

**T**o a strictly logical mind the method of the development of thought must be a perplexing, even irritating matter. Its course is not so much like the simple curve described by a bullet as it speeds its way to a mark, as it is like the devious tacking of a sail boat upon a heavy sea with changeable winds. It would be difficult to find a single problem during the whole record of reflective thought which has been pursued consistently until some definite result was reached. It generally happens that just as the problem becomes defined, and the order of battle is drawn, with contestants determined on each side, the whole scene changes; interest is transferred to another phase of the question, and the old problem is left apparently suspended in mid-air. It is left, not because any satisfactory solution has been reached; but interest is exhausted. Another question which seems more important has claimed attention. If one, after a generation or a century, reviews the controversy and finds that some consensus of judgment has finally been reached, he discovers that this has come about, not so much through exhaustive logical discussion, as through a change in men's points of view. The solution is psychologically, rather than logically, justified.

This general reflection is called to mind as I undertake the discussion of the question of the relation of evolution and ethics. A generation ago the entire interest was in the exact relation between man and the lower animals. We had one school concerned with reducing this difference to the lowest possible limits and urging that the consciousness of man, intellectual and moral, as well as his physical nature, might be considered a direct inheritance through easy gradations from some form of the anthropoid ape. We had another school equally concerned with magnifying the difference, making it, if possible, an unbridgeable chasm. It would be a bold man who would say that this controversy has been settled by the actual weight of concrete detailed evidence, or even that it has been very far advanced. The writings which really throw light on the question, in either direction (so far as the facts are concerned and not merely general considerations), can probably be easily numbered on the fingers of the two hands. Yet suddenly we

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(1898)

find that discussion of this question has practically ceased, and that what engages controversy is the relation of what I may call the evolutionary concepts in general to the ethical concepts. Points of agreement and disagreement between the ideas involved in the notion of evolution and those involved in the notion of moral conduct are searched for. It is the state of the imagination and the direction of interest which have changed.

It is the latter question which I purpose to discuss today. This particular phase of the problem was precipitated, if not initiated, by the late Professor Huxley in his Romanes Lecture for 1893 on "Evolution and Ethics." It is some points in that address which I shall take as my text,—not for the sake of directly controverting them, but as convenient points of departure for raising the questions which seem to me fundamental. In that lecture, as you will all remember, Mr. Huxley points out in his incisive and sweeping language certain differences between what he terms the cosmic and the ethical processes. Those who recall the discussion following the lecture will remember that many felt as if they had received a blow knocking the breath out of their bodies. To some it appeared that Mr. Huxley had executed a sudden *volte-face* and had given up his belief in the unity of the evolutionary process, accepting the very dualistic idea of the separation between the animal and the human, against which he had previously directed so many hard blows. To some conservative thinkers it appeared that Saul had finally shown himself among the prophets. The lecture was deplored or welcomed according to the way one interpreted it with reference to his own prepossessions.

The position taken by Huxley, so far as it concerns us here, may be summed up as follows: The *rule* of the cosmic process is struggle and strife. The *rule* of the ethical process is sympathy and co-operation. The *end* of the cosmic process is the survival of the fittest; that of the ethical, the fitting of as many as possible to survive. Before the ethical tribunal the cosmic process stands condemned. The two processes are not only incompatible but even opposed to each other. "Social progress means the checking of the cosmic process at

every step and the substitution for it of another, which may be called the ethical process; the end of which is not the survival of those who happen to be the fittest in respect of the whole of the conditions which exist, but of those who are ethically the best. The practice of that which is ethically best—which we call goodness or virtue—involves a course of conduct which in all respects is opposed to that which leads to success in the cosmic struggle for existence. . . . The cosmic process has no sort of relation to moral ends. The imitation by man is inconsistent with the first principles of ethics. Let us understand once for all that the ethical progress of society depends, not on imitating the cosmic process, still less in running away from it, but in combating it" (*Ethics and Evolution*, pp. 81–83, *et passim*).

