

# **The Causal Problem<sup>1</sup>**

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## I. Causal explanation and science

Advocates of causal explanation assume that their method is scientific. They assert that the essence of science is the quest for natural causes of things. The first question is whether this assumption is valid.

It is difficult to demonstrate this for mathematics. Propositions of geometry are purely propositions of the relations of parts of geometric figures, never causal.

In biology the theory of evolution relates life forms in terms of a higher, growing out of a lower. But the lower is not viewed as a cause of the higher or the higher of the lower. Basic relations investigated are not causal but growth relations.

When one deals with things inorganic, especially physics, the assumption seems more plausible. But the question still is whether causal explanation is the heart of the method.

Take the case of light. The glow of this iron is caused by heat, the meteor's glow by friction, the moon's by reflection, the distant light of a burning hay stack ignited by a cigarette, the light in this room by the window and the shining sun, the late light in my neighbor's house is explained by illness in the family. That is there are all sort of immediate and remote causes involved in light. But do these remote or even immediate causes have anything to do with the theory of light? Is not physics concerned with the study of light irrespective of causes?

An electric spark may be caused by a short, by a battery, a dynamo, by rubbing one's shoes over the carpet. Is this and like knowledge a science of electricity?

Another example: There are endless number of causes for objects falling. A man falls because of an obstruction in his path. A plane because of a broken wing. A stone because it is dislodged by wind, rain, frost. Is the science of falling bodies a study of these causes? Is science at all interested in when an object falls, where it falls, how it falls, what caused it to fall? The law of falling bodies holds true for a vacuum. Hence it never actually describes a single falling body upon our earth. It definitely ignores every causal factor that might enter into the falling. Just why is it called a scientific law?

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Here one may answer that science deals only with the general cause which here is the attraction of physical bodies. But since science only describes that fact, has never stated the cause, it would seem as if all science of falling bodies today is rather a wish than a fact.

## II. Science and prediction

Does science predict? Obviously it does so under artificial and narrowly controlled conditions of the laboratory. These rightly set up and predictions will be perfect. There are also the predictions of the astronomer who deals with the constant motions of the stars. In either case predictions lie completely within a closed system and refers to nothing outside. So the scientist can't predict whether a glass tube may not break or a fly may not interfere, or lightening, etc.

The popular wish for foreknowledge is entirely of the latter kind. The questions is whether science, especially pure science, has any connection at all with this immediate and practical interest of prediction. The biologist may be interested in the life processes and life history of the organism. But is he concerned with the problem of just when my last tooth will be extracted, when Julia will have her next baby? All this may be in the hands of the gods but is the biologist interested? This connects with the problem previously raised. Is science at all concerned with concrete events in space and time, their cause or prediction?

## III. Cause and time

A common illustration of the causal process is the causal series  $A \rightarrow B \rightarrow C \rightarrow D$ , etc. This raises a number of questions. One is whether all series of phenomena in time are causal series or whether some are and others are not. If the latter, just how does one distinguish the two? Further, it raises the question whether all so-called causal series are not mere time series.

This latter is asserted by Hume. He argues that all one can ever say is that one phenomenon succeeded upon another in time, never that it was caused or necessitated by a previous one. The attribution of action and causal powers to things, he describes as personification. The idea of necessity in things is for him a superstition. We can never say a thing must happen, merely that it probably will. The clock has given off millions of ticks, yet the next one may be its last. The sun has risen millions of times but tomorrow it may not follow the night. So all causality is merely a certain habit of nature and quite a habit with us but such habitual expectation can never be taken for more than it is.

The question is whether Hume is right, if not, what is his error?

## IV. Line of causality

How many lines of causality are there? Let us distinguish two: one as between like phenomena, another between unlike. An example of the first is act A is cause of act B which is cause of act C. Or idea A is cause of idea B, etc. Or physiological response A is cause of physiological response B. An example of the unlike would be: Physiological response A causes idea B which cause action C.

Now the first question is whether both types exist or whether causal processes are only one type. Then, which one?

Suppose we say that causal processes maintain only among like phenomena. Take action as an example. We then have action  $A \rightarrow B \rightarrow C \rightarrow D$ . But there seems to be a difficulty in this. An action series may be interrupted. We perform act A today and act B tomorrow. The two acts are distinct and separate in time, perhaps in space. While they form a sequence it is only the time sequence of Hume. Each act must have its own causal history. Therefore let us say each is caused by an idea. That gives the formula:

Action	A	B	C	D
	↑	↑	↑	↑
Idea	a	b	c	d

And that means we resort to a causal explanation involving phenomena unlike.

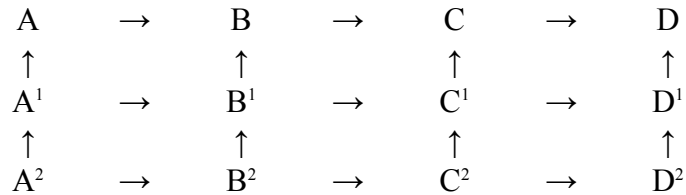
But this gives rise to most serious difficulties as stated by Wundt and others. There is the question of how mind which is a non-physical thing can be a physical cause. The physical processes follow natural law. Is it conceivable that mind can suddenly jump into the physical causal process? That would mean a disruption of natural law, be a miracle. So Wundt pushes us back into the causal relations among like. His formula is the following:

Physical	A	→	B	→	C	→	D
Mind	a	→	b	→	c	→	d

Here A and "a", B and "b" are not in causal relation; they are said to occur simultaneously -- psycho-physical parallelism as he calls it. Of course, now the mystery is pushed back into the relation of the causal series. Just how does it happen that I have the idea of hunger when my stomach is empty if there is no causal connection?

