

Roman Ingarden's Theory of Causation Revised

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Abstract. This article presents Roman Ingarden's theory of causation, as developed in volume III of *The Controversy about the Existence of the World*, and defends an alternative which uses some important insights of Ingarden. It rejects Ingarden's claim that a cause is simultaneous with its effect and that a cause necessitates its effect. It uses Ingarden's notion of 'inclinations' and accepts Ingarden's claim that an event cannot necessitate a later event.

1. Introduction

Roman Ingarden's four volume work *The Controversy about the Existence of the World* (German: 'Der Streit um die Existenz der Welt', Polish: 'Spór o istnienie świata') on ontology and metaphysics has received little attention. One has to admit that it would be more accessible if it were shorter and better structured. But it contains philosophical insights which can help us to see the limits and unquestioned presuppositions of our contemporary Anglosaxon philosophical debates. In this article I shall present Ingarden's theory of causation, criticise it, and present an alternative which takes into account some of Ingarden's insights. Before this I shall draw your attention to some presuppositions of the contemporary debate about causation which Ingarden does not share.

In the first volume of the *Streit* (1947; 1964a; 1964b) Ingarden develops various notions of ontological dependence. In the second volume (1948; 1965a; 1965b) (which consists of two books, volume II/1 and volume II/2) he investigates the ontological structure of various types of entities.¹ Amongst these he investigates also 'intentional objects', of which the characters in a novel are examples. They depend in their existence in a certain sense on the author of the novel. By comparing these kinds of objects with 'autonomous individual objects', Ingarden wants to bring out the fact that the real world is not, unlike the world of a novel, dependent on a conscious subject, but has independent being. He develops this in order to bring out the error in Edmund Husserl's idealism which ascribes to the

¹ (Wachter, 2005) gives a survey of Ingarden's ontology.

world ‘purely intentional being’.² So the reason why the work is called ‘The Controversy about the Existence of the World’ is that it aims to clarify the question in which way the world exists. The third volume of the *Streit* presents a theory of causation and of ‘the causal structure of the real world’. The unfinished German manuscript was published in 1974, four years after his death (Ingarden, 1974). A translation into Polish appeared in 1981 (Ingarden, 1981).

2. Roman Ingarden’s theory of the causal structure of the world

2.1 INGARDEN USES NO LINGUISTIC METHODS

In order to understand Ingarden’s theory of causation, readers whose background is the contemporary Anglosaxon debate about causation need to take into account that Ingarden does not use linguistic or conceptual methods, no paraphrasing of statements, no search for ‘ontological commitments’. Contemporary Anglosaxon philosophers usually assume either that the philosophical task concerning causation is to analyze or define the *concept* of a cause, or that one can find out something about causation by analyzing or defining the concept of a cause. Already David Hume assumed one or both of these claims. Let me sketch this in order to bring out what Ingarden is doing and what he is not doing.

Hume claimed that ‘all our ideas [...] are copies of our impressions’ (*Enquiry*, § 13) and that one finds the meaning of a word by looking for sense impressions of which it is a copy. Therefore he started his investigation of causation by considering whether we have sense impressions of ‘causal connexions’. His negative answer led him to the claim that the expression ‘causal connexion’ is ‘absolutely without any meaning’ (*Enquiry*, § 58). However, Hume seems to recognise that this is not true and that we do have the idea of a causal connection, because he suggests that the origin of our idea of a causal connection is that when we observe that events of one kind A are always followed by events of the kind B, then we get used to this and begin to imagine that there is a causal connection. Hume says nothing about the contradiction between this and his assumption that *all* our ideas are copies of impressions. We must reconstrue this as the view that all *good* (reliable or useful) ideas are copies of impressions.

Having explained how we develop the idea of a causal connection, Hume moves on to say that as we have no experience of causal connections but only of regular sequences of events, we may, ‘suitably to this

² On Husserl’s and Ingarden’s notions of ‘intentional objects’ see Chrudzinski, 2005.

experience', 'define a cause to be an object, followed by another, and where all the objects similar to the first are followed by objects similar to the second' (*Enquiry*, § 60). Hume does not explain why he defines 'cause' without reference to causal connections although we do have the concept of a causal connection. He must mean that his definition of a cause somehow purges the concept of unjustified beliefs.