Even in the lecture, however, Mr. Huxley used certain expressions which show that he did not hold to this opposition in a sense which meant the surrender of his previous evolutionary convictions. Thus he says that the ethical process, "strictly speaking, is part of the general cosmic process, just as the governor in a steam engine is part of the mechanism of the engine" (note 20, p. 115). In a later essay (published as "Prolegomena"), aroused somewhat by the clamour which the lecture had called forth, he makes his position even clearer. Here he illustrates his meaning by referring to the two hands as used in stretching or pulling. Each is opposed to the other, and yet both are manifestations of the same original force (p. 13). It is not that the ethical process is opposed to the entire cosmic process, but that *part* of the cosmic process which is maintained in the conduct of men in society, is radically opposed both in its methods and its aims to that *part* of the cosmic process which is exhibited in the stages of evolution prior to the appearance of socialized man upon the scene.

He makes this point clearer by reference to the analogy of a garden (pp. 9–11). Through the cosmic process, independent of man, certain plants have taken possession of a piece of soil because they are adapted to that particular environment. Man enters and roots out these plants as noxious weeds, or at least as useless for his purposes. He introduces other plants

agreeable to his own wants and aims, and proceeds at once to modify the environment; if necessary, changing the soil by fertilization, building walls, altering conditions of sunlight and moisture so as to maintain his garden as a work of art—an artifice. This artificial structure, the one mediated by man's aims and efforts, is so opposed to the natural state of things that if man lets up in the ardor, the continuity, of his labors, the natural forces and conditions reassert themselves, the wall crumbles, the soil deteriorates, and the garden is finally once more overgrown with weeds.

Mr. Huxley is a trenchant writer, and his illustrations hold the mind captive. But possibly further consideration of this very illustration will point to a different conclusion. Illustrations are two-edged swords. There is no doubt in my mind of the justness of the analogy. The ethical process, like the activity of the gardener, is one of constant struggle. We can never allow things simply to go on of themselves. If we do, the result is retrogression. Over-sight, vigilance, constant interference with conditions as they are, are necessary to maintain the ethical order, as they are to keep up the garden. The problem, however, is to locate this opposition and interference,—to interpret it, to say what it means in the light of our idea of the evolutionary process as a whole.

Thus considering the illustration, the thought suggests itself that we do not have here in reality a conflict of man as man with his entire natural environment. We have rather the modification by man of one part of the environment with reference to another part. Man does not set himself against the state of nature. He utilizes one part of this state in order to control another part. It still holds that "nature is made better by no mean, but nature makes that mean." The plants which the gardener introduces, the vegetables and fruits he wishes to cultivate, may indeed be foreign to this particular environment; but they are not alien to man's environment as a whole. He introduces and maintains by art conditions of sunlight and moisture to which this particular plot of ground is unaccustomed; but these conditions fall within the wont and use of nature as a whole.

These may appear as too obvious considerations to be worth mentioning. Surely they

could not have escaped Mr. Huxley for a moment. Yet it is possible that their bearing escaped him; for, if I mistake not, when we allow our mind to dwell upon such considerations as these, the entire import of the illustration changes. We are led to conceive, not of the conflict between the garden and the gardener; between the natural process and the process of art dependent upon human consciousness and effort. Our attention is directed to the possibility of interpreting a narrow and limited environment in the light of a wider and more complete one,—of reading the possibilities of a part through its place in the whole. Human intelligence and effort intervene, not as opposing forces but as making this connection. When Huxley says that "the macrocosm is pitted against the microcosm; that man is subduing nature to his higher ends; that the history of civilization details the steps by which we have succeeded in building up an artificial world within the cosmos; that there lies within man a fund of energy operating intelligently and so far akin to that which pervades the universe that it is competent to influence and modify the cosmic process,"—he says to my mind that man is an organ of the cosmic process in effecting its *own* progress. This progress consists essentially in making over a part of the environment by relating it more intimately to the environment as a whole; not, once more, in man setting himself against that environment.

Huxley himself defines the issue in words already quoted in which he contrasts the survival of those who "may happen to be the fittest *in respect of the whole of the conditions which exist*, to the survival of those who are ethically the best." The clause italicized sums up the whole problem. It is granted without argument that the fittest with respect to a limited part of the environment are not identical with the ethically best. Can we make this concession, however, when we have in mind the whole of the existing conditions? Is not the extent to which Mr. Huxley pushes his dualistic opposition, are not many of the popular contrasts between the natural and the ethical, results of taking a limited view of the conditions with respect to which the term "fit" is used? In cosmic nature, as Mr. Huxley says,

what is fittest depends upon the conditions. If our hemisphere were to cool again, the "survival of the fittest might leave us with nothing but lichens, diatoms, and such microscopic organisms as that which gives red snow its color." We cannot work this idea one way without being willing to work it in the other. The conditions with respect to which the term "fit" must now be used include the existing social structure with all the habits, demands, and ideals which are found in it. If so, we have reason to conclude that the "fittest with respect to the whole of the conditions" is the best; that, indeed, the only standard we have of the best is the discovery of that which maintains these conditions in their integrity. The unfit is practically the anti-social.

