

sentient beings. That good it brings to them, is mostly the result of their own exertions. Whatsoever, in nature, gives indication of beneficent design, proves this beneficence to be armed only with limited power; and the duty of man is to co-operate with the beneficent powers, not by imitating but by perpetually striving to amend the course of nature—and bringing that part of it over which we can exercise control, more nearly into conformity with a high standard of justice and goodness.

5

TWO CONCEPTS: "CAUSE" AND "CHANCE" *

by

ARISTOTLE

(B.C. 384-322)

I

... One only knows a thing when one knows why it is, its reason. . . .

In the first place, one calls cause that which composes a thing, and that from which it arises. Thus one can say in this sense that bronze is the cause of the statue, and silver is the cause of the phial; and one applies this way of speaking to all things of the same kind. (*Material cause.*) In a second sense, the cause is the form and the model of things; it is the essential character of the thing and its kind. Thus in music, the cause of the octave is the ratio 2:1, and, in a more general way, it is number; and with number, it is the part which enters into its definition. (*Formal cause.*) In a third sense, the cause is the source from which movement or rest comes. Thus he who, in a certain case, has given advice to act is the cause of the acts which are accomplished; the father is the cause of the child; and generally speaking that which acts is the cause of that

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which is done; that which produces a change is the cause of the change produced. (*Efficient cause.*) Fourthly, cause signifies the end and the goal of a thing. Thus health is the cause of walking. If we ask, "Why is he walking?" the answer is, "In order to be well," and when we say this, we believe that we have the cause of the walking. This meaning applies to all the intermediaries who contribute to the attainment of the final end, after the first mover has started the movement. For example, dieting and purgation, or drugs and the instruments of the surgeon can be regarded as means to health; and the only difference is that some are acts and others are instruments. (*Final cause.*)

These are briefly the meanings of the word cause. In accordance with this diversity of senses, a single thing can have several causes at the same time, and not simply. Thus, for the statue, one can assign to it as causes both the art of the sculptor who has made it and the bronze of which it is made, and not in any other sense than as a statue. The two causes are not to be understood in the same sense; they differ in that one is the material and the other is the source of the movement. It is also because of this that there can be said to be things that are reciprocally the causes of each other. Thus exercise is the cause of health, and health is the cause of exercise; but not in the same sense, for, in the first case, health is the end, while in the second health is the source of the movement. Moreover, a single thing is at times the cause of opposite results; for, the same thing which is the cause of a given effect when it is present, can be the cause of an opposite effect when it is absent. For example, the absence of the pilot can be considered the cause of the loss of the ship, because the presence of the same pilot could have guaranteed its safety.

All the causes mentioned can be reduced to these four very obvious kinds. The letters of the alphabet are the cause of the syllables; the material is the cause of the things which art produces; fire and the other elements are the causes of the bodies which they compose; the parts are the cause of the whole, and the propositions are the causes of the conclusions which are drawn from them. Each of these is a cause since it is that out of which the other thing comes. Of these, the causes are either the subject of the thing, as parts relative to the whole; or the essential character of the thing, as the whole and the synthesis and the form; or the source of change or rest, as the germ, the physician, the giver of advice, and in general that which has effects; and finally, in the fourth place, the end and the good of other things; the attainment of the best is that for the sake of which the thing exists, and it would make no difference whether one said the real or the apparent good.

II

"Luck" and "pure spontaneous chance" are sometimes included in the list of causal determinants, and many things are said to come about "as luck would have it" or "by chance." In what sense may luck and chance be included among the types of determinant just enumerated? Further, is luck the same thing as pure chance or something different? And exactly what is each of them?

Some people question even their existence. Nothing, they declare, happens fortuitously; whatever we ascribe to luck or pure chance has been somehow determined. Take, for instance, the case of a man who goes to market and "as luck would have it" meets someone whom he wanted but did not expect to meet: his going to market, they say, was responsible for this. So they argue that of any other occurrence ascribed to luck there is always some more positive explanation to be found. Luck [they say] cannot have been the cause, for it would be paradoxical to regard luck as something real. Further, they consider it noteworthy that none of the ancient philosophers mentioned luck when discussing the causes of becoming and perishing—an indication, apparently, that they disbelieved in the possibility of fortuitous occurrences.

Yet it is odd that while people theoretically accept the venerable argument which assumes that every chance happening and stroke of luck can be attributed to some cause or other, they nevertheless continue to speak of some things as matters of luck, others not. The earlier philosophers ought to have taken some account of this popular distinction, but among their various principles—love and strife, mind, fire, etc.—luck finds no place. The omission is equally surprising whether we suppose them to have disbelieved in luck or to have believed in but disregarded it; for at any rate they were not above employing the idea in their explanations. Empedocles, for example, remarks that air is sifted up into the sky not uniformly but "as it may chance"; or, in the words of his *Cosmogony*, "Now it 'happened' to run this way, now that." And the parts of animals, he declares, came to be what they are purely by chance.

Some go so far as to attribute the heavens and all the worlds to "chance happenings," declaring that the vortex—i.e., the motion which separated and arranged the entire universe in its present order—arose "of itself." We may well be surprised at this assertion that while the existence and generation of animals and plants must be attributed not to chance but to nature or mind or something of the sort (what issues from a particular sperm or seed is obviously not a matter of chance, since from one kind of seed there comes forth an olive, from another a man), yet the heavens and the divinest of

visible things have come into existence spontaneously and have no such causes as animals and plants have. Even if this were true, it would be something to give us pause, and ought to have elicited some comment. For apart from the generally paradoxical nature of such a theory it is rather odd that people should accept it when they can find no evidence of spontaneous occurrences among celestial phenomena but plenty of such evidence among the things in which they deny the presence of chance. The evidence is just the opposite of what should have been expected if their theory were true.