Many have questioned Hume's claim that we have no sense impressions of causal connections, because pressure on our skin can plausibly be taken to be a sense impression of a causal connection. But what is even more dubious is the move from 'We experience no causal connexions' to defining 'cause' without reference to causal connections, and then apparently to the assumption that there are no causal connections. Hume's method of finding the meaning of a word by looking for sense impressions is obviously wrong. Rather, we find it by observing how the word is used and by thinking about the meaning of the word and about possible cases of its usage. Obviously Hume's definition is not designed to define the meaning of 'cause' as we actually use the word, but he does not tell us what it is supposed to do instead.

Furthermore, we need to ask whether Hume's definition of 'cause' supports the claim that there are no causal connections. How should providing a definition of the meaning of a word entail any interesting philosophical existence claim? Hume is generally taken to have denied the existence of causal connections, but some have questioned this (e.g. Strawson, 1989). The cause of this controversy is that Hume does not explicitly say whether there are causal connections, let alone how providing a definition of a cause should support a claim about the existence of causal connections.

A reader who is used to such Humean conceptual methods or to contemporary linguistic methods will need to be aware that Ingarden uses no such methods. He does not undertake to define or analyse the concept of a cause, he does not investigate the origin of the concept of a cause. More generally, he does not belong to those philosophers who assume that philosophy does not look into the world and at things in themselves, but only at concepts, transcendental categories, logical forms, forms of thought, sense data, or language. Ingarden wants to investigate things as they are in themselves, independently of whether and how they are conceived or described.³ In the contemporary debate about causation an important task is to look for counterexamples to proposed definitions of 'cause'. Ingarden is not concerned with this because his aim is not to produce a definition. His

³ For example, when he investigates what a substance is, he says that he wants to investigate things as they are in themselves, 'not in the relative aspect which a being has as the object of a conscious act of referring to it' and without any 'epistemological aspect'. (Ingarden, 1965a, p. 62).

aim is to describe what causation is—not in the sense of what we mean by ‘cause’, but in the sense of describing what happens when one event causes another one.

In the four volumes of *The Controversy about the Existence of the World* Ingarden does not use the word ‘phenomenology’ often, but he clearly assumes two main claims of phenomenology: First, the task of philosophy is not mainly to analyze or define concepts; second, contrary to empiricism, not all our knowledge comes through sense experience. And of course, Ingarden does not assume that we find the meaning of a word through looking for sense impressions of which the meaning is a copy, or that one needs an account of the origin of a concept in order to be justified in using it.

2.2 CAUSES ARE SIMULTANEOUS WITH THEIR EFFECT

While Ingarden recognises that before Hume all causes were generally taken to be things or ‘substances’ (Ingarden, 1974, p. 25), he argues that causes as well as effects are events or processes. By an event Ingarden means a change occurring in a moment. A moment, however, is not a point in time. Rather, it is a ‘minimum of lasting’, which is distinct from zero (Ingarden, 1974, p. 49). The beginning and end of a process are events. Likewise the crossings of processes are events.

The most striking feature of Ingarden’s theory of event causation is that it claims that causes are simultaneous with their effects. More precisely, it distinguishes between ‘immediate’ and ‘mediate’ causes, where the former occur simultaneously with their effects while the latter occur earlier than their effects. Mediate causes always act through immediate causes.

What we call the cause of an event usually is not all that contributed to the causing. Some authors say that it is only a part of the whole cause, others say that some of the other events constitute the ‘conditions’ under which the causing occurs. Ingarden takes the latter line: an immediate cause is the last one of a set of events which together necessitate the effect. It is the triggering factor. The other events together with the cause constitute the ‘sufficient condition’ for the effect.

The cause is only the temporally last element of the active sufficient condition of an event. This condition consists of many factors. The cause makes the condition complete and activates it, while before the already existing factors were inactive in that they could not bring about the effect in question (Ingarden, 1974, p. 53, similarly p. 88).

