

世界经典学术名著原版库

ON GENERATION AND CORRUPTION

《论产生和毁灭》

北京师联教育科学研究所 编



学苑音像出版社

图书在版编目(CIP)数据

世界经典学术名著原版库/北京师联教育科学研究所编. —北京 :学苑音像出版社 2005. 3

ISBN 7 - 88050 - 259 - 9

I. 世... II. 北... III. 世界文学—学术—名著 :英文 IV. I299 - 2

中国版本图书馆 CIP 数据核字(2005)第 187965 号

世界经典学术名著原版库
北京师联教育科学研究所 编

出 版 :学苑音像出版社

印 刷 :北京密云红光印刷厂

开 本 850mmx1168mm 1/16

印 张 498

字 数 10 000 千字

版 次 2005 年 4 月第 1 版

印 数 1 - 5 000

书 号 ISBN 7 - 88050 - 259 - 9

定 价 1080.00 元(全 50 册)

ON GENERATION AND CORRUPTION

by Aristotle

translated by H. H. Joachim

Book I

1

OUR next task is to study coming-to-be and passing-away. We are to distinguish the causes, and to state the definitions, of these processes considered in general-as changes predicable uniformly of all the things that come-to-be and pass-away by nature. Further, we are to study growth and 'alteration'. We must inquire what each of them is; and whether 'alteration' is to be identified with coming-to-be, or whether to these different names there correspond two separate processes with distinct natures.

On this question, indeed, the early philosophers are divided. Some of them assert that the so-called 'unqualified coming-to-be' is 'alteration', while others maintain that 'alteration' and coming-to-be

are distinct. For those who say that the universe is one something (i.e. those who generate all things out of one thing) are bound to assert that coming-to-be is 'alteration', and that whatever 'comes-to-be' in the proper sense of the term is 'being altered': but those who make the matter of things more than one must distinguish coming-to-be from 'alteration'. To this latter class belong Empedocles, Anaxagoras, and Leucippus. And yet Anaxagoras himself failed to understand his own utterance. He says, at all events, that coming-to-be and passing-away are the same as 'being altered': yet, in common with other thinkers, he affirms that the elements are many. Thus Empedocles holds that the corporeal elements are four, while all the elements-including those which initiate movement-are six in number; whereas Anaxagoras agrees with Leucippus and Democritus that the elements are infinite.

(Anaxagoras posits as elements the 'homoeomeries', viz. bone, flesh, marrow, and everything else which is such that part and whole are the same in name and nature; while Democritus and Leucippus say that there are indivisible bodies, infinite both in number and in the varieties of their shapes, of which everything else is composed-the compounds differing one from another according to the shapes, 'positions', and 'groupings' of their constituents.)

For the views of the school of Anaxagoras seem diametrically opposed to those of the followers of Empedocles. Empedocles says that Fire,

Water, Air, and Earth are four elements, and are thus 'simple' rather than flesh, bone, and bodies which, like these, are 'homoeomeries'. But the followers of Anaxagoras regard the 'homoeomeries' as 'simple' and elements, whilst they affirm that Earth, Fire, Water, and Air are composite; for each of these is (according to them) a 'common seminary' of all the 'homoeomeries'.

Those, then, who construct all things out of a single element, must maintain that coming-to-be and passing-away are 'alteration'. For they must affirm that the underlying something always remains identical and one; and change of such a substratum is what we call 'altering'. Those, on the other hand, who make the ultimate kinds of things more than one, must maintain that 'alteration' is distinct from coming-to-be: for coming-to-be and passingaway result from the consilience and the dissolution of the many kinds. That is why Empedocles too uses language to this effect, when he says 'There is no coming-to-be of anything, but only a mingling and a divorce of what has been mingled'. Thus it is clear (i) that to describe coming-to-be and passing-away in these terms is in accordance with their fundamental assumption, and (ii) that they do in fact so describe them: nevertheless, they too must recognize 'alteration' as a fact distinct from coming to-be, though it is impossible for them to do so consistently with what they say.