There are other people who, while accepting luck as a cause of things, regard it as something divinely mysterious, inscrutable to human intelligence.

Accordingly we must investigate the nature of luck and chance, and see whether they are the same as each other or different, and how they fit into our classification of causes.

To begin with, when we see certain things occurring in a certain way either uniformly or "as a general rule," we obviously would not ascribe them to mere luck. A stroke of luck is not something that comes to pass either by uniform necessity or as a general rule. But as there is also a third sort of event which is found to occur, which everyone speaks of as being a matter of luck, and which we all know is meant when the word "lucky" is used, it is plain that such a thing as luck and "pure spontaneous chance" must exist.

Some events "serve a purpose," others do not. Of the former class, some are in accordance with the intention of the purposer, others not; but both are in the class of things that serve a purpose. Evidently, then, even among occurrences that are not the predictable (i.e., neither the constant nor normal) results of anyone's actual intention, there are some which may be spoken of as serving a purpose. What serves a purpose may have originated either in thought or in nature: in either case when its occurrence is accidental we call it a matter of luck. Just as everything has both an essential nature and a number of incidental attributes, so when anything is considered as a causal determinant it may have similarly a twofold aspect. When a man builds a house, for instance, his faculty of house-building is the essential determinant of the house, while the fact that he is blond or cultured is only incidental to that result. The essential determinant can be calculated, but the incidentally related factors are incalculable, for any number of them may inhere in one subject.

As already explained, then, we attribute to chance or luck whatever happens [accidentally] in such a way as to serve a purpose. (The specific difference between chance and luck will be explained later; for the present it is enough to emphasize that both of them refer to actions that happen to serve a purpose.) As an illustra-

tion, suppose that we wish to solicit a man for a contribution of money. Had we known where he was we should have gone there and accosted him. But if with some other end in view we go to a place which it is not our invariable nor even our usual practice to visit, then, since the end effected (getting the money) is not a spontaneous process of nature, but is the type of thing that results from conscious choice and reflection, we describe the meeting as a stroke of luck. It would not be a matter of luck, however, if we were to visit the place for the express purpose of seeking our man, or if we regularly went there when taking up subscriptions. Luck, then, is evidently an incidental aspect of causation in the sphere of actions that involve purposive choice and reflection. Hence, since choice implies "intelligent reflection," we may conclude that luck and intelligent reflection both refer to the same sphere of things and activities. . . .

According as the result of a fortuitous action is good or bad we speak of good and bad luck. In more serious matters we use the terms "good fortune" and "misfortune;" and when we escape by a hair's breadth some great evil or just miss some great good we consider ourselves fortunate or unfortunate accordingly—the margin having been so slight that we can reflect upon the good or ill in question as if it were actually present. Moreover, as all luck is unstable (for nothing invariable or normal could be attributed to luck), we are right in regarding good fortune as also unstable.

Both luck and spontaneous chance, then, as has been said, are incidental to a causal situation, and are attributed to the type of occurrence which is neither constant nor normal and which might have been aimed at for its own sake.

The difference between luck and chance is that "chance" is the more inclusive term. Every case of luck is a case of chance, but not all cases of chance are cases of luck.

Luck, together with lucky or unlucky occurrences, is spoken of only in connection with agents that are capable of enjoying good [or ill] fortune and of performing moral actions. It follows, then, that luck always has some reference to conduct—a conclusion which is further enforced by the popular belief that "good fortune" is the same, or practically the same, as "happiness"; and that happiness, as it involves "well-doing," is a kind of "moral action." Hence only what is capable of moral conduct can perform actions that are lucky or the reverse. Luck does not pertain to the activities of a lifeless thing, a beast, or a child, for these exercise no "deliberate choice." If we call them lucky or unlucky we are speaking figuratively—as when Protarchus speaks of altar stones as fortunate because they are treated with reverence while their fellows are trampled underfoot.

All such objects are affected by luck only in so far as a moral agent may deal with them in a manner that is lucky or unlucky [to himself].

"Pure spontaneous chance," on the other hand, is found both among the lower animals and in many lifeless things. We say of a horse, for example, that it went "by chance" to a place of safety, meaning that it was not for the sake of safety that it went there [but owing to some external cause]. Again, we say of a tripod that it fell onto its feet "by chance," because although it could then be used to sit on, it did not fall for the sake of that.

[The distinction, then, may be summarized as follows.] We attribute to "chance" all those events which are such as ordinarily admit of a telic explanation [i.e., which come about for the sake of something], but which happen on this occasion to have been produced without any reference to the actual result. The word "luck," on the other hand, is restricted to that special type of chance events which (1) are possible objects of choice, and (2) affect persons capable of exercising choice. . . . The difference between chance and luck becomes clearest when applied to the productions of nature: when she produces a monster we attribute it to chance but we do not call nature unlucky. Even this, however, is not quite the same type of situation as that of the horse who chances to escape; for the horse's escape was due to an external cause, while the causes of nature's miscarriages are private to herself.

Thus we have explained the meaning of, and distinction between, chance and luck. Both, it may be added, belong to the order of "efficient determinants" [efficient causes] or "sources of movement"; for the determinants to which they are incidental are either natural forces or intelligent agents—the particular kinds of which are too numerous to mention.

Inasmuch as the results of chance and luck, while of a sort that nature or a conscious intelligence might well have intended, have in fact emerged as a purely incidental result of some causal process, and as no effect can be incidental without some prior and authentic cause for it to be incidental to, it is clear that incidental causation presupposes a causal relation that is authentic and direct. Chance and luck, then, presuppose intelligence and nature as causal agents. Hence, however true it may be that the heavens are due to spontaneous chance, intelligence and nature must be the prior causes, not only of many other things, but of this universe itself.