily, the truth is far otherwise from this crude idea; and for this reason the antagonism between the claims of pure knowledge and professional acquirement should be much less acute than a faulty

view of education would lead us to anticipate. I can put my point otherwise by saying that the ideal of a University is not so much knowledge, as power. Its business is to convert the knowledge of a boy into the power of a man.<sup>34</sup>

Whitehead placed a high value on personal contacts between professors and students and assumed that regular lectures are basic. And what is said in the lectures is vital:

For successful education there must always be a certain freshness in the knowledge dealt with. It must be either new in itself or it must be invested with some novelty of applications to the new world of new times. Knowledge does not keep any better than fish.<sup>35</sup>

The profession of teaching requires dependable men. "It is quite easy to produce a faculty entirely unfit."<sup>36</sup> The selection should not be swayed too heavily by the admirable excellence of the man<sup>37</sup> but upon the principle that "We are only subordinate elements in the education of a grown man."<sup>38</sup> He deplored academic pomposity and inertia in a professor. "It should be the chief aim of a university professor to exhibit himself in his own true character -- that is, as an ignorant man thinking, actively utilizing his small share of knowledge."<sup>39</sup>

As has been noted, Whitehead received his classical education at Sherborne School, and thus can give evidence of the good points of this type of intellectual environment. He argues that excessive emphasis on the Greek and Roman classics is open to serious objections because it concentrates on too narrow a range of experience and is backward looking. But

despite these criticisms, Whitehead defends the value of the classics in being instrumental to a first hand appreciation of the unity of civilization and to an enrichment of the student's intellectual character.<sup>40</sup> And, of course, the gain by learning foreign languages is enormous, too. It develops "the mind in the regions of logic, philosophy, history, and of aesthetic apprehension of literary beauty."<sup>41</sup>

Whitehead offers a sampling of a classic curriculum.<sup>42</sup> Latin and Greek writings are chosen to give the student the proper perspective of Greece and Rome inasmuch as they were the founders of European civilization. The Latin books would include selections from Virgil, Lucretius, Cicero; the Greek literature would include selections from the Odyssey, Herodotus, choruses of the great plays, Plutarch, Euclid.

It is interesting to note what Whitehead has to say about the use of English translations of these classics. He recognizes their necessity: "You may take the noblest poetry in the world, and if you stumble through it at a snail's pace, it collapses from a work of art into a rubbish heap."<sup>43</sup> Of course, he continues, any translation is inferior to the original, so it is understood that at a certain stage of the student's development he will use the translation, but he must master the original for its full appreciation.

Mathematics - the science in which Whitehead was expert - is discussed at some length in its relation to general education. "The very reasons which make this science a delight to its

students are reasons which obstruct its use as an educational instrument."<sup>44</sup>He argued that mathematics, properly taught, should aim to train the pupils to handle abstract ideas to particular concrete circumstance -- and finally, to learn the habit of thinking logically.<sup>45</sup>

A fairly detailed outline of a mathematical curriculum is offered.<sup>46</sup>It consists of statistical laws, the history of mathematics and geometry, and considers what each has to offer in way of liberal education.

"Technical education is in the main a training in the art of utilising knowledge for the manufacture of material products."<sup>47</sup> He points out that the importance of scientific knowledge cannot be realized apart from technical applications<sup>48</sup> and that technical education is needed for the proper development of all human beings.

Whitehead also pointed out that the antithesis between technical and liberal education is fallacious.<sup>49</sup>As stated before, there are three main methods required in a national system of education and each method should include the other two.<sup>50</sup>Thus he urged the inclusion of literary study in the technical curriculum, and he recommended that the curriculum concentrate on getting the pupils to enjoy literature. "It does not matter what they know, but the enjoyment is vital."<sup>51</sup>

#### Influence on Education

As stated earlier, this presentation is intended as "merely something said" of Whitehead's contribution to education. Nat-

urally, this is by no means a near exhaustive presentation, but it does serve to indicate some realization of Whitehead's ideals in education. His influence as being vital is shown in the fact that books have been written which endeavor to apply his philosophy of organism to education. This bringing to the front a thorough knowledge of the science of philosophy on which educational theory and practice must be based - changes the old schoolroom motto: "Don't speak until you are spoken to." The new motto might well be: "Tell me what your thoughts are like."

FOOTNOTES

<sup>1</sup>A. N. Johnson, Whitehead's Discussion of Education, p. 653.

<sup>2</sup>Alfred North Whitehead, Aims of Education, p. V.

<sup>3</sup>Julian Marias, History of Philosophy, p. 399.

<sup>4</sup>Felix Martinez-Ibanez, Tales of Philosophy, p. 302.

<sup>5</sup>Alfred North Whitehead, "Autobiographical Notes," The Philosophy of Alfred North Whitehead (Schilpp), pp. 3-14.

<sup>6</sup>Alfred North Whitehead, Aims of Education, p. 4.

<sup>7</sup>Ibid., p. 2.

<sup>8</sup>Ibid., p. 2.

<sup>9</sup>Ibid., p. V.

<sup>10</sup>Ibid., p. 1.

<sup>11</sup>Ibid., p. 33.

<sup>12</sup>Ibid., p. 1.

<sup>13</sup>Ibid., pp. 32, 30.

<sup>14</sup>Ibid., p. 14.

<sup>15</sup>Alfred North Whitehead, Adventures of Ideas, p. 51.

<sup>16</sup>Ibid., p. 51.

<sup>17</sup>Ibid., p. 58.

<sup>18</sup>Ibid., p. 61.

<sup>19</sup>Alfred North Whitehead, Aims of Education, p. 32.

<sup>20</sup>Ibid., p. 34.

<sup>21</sup>Ibid., p. 36.

<sup>22</sup>Ibid., p. 22.

<sup>23</sup>Ibid., p. 35.

- <sup>24</sup>Ibid., p. 8.
- <sup>25</sup>Ibid., pp. 6, 7.
- <sup>26</sup>Ibid., pp. 5, 9, 13.
- <sup>27</sup>Ibid., p. 48.
- <sup>28</sup>Ibid., p. 11.
- <sup>29</sup>Ibid., p. 6.
- <sup>30</sup>Ibid., p. 1.
- <sup>31</sup>Ibid., p. 95.
- <sup>32</sup>Ibid., p. 96.
- <sup>33</sup>Ibid., pp. 92, 93, 97.
- <sup>34</sup>Ibid., pp. 25, 26, 27.
- <sup>35</sup>Ibid., p. 98.
- <sup>36</sup>Ibid., p. 99.
- <sup>37</sup>Ibid., p. 99.
- <sup>38</sup>Ibid., p. 34.
- <sup>39</sup>Ibid., p. 37.
- <sup>40</sup>Ibid., p. 74.
- <sup>41</sup>Ibid., p. 63.
- <sup>42</sup>Ibid., p. 74.
- <sup>43</sup>Ibid., p. 71.
- <sup>44</sup>Ibid., p. 78.
- <sup>45</sup>Ibid., pp. 79, 80.
- <sup>46</sup>Ibid., pp. 84-88.
- <sup>47</sup>Ibid., pp. 49, 50.

<sup>48</sup>Ibid., p. 49.

<sup>49</sup>Ibid., p. 48.

<sup>50</sup>Ibid., p. 48.

<sup>51</sup>Ibid., p. 57.

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