That we are right in this criticism is easy to perceive. For

'alteration' is a fact of observation. While the substance of the thing remains unchanged, we see it 'altering' just as we see in it the changes of magnitude called 'growth' and 'diminution'. Nevertheless, the statements of those who posit more 'original reals' than one make 'alteration' impossible. For 'alteration, as we assert, takes place in respect to certain qualities: and these qualities (I mean, e.g. hot-cold, white-black, dry-moist, soft-hard, and so forth) are, all of them, differences characterizing the 'elements'. The actual words of Empedocles may be quoted in illustration-

The sun everywhere bright to see, and hot,

The rain everywhere dark and cold;

and he distinctively characterizes his remaining elements in a similar manner. Since, therefore, it is not possible for Fire to become Water, or Water to become Earth, neither will it be possible for anything white to become black, or anything soft to become hard; and the same argument applies to all the other qualities. Yet this is what 'alteration' essentially is.

It follows, as an obvious corollary, that a single matter must always be assumed as underlying the contrary 'poles' of any change whether change of place, or growth and diminution, or 'alteration'; further, that the being of this matter and the being of 'alteration'

stand and fall together. For if the change is 'alteration', then the substratum is a single element; i.e. all things which admit of change into one another have a single matter. And, conversely, if the substratum of the changing things is one, there is 'alteration'.

Empedocles, indeed, seems to contradict his own statements as well as the observed facts. For he denies that any one of his elements comes-to-be out of any other, insisting on the contrary that they are the things out of which everything else comes-to-be; and yet (having brought the entirety of existing things, except Strife, together into one) he maintains, simultaneously with this denial, that each thing once more comes-to-be out of the One. Hence it was clearly out of a One that this came-to-be Water, and that Fire, various portions of it being separated off by certain characteristic differences or qualities-as indeed he calls the sun 'white and hot', and the earth 'heavy and hard'. If, therefore, these characteristic differences be taken away (for they can be taken away, since they came-to-be), it will clearly be inevitable for Earth to come to-be out of Water and Water out of Earth, and for each of the other elements to undergo a similar transformation-not only then, but also now-if, and because, they change their qualities. And, to judge by what he says, the qualities are such that they can be 'attached' to things and can again be 'separated' from them, especially since Strife and Love are still fighting with one another for the mastery. It was owing to

this same conflict that the elements were generated from a One at the former period. I say 'generated', for presumably Fire, Earth, and Water had no distinctive existence at all while merged in one.

There is another obscurity in the theory Empedocles. Are we to regard the One as his 'original real'? Or is it the Many-i.e. Fire and Earth, and the bodies co-ordinate with these? For the One is an 'element' in so far as it underlies the process as matter-as that out of which Earth and Fire come-to-be through a change of qualities due to 'the motion'. On the other hand, in so far as the One results from composition (by a consilience of the Many), whereas they result from disintegration the Many are more 'elementary' than the One, and prior to it in their nature.

2

We have therefore to discuss the whole subject of 'unqualified' coming-to-be and passingaway; we have to inquire whether these changes do or do not occur and, if they occur, to explain the precise conditions of their occurrence. We must also discuss the remaining forms of change, viz. growth and 'alteration'. For though, no doubt, Plato investigated the conditions under which things come-to-be and pass-away, he confined his inquiry to these changes; and he discussed not all coming-to-be, but only that of the elements. He

asked no questions as to how flesh or bones, or any of the other similar compound things, come-to-be; nor again did he examine the conditions under which 'alteration' or growth are attributable to things.

A similar criticism applies to all our predecessors with the single exception of Democritus. Not one of them penetrated below the surface or made a thorough examination of a single one of the problems. Democritus, however, does seem not only to have thought carefully about all the problems, but also to be distinguished from the outset by his method. For, as we are saying, none of the other philosophers made any definite statement about growth, except such as any amateur might have made. They said that things grow 'by the accession of like to like', but they did not proceed to explain the manner of this accession. Nor did they give any account of 'combination': and they neglected almost every single one of the remaining problems, offering no explanation, e.g. of 'action' or 'passion' how in physical actions one thing acts and the other undergoes action. Democritus and Leucippus, however, postulate the 'figures', and make 'alteration' and coming-to-be result from them. They explain coming-to-be and passing-away by their 'dissociation' and 'association', but 'alteration' by their 'grouping' and 'Position'. And since they thought that the 'truth lay in the appearance, and the appearances are conflicting and infinitely many, they made the

'figures' infinite in number. Hence-owing to the changes of the compound-the same thing seems different and conflicting to different people: it is 'transposed' by a small additional ingredient, and appears utterly other by the 'transposition' of a single constituent. For Tragedy and Comedy are both composed of the same letters.