2.3 THE MECHANISM OF CAUSATION IS ONTOLOGICAL DEPENDENCE

Ingarden’s reason for taking immediate causes to be simultaneous with their

effects is that otherwise there could be no 'connection of being' ('Seinszusammenhang') between them (Ingarden, 1974, p. 44). There would be a 'gap' between them. The second event could not originate in the first (Ingarden, 1974, p. 45). There can only be a connection of being between actually existing things, and an event that is past does not actually exist anymore (Ingarden, 1974, p. 64f). And why, Ingarden asks, should the effect occur later than the cause? How could there be a delay? (Ingarden, 1974, pp. 47, 62) There can only be a delay if something which is needed for the causing is yet missing. If the cause is complete, then the effect occurs immediately and simultaneously with the cause.

Behind this argument lies the assumption that an effect is necessitated. It is a part of an 'active, sufficient condition' (Ingarden, 1974, p. 53, similarly p. 61 and p. 171), which is a set of events or states which together necessitate the effect. That is, it is impossible that it occurs while the effect does not occur. Ingarden uses the word 'sufficient' here, like Leibniz and like most authors today, not in the sense of 'enough', but in the sense of 'necessitating'.⁴ If an event really necessitates another event, then it must occur at the same time as the event necessitated. The second event could only occur later if something was yet missing. I shall argue below that this is a true and very important insight, although I shall suggest that the right way to take it into account is to deny that a cause necessitates its effect.

Of course, by necessity Ingarden does not mean what is called today 'logical necessity'. There is no contradiction in the description of the sufficient condition and the denial of the occurrence of the effect. Ingarden assumes that the word 'impossible' in 'It is impossible that C occurs while E does not occur' has its own meaning which is distinct from the meaning of 'contradictory' and is not reducible to something else.⁵

In *Streit I* Ingarden distinguished carefully four senses of ontological dependence:

- That an entity is existentially heteronomous ('seinsheteronom') means that the fundament of its being is not entirely in the entity. For example, Fjodor Karamasov is existentially heteronomous because his fundament of being is in the author, Dostojevski.
- That an entity is existentially derived ('seinsabgeleitet') means that, because of its essence, it can be created by another entity. An existentially original entity ('seinsursprünglich') is one whose essence forces it to exist and which therefore exists at all times, it is imperishable, it exists necessarily. God is such an entity. A materialist

⁴ Leibniz was, in my view rightly, criticised for this by Crusius 1744. Cf. Wachter, 2009, § 5.6.

⁵ For an explication and defence of this understanding of necessity, see Wachter, 2000.

might hold that there is matter that is existentially original.

- That an entity *x* is existentially non-self-sufficient upon *y* means that it can only exist together with *y* in the unity of a whole thing. The properties of a thing, which Ingarden takes to be not universals but individuals (today many call them ‘tropes’, Husserl and Ingarden called them ‘Momente’), are existentially non-self-sufficient upon that thing and upon some of the other properties of that thing because they cannot exist without being in that thing, together with some of its other properties.
- That an entity *x* is existentially dependent upon *y* means that it is not existentially non-self-sufficient upon *y* but that it requires for its existence the existence of *y*.⁶

Of course, Ingarden does not accept the Humean principle that distinct entities are independent from each other, i.e. if *x* and *y* are wholly distinct, then *x* can exist without *y*. For example, while empiricists usually hold that the properties of a thing are independent from each other (e.g. Campbell, 1990, p. 21), Ingarden holds that each property of a thing (which he takes to be not universals but individuals) is existentially non-self-sufficient upon many of the thing’s other properties.

Ingarden points out that a cause and its effect are not existentially non-self-sufficient upon each other (Ingarden, 1974, p. 16). They are not parts of a whole in the way in which the properties of a thing are parts of the whole thing. But Ingarden assumes that there is ‘existential dependence’ between cause and effect. An effect is not existentially dependent upon the cause, because it could have been caused by another event and because it may continue to exist when the cause has ceased to exist. But the set of events or states which is the ‘sufficient condition’ for the effect is existentially dependent upon the effect. So that a cause necessitates its effect is spelled out by Ingarden in terms of existential dependence. If *x* caused *y*, then *x* is the last one of a set of events, *c*, which together are existentially dependent on *y*. *c* cannot occur without *y* occurring. It is impossible that *c* occurs but *y* does not.