Loose popular argument—Mr. Huxley himself hardly falls into the pit—is accustomed to suppose that if the principle of the struggle for existence and survival of the fittest were rigorously carried out, it would result in the destruction of the weak, the sickly, the defective, and the insane. An examination of this popular assumption may serve to illuminate the point just made. We are all familiar with Fiske's generalization that civilization is a product of the prolongation of the period of infancy; that the necessity of caring for offspring not able to take care of themselves, during a continually lengthening period, stimulated the affection and care, the moral germs of social life, and required the foresight and providence that were the germs of the industrial arts upon which society depends. Mr. Fiske's contention, whether true or false, is worth putting over against the popular assumption. How far are we to go in the destruction of the helpless and dependent in order that the "fit" may survive? Clearly in this case the infant was one who was "fit," not only in ethical terms but in terms of furthering the evolutionary process. Is there any reason to suppose that the dependent classes are not equally "fit" at present, when measured by the whole of the conditions as a standard?

We may imagine a leader in an early social group, when the question had arisen of putting to death the feeble, the sickly, and the aged, in order to give that group an advantage in the struggle for existence with other

groups;—we may imagine him, I say, speaking as follows: "No. In order that we may secure this advantage, let us preserve these classes. It is true for the moment that they make an additional drain upon our resources, and an additional tax upon the energies which might otherwise be engaged in fighting our foes. But in looking after these helpless we shall develop habits of foresight and forethought, powers of looking before and after, tendencies to husband our means, which shall ultimately make us the most skilled in warfare. We shall foster habits of group loyalty, feelings of solidarity, which shall bind us together by such close ties that no social group which has not cultivated like feelings through caring for all its members, will be able to withstand us." In a word, such conduct would pay in the struggle for existence as well as be morally commendable.

If the group to which he spoke saw any way to tide over the immediate emergency, no one can gainsay the logic of this speech. Not only the prolongation of the period of dependence, but the multiplication of its forms, has meant historically increase of intelligent foresight and planning, and increase of the bonds of social unity. Who shall say that such qualities are not positive instruments in the struggle for existence, and that those who stimulate and call out such powers are not among those "fit to survive"? If the deer had never developed his timidity and his skill in running away, the tiger and the wolf had never shown their full resources in the way of courage and power of attack. Again, prevention is better than cure, but it has been through trying to cure the sick that we have learned how to protect the well.

I have discussed this particular case in the hope of enlarging somewhat our conception of what is meant by the term "fit"; to suggest that we are in the habit of interpreting it with reference to an environment which long ago ceased to be. That which was fit among the animals is not fit among human beings, not merely because the animals were non-moral and man is moral; but because the conditions of life have changed, and because there is no way to define the term "fit" excepting through these conditions. The environment is now distinctly a social one, and the content of the term "fit" has to be made with reference to social

adaptation. Moreover, the environment in which we now live is a changing and progressive one. Every one must have his fitness judged by the whole, including the anticipated change; not merely by reference to the conditions of today, because these may be gone tomorrow. If one is fitted simply to the present, he is not fitted to survive. He is sure to go under. A part of his fitness will consist in that very flexibility which enables him to adjust himself without too much loss to sudden and unexpected changes in his surroundings. We have then no reason here to oppose the ethical process to the natural process. The demand is for those who are fit for the conditions of existence in one case as well as in the other. It is the conditions which have changed.<sup>2</sup>

Let us turn our attention from the idea of "fitness" to that of the process or method—the "struggle for existence." Is it true that in the moral sphere the struggle must cease, or that we must turn ourselves resolutely upon it, branding it as immoral? Or, as in the case of the idea of fitness, is this struggle as necessary to the ethical as it is to the biological? In reality, the idea of struggle for existence is controlled by the environment in which that struggle is put forth. That which is struggle for life, and successful struggle, at one time, would be inert supineness or suicidal mania at another. This is as true of varying periods in animal development as it is of the human contrasted with the animal. The nature of the struggle for existence is constantly modifying itself, not because something else is substituted for it, much less opposed to it; but because as the conditions of life change, the modes of living must change also. That which would count in the Carboniferous period will not count in the Neozoic. Why should we expect that which counts among the carnivora to count with man,—a social animal? If we do not find the same qualities effective (and hence to be maintained) in both cases; or if we find that opposed qualities are called for, what right have we to assume that what was once effected by the struggle for existence has now to be accomplished by another and opposed force?