Since almost all our predecessors think (i) that coming-to-be is distinct from 'alteration', and (ii) that, whereas things 'alter' by change of their qualities, it is by 'association' and 'dissociation' that they come-to-be and pass-away, we must concentrate our attention on these theses. For they lead to many perplexing and well-grounded dilemmas. If, on the one hand, coming-to-be is 'association', many impossible consequences result: and yet there are other arguments, not easy to unravel, which force the conclusion upon us that coming-to-be cannot possibly be anything else. If, on the other hand, coming-to-be is not 'association', either there is no such thing as coming-to-be at all or it is 'alteration': or else we must endeavour to unravel this dilemma too-and a stubborn one we shall find it. The fundamental question, in dealing with all these difficulties, is this: 'Do things come-to-be and "alter" and grow, and undergo the contrary changes, because the primary "reals" are indivisible magnitudes? Or is no magnitude indivisible?' For the answer we give to this question makes the greatest difference. And

again, if the primary 'reals' are indivisible magnitudes, are these bodies, as Democritus and Leucippus maintain? Or are they planes, as is asserted in the *Timaeus*?

To resolve bodies into planes and no further-this, as we have also remarked elsewhere, in itself a paradox. Hence there is more to be said for the view that there are indivisible bodies. Yet even these involve much of paradox. Still, as we have said, it is possible to construct 'alteration' and coming-to-be with them, if one 'transposes' the same by 'turning' and 'intercontact', and by 'the varieties of the figures', as Democritus does. (His denial of the reality of colour is a corollary from this position: for, according to him, things get coloured by 'turning' of the 'figures'.) But the possibility of such a construction no longer exists for those who divide bodies into planes. For nothing except solids results from putting planes together: they do not even attempt to generate any quality from them.

Lack of experience diminishes our power of taking a comprehensive view of the admitted facts. Hence those who dwell in intimate association with nature and its phenomena grow more and more able to formulate, as the foundations of their theories, principles such as to admit of a wide and coherent development: while those whom devotion to abstract discussions has rendered unobservant of the facts are too ready to dogmatize on the basis of a few observations. The rival treatments of the subject now before us will serve to illustrate how

great is the difference between a 'scientific' and a 'dialectical' method of inquiry. For, whereas the Platonists argue that there must be atomic magnitudes 'because otherwise "The Triangle" will be more than one', Democritus would appear to have been convinced by arguments appropriate to the subject, i.e. drawn from the science of nature. Our meaning will become clear as we proceed. For to suppose that a body (i.e. a magnitude) is divisible through and through, and that this division is possible, involves a difficulty. What will there be in the body which escapes the division?

If it is divisible through and through, and if this division is possible, then it might be, at one and the same moment, divided through and through, even though the dividings had not been effected simultaneously: and the actual occurrence of this result would involve no impossibility. Hence the same principle will apply whenever a body is by nature divisible through and through, whether by bisection, or generally by any method whatever: nothing impossible will have resulted if it has actually been divided-not even if it has been divided into innumerable parts, themselves divided innumerable times. Nothing impossible will have resulted, though perhaps nobody in fact could so divide it.

Since, therefore, the body is divisible through and through, let it have been divided. What, then, will remain? A magnitude? No: that is impossible, since then there will be something not divided, whereas ex

hypothesis the body was divisible through and through. But if it be admitted that neither a body nor a magnitude will remain, and yet division is to take place, the constituents of the body will either be points (i.e. without magnitude) or absolutely nothing. If its constituents are nothings, then it might both come-to-be out of nothings and exist as a composite of nothings: and thus presumably the whole body will be nothing but an appearance. But if it consists of points, a similar absurdity will result: it will not possess any magnitude. For when the points were in contact and coincided to form a single magnitude, they did not make the whole any bigger (since, when the body was divided into two or more parts, the whole was not a bit smaller or bigger than it was before the division): hence, even if all the points be put together, they will not make any magnitude.

But suppose that, as the body is being divided, a minute section-a piece of sawdust, as it were-is extracted, and that in this sense-a body 'comes away' from the magnitude, evading the division. Even then the same argument applies. For in what sense is that section divisible? But if what 'came away' was not a body but a separable form or quality, and if the magnitude is 'points or contacts thus qualified': it is paradoxical that a magnitude should consist of elements, which are not magnitudes. Moreover, where will the points be? And are they motionless or moving? And every contact is always a

contact of two somethings, i.e. there is always something besides the contact or the division or the point.