Of course, as Ingarden is not an empiricist, the impossibility meant here is not a linguistic or logical one but purely ontological (Ingarden, 1974, p. 62). There is no contradiction between ‘*c* occurred’ and ‘*y* did not occur’. *c* is existentially dependent upon *y* because of the ‘material essence’ (p. 19) of the cause and of the effect. That is, because of what the cause and the effect are, because of the qualities that are involved in these events. By this, Ingarden also rejects the view that the necessity in causation is grounded in

⁶ For the names of the various kinds of existential dependence I use Peter Simons’ translation (in Ginsberg, 1931, p. 263). An English translation of the relevant parts of *Streit I* is (Ingarden, 1964b).

laws. 'Laws have themselves no power over things' (p. 60), they only describe things.

So Ingarden assumes that there is a real connection between an immediate cause and its effect, and he specifies exactly what it is: it is one of necessitation through existential dependence. The cause, together with certain other events, drags the effect into being with necessity and thus without delay. Therefore immediate causes are simultaneous with their effect.

2.4 PERSISTING IN TIME

How does Ingarden do justice to the impression that often effects occur later than their causes, for example when an earthquake causes a tidal wave? He spells this out in terms of 'mediate' causes, which are connected with each other through processes. That *x* at time t_1 was a mediate cause of *z* at time t_2 means that *x* was the last part of a set of events which together were a sufficient condition for an event *y* at t_1 which is connected with *z* through a process. Processes for Ingarden are not causal. What else could they be? They are a matter of something simply staying the same, carrying on through time. When a thing persists in time, it moves 'from one present to another present' (Ingarden, 1974, p. 72). This is not a matter of causation: the existence of a thing at one time is not a cause of the existence of that thing at a later time (p. 73). Persisting through time or 'remaining in being' occurs because there is in things *an inclination to carry on* (p. 73, also p. 116).

Not only the persistence of things consists in simple 'remaining in being' (Ingarden, 1974, p. 73), also (some or all) other processes do. Ingarden's example is a thing that moves in a straight line. No forces are necessary for the continuation of the movement. It is the *same* movement at all times during a certain period. The movement is a changeless process which *just remains in being*. Ingarden calls that a *homogenous* process. A stage of such a process is, according to Ingarden, *not* a cause of the later stages. 'The later phases of that which simply remains in being are not effects of the earlier phases of that which remains in being' (p. 73).

So causation in the strict sense is a simultaneous relation. What relates a mediate cause and its effect is that something persists identically through time. If there was no diachronic identity, if nothing was to carry on identically through time, then world history would not be spread out over time but would collapse into one moment (Ingarden, 1974, pp. 40, 121). 'The processes which mediate between events and make them into relata of mediate causal relations, introduce the difference of time between them' (p. 121). For Ingarden, *causing is something distinct from persisting identically through time*. The former is simultaneous, the latter stretches over time.⁷

⁷ I have simplified Ingarden's view. While on p. 40 Ingarden writes that *processes* introduce the time difference between a mediate cause and its effect, on pp. 47, 72, 113, and 122 he writes that a mediate cause can be connected with its effect either through

3. Objections to Ingarden

I shall now raise objections, and then I shall argue that there are important insights in Ingarden's theory and develop a theory which takes the objections as well as the insights into account. The first objection against Ingarden's theory is that it is false that causes are simultaneous with their effects. We should clarify what this objection is about. On what does it depend whether it is false to say that causes are simultaneous with their effects? On how we use the term 'cause'? Or something more objective or deeper? I suggest that it first depends on which cases we usually call cases of causation, and then on how these cases *are* objectively. In many or even all cases where we call an event the cause of another event, the cause is *earlier* than its effect. For example, the earthquake caused the tidal wave, moving the light switch caused the lightening of the light bulb, the movement of billiard ball A caused the movement of billiard ball B. These are amongst the clearest and most typical cases of event causation. Even if Ingarden is right in his assumption that there are cases of ontological dependence between simultaneous events, the question is whether these are or should be taken to be cases of causation in the narrowest sense, and then whether all cases of causation involve existential dependence.

