

CHAPTER I

Education According to Nature

Many educationists have held a view which they have expressed in some such words as 'a child ought to be educated according to Nature'. These educationists have often disagreed among themselves and each of them has generally used the word 'Nature' in more than one sense. Consequently, in this chapter I shall not attempt to expound the views of any one of these educationists, nor shall I attempt to expound a view which may have been common to a number of them. Rather I shall attempt to discuss a number of propositions all of which have at one time or another been held to be implied by the proposition, 'a child ought to be educated according to Nature'. I shall not consider whether the propositions actually are implied by this latter proposition, but shall consider them solely on their own merits. I do this for three reasons. First, the proposition 'a child ought to be educated according to Nature' is so vague that it is not important to decide what it implies. Secondly, the propositions which I shall consider have generally been advanced with the intention of making clear the meaning of 'a child ought to be educated according to Nature'. Thirdly, the propositions, if true, are important at the present time.

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The first proposition which I wish to consider is the following: 'A child's education ought to be such that it is free to develop according to the laws of its own nature.'¹ There is a sense in which this is certainly true, the sense, namely, in which we would be continuously confronted with a series of miracles if the child did not develop according to the laws of its own nature. But in this sense the proposition, although true, is trivial. For when any state of affairs *A* passes into another state of affairs *B*, either it does so in accordance with the laws of nature or it does not, and in the latter case we have a miracle. But no educationist seriously maintains that the changes which form a child's growth are miraculous. If, indeed, they are then there is certainly no point in studying education. Hence our proposition, interpreted in this sense, says nothing about the child which is not obviously true.

What then did those educationists mean who put forward this proposition? What they meant was, I think, something like this. To describe the changes which take place in any system (whether the system be a physical, chemical, biological, or psychological one), we need to know two sets of things. We need to know first of all the initial state of the system, and secondly, we need to know the natural laws involved. For example, to describe the changes which take place when a stone is let fall from the top of a cliff, we need to know the initial conditions of

¹ Such a proposition has been held to be true by Rousseau, Pestalozzi, Froebel, for example.

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projection and the law or laws governing the motion. Similarly, to describe the changes which take place when a plant grows, we need to know the kind of seed which was initially planted, and secondly, the laws which govern the interaction between that kind of seed and the environment (temperature, humidity, constitution of soil, etc.). Hence to describe the changes which take place during the growth of a child we need to know the initial (that is, hereditary) state of the child, and the laws which govern the interaction between that state and the environment. So far I think most people would agree. But those educationists who put forward the proposition which we are considering maintain something more. They maintain that the initial state of the child and the laws which govern the interaction between that state and the environment are analogous to the seed of a plant and the laws which govern the interaction between that seed and the environment. It is this further claim which justifies these educationists saying that they advocate 'Education according to Nature'. They regard the process of education as analogous to (in the sense described) certain *natural* processes, where 'natural' is now used in the sense in which it is opposed to 'artificial'. Or, to put it in another way, they regard the process of education as analogous to certain processes which occur in the *World of Nature*. The teacher should thus act like a gardener who affords a plant every opportunity for 'natural' growth, and should not act like a gardener who attempts to do something 'unnatural' with a plant.

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The crucial question for such a view of education is how far does this analogy hold? There is no doubt that there is some analogy between the laws governing the physical development of the child and the laws governing the development of a plant, and hence there is some justification for the view if applied to physical education. But the educationists who hold this view are not generally very much concerned with physical education, and the view is certainly false if applied to mental education.¹ For some of the laws that govern the mental changes which take place in a child are the laws of learning. Now although psychologists are not all agreed about the correct explanation of the various laws of learning, there is general agreement that there are three main types of learning:² (a) the process of 'conditioning', (b) learning by trial and error, and (c) learning by what the Gestalt psychologists have called 'Insight'. But the laws³ which have been found to hold for these three processes have no analogy at all with the laws which govern the interaction between a seed and its environment. Hence our original proposition, 'a child's education ought to be such that it is free to develop according to the laws of its own nature', if interpreted in this way, is false; and therefore there is no justification for the view that a child should be educated 'according to Nature' with this interpretation of such a phrase.

1 I use this term to include what is generally called intellectual and moral education.

2 Although some psychologists hold that these three types are not independent.

3 See below, pp. 96–104.

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The second proposition which I wish to consider is concerned with intellectual education. ‘Sense impression of Nature is the only true foundation of human instruction; because it is the only true foundation of human knowledge.’¹ Some educationists have not been content to rest here, but have gone further and held that, for example, ‘all things essentially related to each other should be brought to that connexion in the mind which they really have in Nature’.² This extension seems certainly to be a mistake. Edinburgh is related to London in the world of nature by the relation ‘north of’. But it is clearly absurd to say that in my mind the idea of Edinburgh should be north of the idea of London. Nor is it correct to take the more charitable interpretation and say that the ideas of London and Edinburgh ought to cause in my mind the idea of the relation ‘north of’. For there is clearly no reason at all why I should not think of London and Edinburgh without thinking of their geographical position. Hence I shall consider only the original proposition which maintains that the only foundation of intellectual education is sense impression of nature, and that in this sense a child ought to be educated ‘according to Nature’.