The term "struggle for existence" seems to be used in two quite different senses by Mr. Huxley. In one case it means practically simply

self-assertion. I do not see that the *struggle* for existence is anything more than living existence itself. Life tends to maintain itself because it is life. The particular acts which are put forth are the outcome of the life that is there; they are its expression, its manifestation.

Self-assertion in this sense carries with it no immoral connotation, unless life by its very nature is immoral. But Huxley also uses "struggle for existence" with a distinctly selfish meaning. He speaks of the "ape and tiger promptings" as branded with the name of sins (p. 52). He identifies self-assertion with "the unscrupulous seizing upon all that can be grasped; the tenacious holding of all that can be kept" (p. 51). It is "ruthless." It "thrusts aside or treads down all competitors." It "involves the gladiatorial theory of existence" (p. 82). Hence it is a "powerful and tenacious enemy to the ethical" (p. 85).

Surely, all this is rhetoric rather than philosophy or science. We inherit our impulses and our tendencies from our ancestors. These impulses and tendencies need to be modified. They need to be curbed and restrained. So much goes without saying. The question is regarding the nature of the modification; the nature of the restraint, and its relation to the original impulses of self-assertion. Surely, we do not want to suppress our animal inheritance; nor do we wish to restrain it absolutely,—that is, for the mere sake of restraint. It is not an enemy to the moral life, simply because without it no life is possible. Whatever is necessary to life we may fairly assume to have some relevancy to moral living. More than this is true. That self-assertion which we may call life is not only negatively, but positively a factor in the ethical process. What are courage, persistence, patience, enterprise, initiative, but forms of the self-assertion of those impulses which make up the life process? So much, I suppose, all would grant; but are temperance, chastity, benevolence, self-sacrifice itself, any less forms of self-assertion? Is not more, rather than less strength, involved in their exercise? Does the man who definitely and resolutely sets about obtaining some needed reform and with reference to that need sacrifices all the common comforts and luxuries of life, even

for the time being social approval and reputation, fail in the exercise of self-assertion?

The simple fact of the case is of course that these promptings, even the promptings of the "tiger and the ape," are, simply as promptings, neither moral nor immoral; no more sins than they are saintly attributes. They are the basis and material of all acts whatsoever, good and bad. They become good when trained in a certain way, just as they become bad when trained in another way. The man who regards his animal inheritance as evil in and of itself apart from its relation to aims proposed by his intelligence, has logically but one recourse,—to seek Nirvana.<sup>3</sup> With him the principle of self-negation becomes absolute. But with all others, the men and women whom Mr. Huxley is presumably addressing, self-restraint is simply a factor within self-assertion. It relates to the particular ways in which self-assertion is made.

I may appear here to have ignored Huxley's distinction between the struggle for existence and the struggle for happiness (p. 40). The former it will be said, he uses in a definite technical sense as meaning simply the struggle for the perpetuation of life, apart from the kind of life led, and as exhibiting itself in direct conflict with others, leading to the elimination of some. That struggle for existence it may be surely said, is not to be continued within the ethical process. The struggle for existence relates, he says, simply to the "means of living." Besides that we have the struggle for happiness, having to do with the uses to which these means are put,—the values which are got out of them, the ends.

I reply in the first place, that Mr. Huxley contradicts himself on this point in such a way that one would be quite justified in ignoring the distinction; and in the second place, that I am not able to see the validity of the distinction.