Consider an earthquake in the sea causing a tidal wave. Are there simultaneous events which are ontologically dependent on each other? Ingarden would say that the beginning of the movement of the ground is simultaneous with, and causes, the beginning of the movement of the water. Further, he would say that there is a causal relation between processes: the process of the movement of the ground causes the process of the movement of the water. As the earth and the water are clearly two different things, Ingarden's claim that the movement of the ground and the movement of the water are distinct events or processes is true. It is also true that they are existentially dependent on each other: the movement of the ground cannot

something remaining in the same state over some time or through a 'homogeneous process'. So here he is using a narrow concept of a process which does not include a thing's carrying on through time. By a homogeneous process ('gleichförmiger Vorgang') Ingarden means one that develops without change, i.e. without being affected by some 'force' (p. 116). An inhomogeneous process is one that changes through some force acting on it. Among the inhomogeneous processes Ingarden distinguishes between those that are changing continuously, through a constant force, and those on which at different times different forces are acting (p. 118). However, while Ingarden says clearly that homogeneous processes consist in simple remaining in being and that therefore a stage of it is not a cause of the later stages, he does not say clearly whether a stage of a non-homogeneous process is a cause of the later stages. He should admit that, as they are not changeless, they are causal, but that would be difficult to reconcile with his thesis that cause and effect are simultaneous or connected through non-causal processes.

occur without the movement of the water. As the ground and the water cannot occupy the same place, the ground cannot move without accelerating and removing the water. Thus in some cases there are simultaneous events which are ontologically dependent on each other. And it is natural to say that the movement of the ground 'caused' the movement of the water.

But now consider a lake, A, with a flood gate. When the floodgate is opened at time t_1 , then the water starts to flow into another lake, B. At time t_2 A is empty and B is full. Event O, the opening of the flood gate, was a mediate cause of event F, which is lake B being full at t_2 . Is there an event simultaneous with O on which O is existentially dependent and which is connected with F through a process? There is some event at t_1 on which O is existentially dependent, but it is not connected with F through a process. Every movement of a thing x is existentially dependent upon the simultaneous movement of the thing y which occupied the space to which x moves. But when y is not involved in the process leading to the later event, z, of which x is a mediate cause, then Ingarden's model of mediate causation fails. Not all causation occurs through simultaneous causation.

To see a further problem with Ingarden's theory, consider a universe with two bodies, A and B, moving away from each other through the gravitational force between them at time t_1 they are at rest. Then they accelerate through the gravitational force towards each other. At time t_2 they have velocity v_2 (let us assume that they have equal masses, then they have the same velocity at t_2), and at t_3 they hit each other with velocity v_3 . In this case it is true to say that the bodies' hitting each other with v_3 at t_3 was caused by the bodies' movement and their masses and their distance at t_2 . Again, the problem with Ingarden's theory is that the movement at t_2 is not existentially dependent upon some event which is involved in a process leading to the collision.

A further problem is that the process leading to the collision can hardly be analysed as consisting in something persisting changelessly and identically through time. Ingarden's line of thought is: a cause in the strict sense necessitates its effect; no event can necessitate a later event; the phases of something that persists changelessly and identically through time do not cause the later phases. His defense for taking the constant, unaccelerated movement of a body to consist in something persisting identically through time and not as causal is that the process is *changeless*. There is no force acting on it. Even if we granted that, in this example Ingarden would have no defense for his claim that causation is simultaneous and that processes are non-causal. There is a force acting continuously on the bodies, and the force is changing continuously. The process is not changeless in any way. Against Ingarden, we have to say that in this case there is no simultaneous causation and furthermore that the process does not consist in something persisting identically through time.

4. The necessity assumption

The reason for which Ingarden claims that immediate causes are simultaneous with their effects and that all causation involves immediate causation is his assumption that an effect must be *necessitated*. For every effect there is an ‘active sufficient condition’ (53), in the sense that there is a set of events or states of affairs (including the cause) which cannot occur without the effect occurring. From this Ingarden concludes that the effect cannot occur later than the cause. I shall now argue that this conclusion is correct but that a cause (or some set of events containing it) does not necessitate its effect. Let me add to Ingarden’s argument that if two events occur at different times, then there cannot be a ‘connection of being’ between them, the following brief argument.