Let us consider first of all the reason given for this view, namely, sense impression of nature is the only true foundation of human knowledge. In what sense is this true? It seems to me that there is an important sense in which it is

1 J. H. Pestalozzi, *The Method*. Froebel and Montessori also hold such a view.

2 Op. cit.

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true, but so far as I know none of the educationists who hold this view have stated what that sense is. Suppose I look at a table in this room and say 'this table is brown'. Then it is true that my sense impression is the foundation of my knowledge that this table is brown. It is the foundation of my knowledge in the sense that it is logically impossible for me to judge 'this table is brown' unless I am actually having a sense impression of the table. Consider, however, the proposition, 'The Prime Minister of Great Britain lives in Downing Street'. It is certainly as true that I have knowledge of this proposition as that I have knowledge of the proposition 'this table is brown'. But what sense impression is the foundation of my knowledge in this case? It is clear, I think, that in this case there is no sense impression which corresponds to my knowledge as my sense impression of the table corresponded to my knowledge in the previous case. Consequently our knowledge appears to be in this position. There are certain propositions, for example, 'this table is brown', knowledge of which is logically dependent on corresponding sense impressions, and there are other propositions, for example, 'The Prime Minister of Great Britain lives in Downing Street', knowledge of which does not seem to depend on corresponding sense impressions.

But although knowledge of the proposition, 'The Prime Minister of Great Britain lives in Downing Street', does not depend on a corresponding sense impression, it does depend on some sense impression. The easiest way of seeing

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this is, I think, to realize the distinction between what Mr Bertrand Russell calls 'knowledge by acquaintance' and 'knowledge by description'. 'I say that I am *acquainted* with an object when I have a direct cognitive relation to that object, that is, when I am directly aware of the object itself.'¹ According to Russell there are at least two sorts of objects of which we are directly aware, namely, particulars and universals. 'An object is known by description when we know that it is the so and so, that is, when we know that there is one object, and no more, having a certain property.'² Knowledge of an object by acquaintance depends, therefore, on a corresponding sense impression. But it is possible to know a thing by description, in which case we have knowledge of certain characteristics and have knowledge that these characteristics belong to the thing. Indeed, it is clear that most of our knowledge is knowledge by description.

Russell, however, argues that knowledge by description is dependent on sense impression, although to knowledge of a given object by description there is no *corresponding* sense impression. 'The fundamental epistemological principle in the analysis of propositions containing descriptions is this: Every proposition which we can understand must be composed wholly of constituents with which we are acquainted. . . . The chief reason for supposing the principle true is that it seems scarcely possible to believe that we can make a judgment or entertain a supposition without

¹ Bertrand Russell, *Mysticism and Logic*, p. 209.

² Op. cit. pp. 214–15.

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knowing what it is that we are judging or supposing about.’¹ It therefore follows that if I can understand the proposition, ‘The Prime Minister of Great Britain lives in Downing Street’, it must contain only constituents with which I am acquainted, that is, constituents of which I am having or have had some sense impression. All that is then necessary for me to understand the proposition is that I should have knowledge by acquaintance of certain characteristics and know that these characteristics belong to one and only one individual. If this is correct it follows that knowledge by description is also founded on sense impression. Hence the proposition, ‘sense impression of nature is the only true foundation of human knowledge’, is true in this sense explained by Russell.

Does it follow that the original proposition ‘sense impression of nature is the only true foundation of human instruction’ is also true? It does not seem to me that it does.

(1) We have seen that although sense impression is the foundation of both knowledge by acquaintance and knowledge by description, yet the latter is, in some way, a construction out of sense impression.² It is clearly just as important that the nature of this construction should be realized as that the basic sense impressions should be experienced. It is true that oxygen and hydrogen are the foundation of water, but no chemistry teacher would

¹ Russell, *Mysticism and Logic*, p. 219.

² The way in which it is a construction out of sense impression is analysed in Russell’s *Theory of Descriptions*.

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consider that it was unnecessary to say how water was constructed out of oxygen and hydrogen. On the contrary, knowledge of the way in which oxygen and hydrogen combine to form water is quite as important as knowledge of the fact that it is oxygen and hydrogen and not, say, carbon and oxygen that form water.

(2) Both knowledge by acquaintance and knowledge by description are types of knowledge directed towards objects. But a great deal of our knowledge is not knowledge of objects at all, as, for example, our knowledge of the laws of nature. The law that magnetized bodies attract each other is not primarily a statement about existing objects. It states that if any two bodies are magnetized then they will have some other property as well, but whether there are magnetized bodies or not is not stated. It is true that our knowledge of such a law of nature is founded on our sense impressions and is obtained by induction from our knowledge of propositions about objects. But it is not itself a proposition about objects. Now it must be one of the purposes of instruction to ensure that the child does obtain such knowledge, and is able to arrive at such inductive conclusions by itself. If so it follows that sense impression of nature cannot be the *only* true foundation of human instruction.

(3) An equally serious objection is that if the only true foundation of human instruction is to be sense impression of nature, arithmetic and mathematics have no place in the foundation of human instruction. The supporters of this

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view of education do not admit such a conclusion, and there exists a great mass of literature ostensibly explaining how arithmetic and mathematics can be taught by means of sense impressions which the child receives from various pieces of apparatus. I do not propose to consider the value of such apparatus in the education of a child; but I think it cannot be too strongly emphasized that the view which imagines that arithmetic and mathematics must or can be taught by means of such apparatus is based on a completely wrong idea as to the nature of these subjects.

Moreover, the different theories¹ concerning the nature of arithmetic and mathematics are in complete agreement as regards the present question and in complete disagreement with the views of those educationists whom we are considering. The latter generally urge that arithmetic should be taught in some such way as the following. The child must first of all learn the 'meaning' of the different number concepts. Thus the meaning of the concept 'two' is taught by showing the child two beads, two spoons, two children, etc. The different addition combinations are then taught by showing the child that two beads when placed beside three give five beads; that two spoons when placed beside three spoons give five spoons, etc. In this way the child also sees that when one bead is placed beside four beads the same result is obtained as when two beads are

¹ The different theories are 'The Logistic Theory' or 'Logicism', 'The Formalist Theory' or 'Formalism', and 'The Finitist Theory' or 'Finitism'. For a possible reconciliation, see R. Carnap, *The Logical Syntax of Language*, pp. 325-8.