As to Mr. Huxley's self-contradiction, he asserts in a number of places that the struggle for existence as such (as distinct from the struggle for happiness) has now come to an end. It held only in the lower social forms when living was so precarious that people actually killed each other, if not for food, at least to secure the scanty store of food available. If it

holds now at all it is simply among the small criminal class in society (p. 41). Now Mr. Huxley not only takes this position, but from a certain point of view is bound to take it. If the struggle is still going on, selection is still occurring, and there is every reason to suppose that as heretofore, it is a distinct agent in social progress; and Mr. Huxley is bound to hold that natural selection no longer operates in social progress and that therefore we must have recourse to other means. But if the struggle for existence has thus ceased of itself within any given human society, what sense is there in saying that it is now "a tenacious and powerful enemy with which ethical nature has to reckon"? If it has died out because of the change of conditions, why should the ethical process have to spend all its energy in combating it? "Let the dead bury their dead."<sup>4</sup>

In other words, Mr. Huxley himself is practically unable to limit the meaning of the phrase "struggle for existence" to this narrow import. He has himself to widen it so as to include not only the struggle for mere continuance of physical existence, but also whatever makes that life what it is. The distinction between the struggle for existence and the struggle for happiness breaks down. It breaks down, I take it, none the less in animal life itself than it does in social life. If the struggle for existence on the part of the wolf meant simply the struggle on his part to keep from dying, I do not doubt that the sheep would gladly have compromised at any time upon the basis of furnishing him with the necessary food—including even an occasional bowl of mutton broth. The fact is the wolf asserted himself as a wolf. It was not mere life he wished, but the life of the wolf. No agent can draw this distinction between desire for mere life and desire for happy life for himself; and no more can the spectator intelligently draw it for another.

What then is the conflict, the tension, which is a necessary factor in the moral life—for be it remembered there is no difference of opinion with Mr. Huxley upon this point? The sole question is whether the combat is between the ethical process as such, and the cosmic, natural, process as such. The outcome of our previous discussion is that it cannot be the

latter because the natural process, the so-called inherited animal instincts and promptings, are not only the stimuli, but also the materials, of moral conduct. To weaken them absolutely, as distinct from giving them a definite turn or direction, is to lessen the efficiency of moral conduct. Where then does the struggle come in? Evidently in the particular turn or direction which is given to the powers of the animal nature making up the immediate content of self-assertion. But once more, what does this turn or direction mean? Simply, I take it, that an act which was once adapted to given conditions must now be adapted to other conditions. The effort, the struggle, is a name for the necessity of this re-adaptation.<sup>5</sup> The conditions which originally called the power forth, which led to its "selection," under which it got its origin, and formation, have ceased to exist, not indeed, wholly, but in such part that the power is now more or less irrelevant. Indeed, it is not now a "power" in the sense of being a function which can without transformation operate successfully with reference to the whole set of existing conditions. Mr. Huxley states the whole case when he says that "in extreme cases man does his best to put an end to the survival of the fittest of former days by the axe and rope." The phrase, "the fittest of former days" contains the matter in a nut-shell. Just because the acts of which the promptings and impulses are the survival, were the fittest for by-gone days they are not the fittest now. The struggle comes, not in suppressing them nor in substituting something else for them; but in reconstituting them, in adapting them, so that they will function with reference to the existing situation.

This, I take it, is the truth, and the whole truth, contained in Mr. Huxley's opposition of the moral and the natural order. The tension is between an organ adjusted to a past state and the functioning required by present conditions. And this tension demands reconstruction. This opposition of the structure of the past and the deeds of the present is precisely that suggested in the discussion of the illustrative garden. The past environment is related to the present as a part to a whole. When animal life began on land, water became only one factor in the conditions of life, and the animal attitude towards

it was changed. It certainly could not now get along without a water-environment, much less could it turn against it; but its relations to moisture as a condition of life were profoundly modified. An embryonic Huxley might then have argued that the future success of animal life depended upon combating the natural process which had previously maintained and furthered it. In reality the demand was, that which was only a part should be treated as such, and thus subordinated to the whole set of conditions.

Thus when Mr. Huxley says (p. 12) that "nature is always tending to reclaim that which her child, man, has borrowed from her and has arranged in combinations which are not those favored by the general cosmic process," this only means that the environment *minus* man is not the same environment as the one that includes man. In any other sense these "combinations" *are* favored by the general cosmic process,—in witness whereof man through whom that process works has set his sign and seal. That if you took man out of this process things would change, is much like saying that if they were different they would not be the same; or, that a part is not its own whole.