If A and B are point events, then there can occur an event after A and before B which prevents the occurrence of B. If A and B are temporally extended and B begins later than A begins and ends later than A ends, then A cannot necessitate B either. After the beginning of A an event can occur which prevents the beginning of B. Even the occurrence of the whole event A cannot necessitate B because after the end of A—let us call this time t_2 something can occur which prevents the occurrence of a part of B, and then it is not true anymore that B occurred. One might object that if such an event occurred, then it had a cause at time t_2 which is incompatible with an event which is a part of A. But the event which prevents B may occur as the result of an indeterministic (probabilistic) process. So at t_2 there could be an indeterministic processes going on which could develop so as to collide with the process coming from A, preventing B. However big you make A, it cannot exclude that possibility. Furthermore, there could be a free agent who brings about after t_2 an event which prevents B directly. However big you make A, it cannot exclude that either, because at t_2 there is nothing which determines whether such an action will occur. Of course, there might be no free agents, but the mere possibility of their existence makes it already false that A necessitates B. The only way to exclude that B is prevented from occurring is to add ‘and nothing prevents B from occurring’. But ‘It is impossible that A occurs while B does not occur and nothing prevents B from occurring’ is not correctly expressed by saying that A necessitates B. No event necessitates a later event. Of course, when there is, as a matter of fact, nothing which could prevent an effect from occurring, then the effect will occur. But the necessitation thesis makes the stronger claim that if the complete cause occurs, nothing *could* prevent the occurrence of the effect. This leads to the idea that deterministic causal processes cannot be stopped. That this idea has been accepted by many philosophers is proven by the fact that many philosophers reject free will because they assume that there is a conflict between causation and free will.

That an event cannot necessitate a later event is a correct and important insight of Ingarden. But why should we accept Ingarden's assumption that a cause, or a 'sufficient condition', necessitates the effect? Cases like 'The earthquake caused the tidal wave' or 'The spark caused the explosion' are paradigm cases of causation, and there the cause is earlier than the effect. This shows not only that in the paradigm cases of causation the cause does not necessitate the effect, it also shows that we do not *mean* by 'cause' that it necessitates its effect. I have no explanation for why so many philosophers assumed that a (complete) cause necessitates its effect. The only reason for thinking that a cause necessitates its effect which I can see is that by 'A caused B' we imply that A as well as B occurred, so if A occurred but not B, then A was not a cause of B. But this so obviously does not entail that a cause necessitates its effect that I can hardly believe that anybody accepted the necessitation thesis for that reason. Let us see if we can find an adequate theory of causation if we assume that cases like 'The earthquake caused the tidal wave' are paradigm cases of causation and that causes do not necessitate their effects.

5. Tendencies

Ingarden mentions himself what in my view is the key to the correct understanding of event causation. Describing what persisting through time is, Ingarden says that there is a certain 'inertia' ('Trägheit') in things, an 'inclination to carry on' ('Neigung zum Weiterbestehen') (Ingarden, 1974, p. 73, similarly p. 116). Consider the universe described above with just two bodies moving towards each other at time t_2 . Now ask the question: How will that universe, U, carry on after t_2 ? It could carry on in many ways. Every possible state of a universe is what could come after t_2 . There could be after t_2 a universe with just five bodies, one which is as ours was in 1894 at noon, or there could be no universe at all. But all these possibilities are unlikely. What will be there after t_2 , if God does not cease to sustain the universe and if nothing else interferes, is two bodies moving towards each other. Why? Why is this possible way of carrying on so much more likely than any of the other innumerable possible ways of carrying on? Because of that which Ingarden calls an 'inclination' in things. But, contrary to Ingarden, there are not only inclinations towards carrying on changelessly and identically. In our example there is at t_2 an inclination towards carrying on with two bodies moving towards each other with a certain increasing velocity and an increasing rate of increasing (because the force gets stronger the closer the bodies move towards each other).