But just how is one to get out of all these difficulties?

Let us forget them and assume that both types of processes exist and go on together constantly. Let us picture the scheme as follows:

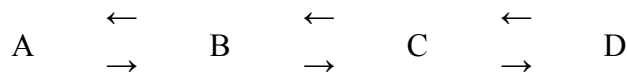


Now we seem to be in for some more trouble. In the first row A causes B and in the second row B<sup>1</sup> causes B. Does that mean that two different causes can produce an identical effect? If two can do so, can three? Can three million? If so, what happens to our prediction? We say, of course, the effect of A on B is different from the effect of B<sup>1</sup> on B. Assume it. How does B effect C if B has been affected simultaneously by its two causes? The causal effects get mixed up at every single crossing point. How are we going to know what happens to C out of such a mixture in B? If that looks easy the problem may be complicated by supposing that the effects of A and B<sup>1</sup> on B is not exactly simultaneous but a millionth of a fraction off, a long way apart, one is first and then the other is first.

What is the solution to this?

## V. Causal direction

Has the causal series one direction or has it two and opposite directions?



Are there some series with one and other series with two? Does causal action ever turn around? What makes it turn? If it doesn't turn, how does it come back? If it doesn't come back how does one get interaction?

## VI. Causal power

Are all causes of equal power? Is the physical more powerful than the mental or vice versa? Is one desire more powerful than another, one idea more powerful than another? How do we determine which is the more powerful? And just how is the greater power of one idea over another, one desire over another, to be accounted for?

Are there phenomena which have no power at all, which never cause anything but are always passive and acted upon?

Some say material conditions, biological, economic, determine the mind, not the mind these. That would mean that the determined becomes the determiner and the determiner the determined. That is, the determiner loses the power to determine. At one moment it has the power to determine mind, next moment it hasn't but is a victim. So the determiner must always be one if we are to predict. But that raises problems to which we shall not follow out.

## VII. Causal sequence

There are several problems that arise in connection with causal sequence.

Can a causal sequence be interrupted? A causes B causes C. Can A be stopped from causing B? It is said that given certain causes certain consequences follow inevitably. If it can be interrupted, how is prediction possible? And if it can't be what is meant by controlling causal processes?

Is it possible to interrupt a causal process for a time and after the interruption have it go on again? How is such delayed action to be made intelligible on the part of the last cause? How long can it be halted?

Can a causal process be speeded up or slowed down?

Can a causal process, say like making a fence, be so spaced as to let all sort of activities go on between each phase. I set one post and then talk to my neighbor an hour. I set another and have a glass of beer. I set a third and take a day off fishing. Why isn't that in between part of the fence-setting causal process? If not how is one to explain the time variable of causal action?

## VIII. The causal unit

If there is to be causal explanation we must know the causal unit.

Take the case of action. What is the unit? The act is the building of a house. Let us assume that it has A as its cause. Let us divide the whole into three parts, making a basement, constructing the body, putting on the roof. Are these three different activities determined by the same cause A or does each of those separate acts have its own cause? And making the basement involves digging the earth, hauling gravel, mixing cement, etc. Being different acts we may assume each has its causes. Mixing cement means carrying water, lifting cement sacks, stirring the mixture. These will each have their causes. And so we may go down the line with Behaviorists to the last twitch and sub-twitch and give each its cause. And then where are we? -- Just no place.

If such a host of acts can be attributed to one cause then one can as well attribute the individual's whole action life or all human action, as well as all things besides, to one cause and be done with it.

On the other hand, if we break the action order up into many actions in order to explain the whole system we have on our hands a new system of causes which is as mysterious as the acts we sought to explain. Actually, far more so. Now we must explain how the causes which produce the action sequence get into that sequence. The mystery has merely been shifted from the acts to the causes. For now we have the series cause  $A^1$ ,  $B^1$ ,  $C^1$ ,  $D^1$ , as producing the actions A, B, C, D. The question is whether these causes are in mere time sequence or are themselves caused. If in mere time sequence then there is no necessary relation as Hume shows. We cannot predict. If they are themselves in causal relation then the question is what is the cause of the causes? And that in turn will need a cause which means our explanation of the mystery recedes while we go through the motions of explaining we actually only push the explanation away and further back and explain nothing at all.

Is there a way out of this dilemma?

#### IX. The causal object

There is an ambiguity in the linear causal formula as to the object.

Ordinarily we say A causes B causes C. Should we rather say A acts upon an object B which acts upon an object C? Take the human sphere where this would seem to be especially important. When we say cause A causes act B, then where is the individual? As long as causes are made immediate to action the individual is ruled out. To speak of inner causes means nothing except a reference to space, here one hard to define. For assuming a causal series exactly where does the individual begin, where end? Is it where his mind begins and ends? Where is that?

To get the individual into the scheme we might say cause A merely affects individual B who then proceeds to act. The immediate cause of all the acts of the individual is the individual.

We now have the difficulty of explaining how the individual at this moment affected and passive can change in the next into an active cause. How can the passive cause the active? Or does the individual become active spontaneously? All this is very puzzling. Shall we say there is no such thing as an individual and dissolve him in causal process? Or shall we insist upon bringing him into it? If so how can this be done without resorting to free will or miracle?

X. Causal action

To cause we attribute action. But what does that mean?

It may mean mere physical, mechanical force.

It may mean stimulation.

It may mean giving direction.

It may mean a very peculiar agent like a catalytic agent.

It may mean to give form - a formative cause.

Does one cause perform all those types of action? Or must we distinguish entirely different classes of causes? If the latter what are these classes? Which of these is pertinent to explaining action, mind, social relations?

XI. The causal product

At this point the idea of the causal system undergoes modification.