There are many signs that Mr. Huxley had Mr. Spencer in mind in many of his contentions; that what he is really aiming at is the supposition on the part of Mr. Spencer that the goal of evolution is a complete state of final adaptation in which all is peace and bliss and in which the pains of effort and of reconstruction are known no more. As against this insipid millennium, Mr. Huxley is certainly right in calling attention to the fact that the ethical process implies continual struggle, conquest, and the defeats that go with conquest. But when Mr. Huxley asserts that the struggle is between the natural process and the ethical, we must part company with him. He seems to assert that in some far century it may be possible for the ape and the tiger to be so thoroughly subjugated by man that the "inveterate enemy of the moral process" shall finally be put under foot. Then the struggle will occur against the environment because of a shortage of food. But we must insist that Mr. Huxley is here falling into the very charges which he has brought against Mr. Spencer's school. The very

highest habits and ideals which are organizing today with reference to existing conditions will be just as much, and just as little, an obstacle to the moral conduct of man millions of years from now, as those of the ape and the tiger are to us. So far as they represent the survival of outworn conditions, they will demand re-constitution and re-adaptation, and that modification will be accompanied by pain. Growth always costs something. It costs the making over of the old in order to meet the demands of the new.

This struggle, then, is not more characteristic of the ethical process than it is of the biological. Long before man came upon the earth, long before any talk was heard of right and wrong, it happened that those who clung persistently to modes of action which were adapted to an environment that had passed away, were at a disadvantage in the struggle for existence, and tended to die out. The factors of the conflict upon which Mr. Huxley lays so much stress have been present ever since the beginning of life and will continue to be present as long as we live in a moving, and not a static world. What he insists upon is reconstruction and readaptation,—modification of the present with reference to the conditions of the future.

With the animal it was simply the happy guess,—the chance. In society there is anticipation; with man it is the intelligent and controlled foresight, the necessity of maintaining the institutions which have come down to us, while we make over these institutions so that they serve under changing conditions. To give up the institutions is chaos and anarchy; to maintain the institutions unchanged is death and fossilization. The problem is the reconciliation of unbridled radicalism and inert conservatism, in a movement of reasonable reform. Psychologically the tension manifests itself as the conflict between habits and aims: a conflict necessary, so far as we can see, to the maintenance of conscious life. Without habits we can do nothing. Yet if habits become so fixed that they cannot be adapted to the ends suggested by new situations, they are barriers to conduct and enemies to life. It is conflict with the end or ideal which keeps the habit working, a flexible and efficient instrument of

action. Without this conflict with habits, the end becomes vague, empty, and sentimental. Defining it so that the habits may be utilized in realizing it makes it of practical value. This definition would never occur were it not that habits resist it.

Just as habits and aims are co-operating factors in the maintenance of conscious experience, just as institutions and plans of reform are co-workers in our social life, just as the relative antagonism between the two is necessary to their valuable final co-adaptation; so impulse, call it animal if we will, and ideal, call it holy though we may, are mutually necessary in themselves and in their mutual opposition,—necessary for the ethical process. It is well for the ideal that it meet the opposition of the impulse, as it is for the animal prompting to be held to the function suggested by the ideal.

In locating and interpreting this tension, this opposition between the natural and the moral, I have done what I set out to do. There is one other point which it seems worth while to touch upon before leaving the matter. Three terms are always found together in all discussions of evolution,—natural selection, struggle for existence, and the fit. The latter two of these ideas we have discussed in their bearings upon moral life. It remains to say a word or two upon natural selection. Mr. Huxley's position on this point is not quite clear. As has been already suggested, it seems to be varying, if not actually self-contradictory. At times he seems to hold that since the struggle for existence has ceased in the social sphere, selection has ceased also to act, and therefore the work formerly done by it (if we may for the moment personify it as an agent) now has to be done in other ways (see the passages referred to on pp. 43-44). At other times he seems to hold that it is still going on but that its tendency upon the whole is bad, judged from the ethical standpoint, and therefore requires to be consciously counteracted.

Certainly the question of the scope of selection in the sphere of social life is confused. Does it still continue or does it not? If it does operate what are its modes of working? Many seem to suppose that we do not have it excepting where we intentionally isolate those whom



we consider unfit, and prevent them from reproducing offspring; or that it is found only if we artificially regulate marriage in such a way as to attempt to select social and animal types considered higher at the expense of the lower. Mr. Huxley naturally considers selection in this sense, not only practically impossible, but intrinsically undesirable. But is this the only or the chief meaning of natural selection? Does it follow that social selection, to use a term employed by late writers, is something radically different from natural selection?