Following John Stuart Mill (1843, 3.10.5), I call such inclinations 'tendencies'. Tendencies towards the world carrying on in a certain way. Which way can be specified by specifying a later state of affairs towards

which the tendency is pointing. In the case described, there is at time t_2 a tendency T towards there being two bodies at certain positions at time t_3 . However, we should say that the same tendency is also a tendency towards there being two bodies at certain positions at a certain time between t_2 and t_3 . Any tendency at time t_1 towards S at t_2 , is also a tendency towards certain states of affairs at any time between t_1 and t_2 .

It is important to distinguish 'tendency' in this technical sense from tendencies which are ascribed to a thing or substance. One can use 'The body has a tendency towards moving to position B ' for 'There is a tendency towards the body being at position B at time t ', but tendencies are not borne by and do not inhere in substances. Usually there is not just one substance on which a tendency is based, and of the substances which are involved in the basis of a tendency only some of its properties are relevant. In the example given, the masses and the distance between the two bodies are relevant, whilst their temperature and their colour are not. Therefore tendencies are based on *states of affairs*, which are specified by saying which properties of which things are relevant.

When the world carries on following tendency T towards S so that S occurs, we say that T is *realised*. There is then a *process* leading from T 's basis to S .

However, a tendency need not be realised. For example when there is at t_1 a tendency T towards S and at t_1 another tendency T' , based on another state of affairs, towards a state of affairs that is incompatible with S , then only one of the two tendencies can be realised. The processes following T and T' then cross each other. More generally, when something brings about an event which is incompatible with the realisation of tendency T , then we can say that the realisation of T was prevented, that T was interfered with, or that something intervened in T or in the process following T .

We can distinguish tendencies of various strengths. The strongest kind of tendency is the one for which it is true that it is impossible for it not to be realised when nothing intervenes with T . That is, it is impossible that it fails to be realised just by chance. This we can call a deterministic tendency; a process following a deterministic tendency we can call a deterministic process. By contrast, an indeterministic tendency is one which *can* fail to be realised without there being anything to prevent its realisation. It just fails to be realised. There is a certain probability that it will not be realised. Indeterministic tendencies lead to probabilistic processes.

This notion of a deterministic process differs from the usual notion of determinism and of a deterministic process. Determinism, as usually understood, is the thesis that every event is necessitated by antecedent events. According to the usual notion, a deterministic notion is non-stoppable. But as events cannot be necessitated by antecedent events and as there cannot be nonstoppable processes, we do not need these notions and

can use the word 'deterministic' more usefully in the sense defined. Determinism then is the view that there are no probabilistic processes. Newtonian physics, for example, is in this sense deterministic, because it describes no probabilistic processes.

6. Causation

We can now describe what is the case where there is event causation. Where a tendency is realised, there is a process, a *causal* process. Causation is not to be understood in terms of pairs of cause and effect and of causal chains, but in terms of processes. A cause is connected with its effect through a process.

While a process can be stopped, when we say 'A caused B' we are implying that the process leading from A to B was not stopped. We can now say what causation is:

(C) In typical cases where x caused y, x was the basis of a tendency towards B and the tendency was realised.

I say in (C) only 'in typical cases of causation' and not 'in all cases' because we say also for example that the ball fell into the pocket because the other ball just missed it. The other ball did not do anything, it was not involved in any process leading to the effect. So we sometimes say truly that A caused B although A was not involved in a process leading to B. We can call this passive or negative causation. And of course we often call not events but free agents the cause of some event. When I freely throw a stone into a window, then I can truly be said to be the cause of the breaking of the window although I am not the basis of a tendency leading to the effect. So perhaps we can say instead of 'typical cases' 'all cases of active, positive event causation'. But in any case (C) is not designed to be a definition of the concept of a cause but a description of what is the case in typical cases of causation. If we want to call it a definition we can call it a 'real definition' instead of a 'nominal definition'. But because it does not just say what we mean by a 'cause', it is more suitably called a description or theory of causation. In this it is similar to Ingarden's theory of causation. But while Ingarden claimed that an effect has to be necessitated through existential dependence and hence that a cause has to be simultaneous with its effect, I have suggested that not existential dependence but the 'inclinations', whose existence Ingarden also recognises, are the mechanism of causation.⁸

⁸ For further details of the tendency theory of causation, see Wachter, 2009, chap. 5.

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