These, then, are the difficulties resulting from the supposition that any and every body, whatever its size, is divisible through and through. There is, besides, this further consideration. If, having divided a piece of wood or anything else, I put it together, it is again equal to what it was, and is one. Clearly this is so, whatever the point at which I cut the wood. The wood, therefore, has been divided potentially through and through. What, then, is there in the wood besides the division? For even if we suppose there is some quality, yet how is the wood dissolved into such constituents and how does it come-to-be out of them? Or how are such constituents separated so as to exist apart from one another? Since, therefore, it is impossible for magnitudes to consist of contacts or points, there must be indivisible bodies and magnitudes. Yet, if we do postulate the latter, we are confronted with equally impossible consequences, which we have examined in other works.' But we must try to disentangle these perplexities, and must therefore formulate the whole problem over again.

On the one hand, then, it is in no way paradoxical that every perceptible body should be indivisible as well as divisible at any and every point. For the second predicate will attach to it potentially, but the first actually. On the other hand, it would seem to be

impossible for a body to be, even potentially, divisible at all points simultaneously. For if it were possible, then it might actually occur, with the result, not that the body would simultaneously be actually both (indivisible and divided), but that it would be simultaneously divided at any and every point. Consequently, nothing will remain and the body will have passed-away into what is incorporeal: and so it might come-to-be again either out of points or absolutely out of nothing. And how is that possible?

But now it is obvious that a body is in fact divided into separable magnitudes which are smaller at each division-into magnitudes which fall apart from one another and are actually separated. Hence (it is urged) the process of dividing a body part by part is not a 'breaking up' which could continue ad infinitum; nor can a body be simultaneously divided at every point, for that is not possible; but there is a limit, beyond which the 'breaking up' cannot proceed. The necessary consequence-especially if coming-to-be and passing-away are to take place by 'association' and 'dissociation' respectively-is that a body must contain atomic magnitudes which are invisible. Such is the argument which is believed to establish the necessity of atomic magnitudes: we must now show that it conceals a faulty inference, and exactly where it conceals it.

For, since point is not 'immediately-next' to point, magnitudes are 'divisible through and through' in one sense, and yet not in

another. When, however, it is admitted that a magnitude is 'divisible through and through', it is thought there is a point not only anywhere, but also everywhere, in it: hence it is supposed to follow, from the admission, that the magnitude must be divided away into nothing. For it is supposed-there is a point everywhere within it, so that it consists either of contacts or of points. But it is only in one sense that the magnitude is 'divisible through and through', viz. in so far as there is one point anywhere within it and all its points are everywhere within it if you take them singly one by one. But there are not more points than one anywhere within it, for the points are not 'consecutive': hence it is not simultaneously 'divisible through and through'. For if it were, then, if it be divisible at its centre, it will be divisible also at a point 'immediately-next' to its centre. But it is not so divisible: for position is not 'immediately-next' to position, nor point to point-in other words, division is not 'immediately-next' to division, nor composition to composition.

Hence there are both 'association' and 'dissociation', though neither (a) into, and out of, atomic magnitudes (for that involves many impossibilities), nor (b) so that division takes place through and through-for this would have resulted only if point had been 'immediately-next' to point: but 'dissociation' takes place into small (i.e. relatively small) parts, and 'association' takes place out of

relatively small parts.

It is wrong, however, to suppose, as some assert, that coming-to-be and passing-away in the unqualified and complete sense are distinctively defined by 'association' and 'dissociation', while the change that takes place in what is continuous is 'alteration'.

On the contrary, this is where the whole error lies. For unqualified coming-to-be and passing-away are not effected by 'association' and 'dissociation'. They take place when a thing changes, from this to that, as a whole. But the philosophers we are criticizing suppose that all such change is 'alteration': whereas in fact there is a difference. For in that which underlies the change there is a factor corresponding to the definition and there is a material factor.

When, then, the change is in these constitutive factors, there will be coming-to-be or passing-away: but when it is in the thing's qualities, i.e. a change of the thing per accidents, there will be 'alteration'.

'Dissociation' and 'association' affect the thing's susceptibility to passing-away. For if water has first been 'dissociated' into smallish drops, air comes-to-be out of it more quickly: while, if drops of water have first been 'associated', air comes-to-be more slowly. Our doctrine will become clearer in the sequel.' Meantime, so much may be taken as established-viz. that coming-to-be cannot be 'association', at least not the kind of 'association' some philosophers assert it to be.