The belief that natural selection has ceased to operate rests upon the assumption that there is only one form of such selection: that where improvement is indirectly effected by the failure of species of a certain type to continue to reproduce; carrying with it as its correlative that certain variations continue to multiply, and finally come to possess the land. This ordeal by death is an extremely important phase of natural selection, so-called. That it has been the chief form in pre-human life will be here admitted without discussion; though doubtless those having competent knowledge of details have good reason for qualifying this admission. However, to identify this procedure absolutely with selection, seems to me to indicate a somewhat gross and narrow vision. Not only is one form of life as a whole selected at the expense of other forms, but one mode of action in the same individual is constantly selected at the expense of others. There is not only the trial by death, but there is the trial by the success or failure of special acts—the counterpart, I suppose, of physiological selection so-called. We do not need to go here into the vexed question of the inheritance of acquired characters. We know that through what we call public opinion and education certain forms of action are constantly stimulated and encouraged, while other types are as constantly objected to, repressed, and punished. What difference in principle exists between this mediation of the acts of the individual by society and what is ordinarily called natural selection, I am unable to see. In each case there is the reaction of the conditions of life back into the agents in such a way as to modify the function of living. That in one case this modification takes place through changes in the structure of

the organ, say the eye, requiring many generations to become active; while in the other case it operates within the life of one and the same individual, and affects the uses to which the eye is put rather than (so far as we can tell) the structure of the eye itself, is not a reason for refusing to use the term “natural selection.” Or if we have limited that term to a narrower technical meaning, it is certainly no reason for refusing to say that the same kind of forces are at work bringing about the same sort of results. If we personify Nature, we may say that the influences of education and social approval and disapproval in modifying the behavior of the agent, mark simply the discovery on the part of Nature of a shorter and more economical form of selection than she had previously known. The modification of structure is certainly not an end in itself. It is simply one device for changing function. If other means can be devised which do the work more efficiently, then so much the better. Certainly it marks a distinct gain to accomplish this modification in one and the same generation rather than to have to trust to the dying out of the series of forms through a sequence of generations. It is certainly implied in the idea of natural selection that the most effective modes of variation should themselves be finally selected.

But Mr. Huxley insists upon another distinction. Stated in terms of the garden illustration, it is that: “The tendency of the cosmic process is to bring about the adjustment of the forms of plant life to the current conditions; the tendency of the horticultural process is the adjustment of the needs of the forms of plant life which the gardener desires to raise.” This is a very common antithesis. But is it as absolute and sweeping as we generally affect to believe? Every living form is dynamically, not simply statically, adapted to its environment. I mean by this it subjects conditions about it to its own needs. This is the very meaning of “adjustment”; it does not mean that the life-form passively accepts or submits to the conditions just as they are, but that it functionally subordinates these natural circumstances to its own food needs.

But this principle is of especial importance with reference to the forms in which are

found the lines of progressive variation. It is, relatively speaking, true of the weeds and gorse of the patch of soil from which Mr. Huxley draws his illustration, that they are adjusted to current conditions. But that is simply because they mark the result, the relatively finished outcome of a given process of selection. They are arrested forms. Just because the patch has got into equilibrium with surrounding conditions progressive variation along that line has ceased. If this were all the life in existence, there would be no more evolution. Something, in other words, did *not* adapt itself to "current conditions," and so development continued.

It would be ungrateful in any discussion of this subject not to refer to Malthus's classic illustration of the feast spread by Nature—not big enough for the invited guests. It is supposed, in its application to struggle for existence and selection, that this means that the life-forms present struggle just to get a share of the food that is already there. Such a struggle for a quota of food already in existence, might result, through selection, in perfecting a species already in existence, and thus in fixing it. It could not give rise to a new species. The selection which marks progress is that of a variation which *creates* a new food supply or amplifies an old one. The advantage which the variation gives, if it tends towards a new species, is an organ which opens up a wider food environment, detects new supplies within the old, or which makes it possible to utilize as food something hitherto indifferent or alien. The greater the number of varieties on a given piece of soil, the more individuals that can maintain a vigorous life. *The new species means a new environment to which it adjusts itself without interfering with others.* So far as the progressive varieties are concerned, it is not in the least true that they simply adapt themselves to current conditions; evolution is a continued development of new conditions which are better suited to the needs of organisms than the old. The unwritten chapter in natural selection is that of the evolution of environments.

Now, in man we have this power of variation and consequent discovery and constitution of new environments set free. All biological process has been effected through this, and so every tendency which forms this power is

selected; in man it reaches its climax. So far as the individual is concerned, the environment (the specific conditions which relate to his life) is highly variable at present. The growth of science, its application in invention to industrial life, the multiplication and acceleration of means of transportation and intercommunication, have created a peculiarly unstable environment. It shifts constantly within itself, or qualitatively, and as to its range, or quantitatively. Simply as an affair of Nature, not of art (using these terms in Mr. Huxley's sense) it is a profitable, an advantageous thing that structural changes, if any occur, should not get too set. They would limit unduly the possibility of change in adaptation. In the present environment, flexibility of function, the enlargement of the range of uses to which one and the same organ, grossly considered, may be put, is a great, almost the supreme, condition of success. As such, any change in that direction is a favorable variation which must be selected. In a word, the difference between man and animal is not that selection has ceased, but that selection along the line of variations which enlarge and intensify the environment is active as never before.

We reach precisely the same conclusion with respect to "selection" that we have reached with reference to the cognate ideas—"fit" and "struggle for existence." It is found in the ethical process as it is in the cosmic, and it operates in the same way. So far as conditions have changed, so far as the environment is indefinitely more complex, wider, and more variable, so far of necessity and as a biological and cosmic matter, not merely an ethical one, the functions selected differ.

There are no doubt sufficiently profound distinctions between the ethical process and the cosmic process as it existed prior to man and to the formation of human society. So far as I know, however, all of these differences are summed up in the fact that the process and the forces bound up with the cosmic have come to consciousness in man. That which was instinct in the animal is conscious impulse in man. That which was "tendency to vary" in the animal is conscious foresight in man. That which was unconscious adaptation and survival in the animal, taking place by the "cut and

try" method until it worked itself out, is with man conscious deliberation and experimentation. That this transfer from unconsciousness to consciousness has immense importance, need hardly be argued. It is enough to say that it means the whole distinction of the moral from the unmoral. We have, however, no reason to suppose that the cosmic process has become arrested or that some new force has supervened to struggle against the cosmic. Some theologians and moralists, to be sure, welcomed Huxley's apparent return to the idea of a dualism between the cosmic and the ethical as likely to inure favorably to the spiritual life. But I question whether the spiritual life does not get its surest and most ample guarantees when it is learned that the laws and conditions of righteousness are implicated in the working processes of the universe; when it is found that man in his conscious struggles, in his doubts, temptations, and defeats, in his aspirations and successes, is moved on and buoyed up by the forces which have developed nature; and that in this moral struggle he acts not as a mere individual but as an organ in maintaining and carrying forward the universal process.

#### NOTES

[First published in *Monist*, VIII (Apr. 1898), 321-41. Not reprinted during the author's lifetime. EW 5:34-53.]

1. This paper was delivered as a public lecture during the Summer Quarter's work of the University of Chicago. This will account for the lack of reference to other articles bearing on the subject. I would call special attention, however, to Mr. Leslie Stephen on Natural Selection and Ethics, in the *Contemporary Review*, and the article by Dr. Carus in *The Monist*, Vol. IV, No. 3, on "Ethics and the Cosmic Order."

2. Precisely it may be said, and that is just the reason that Mr. Huxley insists upon the opposition of the natural and the ethical. I cannot avoid believing that this is what Mr. Huxley really had in mind at the bottom of his consciousness. But what he says is not that the form and content of fitness, of struggle for existence, and of selection, change with the change of conditions, but that these concepts lose all applicability. And this is just the point under discussion.

3. It is passing strange that Mr. Huxley should not have seen that the logical conclusion from his premises of this extreme opposition are just those which he has himself set forth with such literary power earlier in his essay (pp. 63-68). That he did not show, to my mind, how much he takes the opposition in a rhetorical, not a practical, sense.

4. Here is his flat contradiction: "Men in society are undoubtedly subject to the cosmic process. . . . The struggle for existence tends to eliminate those less fitted to adapt themselves to the circumstances of their existence" (p. 81). Compare this with pp. 15, 36, 38, and the other passages referred to above.

5. I have developed this conception psychologically in the *Philosophical Review* for Jan. 1897, in an article upon "The Psychology of Effort" [*The Early Works of John Dewey*, V, 151-63].