Causality and Causation in Law

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> Of all truths relating to phenomena, the most valuable to us are those which relate to the order of their succession. On a knowledge of these is founded every reasonable anticipation of future facts, and whatever power we have of influencing these facts to our advantage.
> John Stuart Mill, A System of Logic

Aleksander Peczenik's chief contribution to traditional legal science, apart from jurisprudence, is his monograph on "Causes and Damages" (1979). In this book he has analysed problems of causation with particular regard to Swedish tort law. It seems therefore an appropriate tribute to his work in legal science to continue the analysis of causation. In the following I shall discuss some questions, most of them pertaining to fields other than the law of torts, which deal with causation in a wide sense.

These questions are: 1) What is the relation between causality and causation in law? 2) What does causation mean in legal contexts other than ascribing responsibility? 3) What is the role of the logic of conditions in the analysis of causation in law? Although the questions are far too complicated to be analysed fully in the present context, it seems worthwhile to draw attention to them.

1. Occasionally there is in one language a single word or expression for a concept that in another language is represented by either of two different words, which are not quite synonymous. This linguistic feature indicates that there are really two different concepts, which can be confused when the former of these languages is used.

The Swedish word "*kausalitet*" (or "*orsaksförhållande*") seems in some cases to correspond to the English word "causality", in other cases to the English word "causation". Although even in English no consistent linguistic convention seems to exist, there are good grounds for distinguishing between these two related concepts, even though there is a connection between them.

2. The notion of "causality" belongs primarily to the natural sciences, particularly physics. It is therefore necessary to start with a short exposition of

this notion.[1] I do not pretend to know anything about physics, and I am aware that specialists, both physicists and philosophers, would present their arguments in a more rigorous way than I can do. However, I hope that what I say will be sufficient for lawyers.

Causality is a feature of the natural world that is intimately connected with the idea of laws of nature.[2] There are philosophical problems that will not be discussed here, since they have little bearing on the analysis of law that I am attempting here.[3]

The essence of the notion of causality seems to be that certain phenomena are connected with one another by relations that can be described as laws. I shall use the term "lawfulness" (without associating it with "law" in the legal sense) for such relations.[4] The nature of lawfulness lies outside the scope of this study.

On the borderline between science and philosophy there are some characteristics of causality that have a bearing on legal problems.

Connections that are purely logical (in a wide sense) are not causal. If X is the father of Y, Y is the child of X. This is not a causal relationship. Cause and effect are logically independent of one another.

Causal connections are deterministic. If a connection between two phenomena can be proved to be accidental or random, it is impossible to speak of causality or even determination. If a comet is seen in the sky at the same time as a war breaks out, this connection cannot form the basis of a causal argument.

An important kind of deterministic relation is the statistical one. If a number of people are exposed to X-ray radiation, and a greater proportion of these people than of the remaining part of the population develop cancer, and this fact cannot be attributed to any other general circumstances, there is a statistical determination connecting X-ray radiation and cancer. This differs from what is generally understood by causality.[5]

The causality in which we are primarily interested is concerned with special events. It is assumed that in the physical world there are some events that in the particular context will constitute causes and others that will be the effects of the

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1 The following is based mainly on M. Bunge, *Causality, The Place of the Causal Principle in Modern Science* (Harvard University Press, Cambridge Mass. 1959), H. Feigl, *Notes on Causality*, in: H. Feigl & M. Brodbeck, Readings in the Philosophy of Science (New York 1953), pp. 408 ff., J. Mackie, *The Cement of the Universe: A Study of Causation* (Oxford 1974), *Causation* (E. Sosa & M. Tilley eds., Oxford 1993). See for the philosophical aspects G.H. von Wright, *Explanation and Understanding* (London 1971), *Causality and Determinism* (New York 1974). See also A. Peczenik, *Causes and Damages* (1979) Ch. 10 and 11.

2 See Bunge, op.cit. pp. 22 ff.

3 The starting point is generally Hume's analysis. See D. Hume, *A Treatise of Human Nature* Part III, Section XIV (Selby-Bigge ed., 1888, pp. 155 ff.), *An Enquiry Concerning Human Understanding*, Section VII, Part I (Selby-Bigge ed., 1902, pp. 60 ff.).

4 The term is taken from Bunge, op.cit. p. 22 and passim. Bunge also speaks of "orderliness". Other terms are "nomic" and "nomological". They seem to relate chiefly to natural laws, and I therefore prefer the somewhat vaguer term.

5 There have been attempts to explain all causality on theories of probability; see W.S. Salmon, *Probabilistic Causality*, in Causation (supra fn. 1) pp. 137 ff., with references. As for statistical causation in the law of torts see infra 15.

former. In this sense the determination is unique.[6] The fact that in some situations we can only observe statistical connections does not falsify the hypothesis that the laws of nature with which we deal relate to special events. This may be the case in the example concerning X-ray radiation and cancer just mentioned. If we had better means of observation at our disposal and better knowledge of the physical and medical properties involved, we might be able to predict with absolute certainty who of those who have been exposed to X-ray radiation that will develop cancer. In general, even if we can only observe statistical correlations, we assume that there is unique causality underlying it. This is not the same as saying that everything is subject to unique determination, only that this is sometimes the case.

Causality as a kind of determination has some further characteristics that should be noted. It has a direction from cause to effect.[7] It is thus asymmetric.[8] If a blow causes the death of a person, the death cannot be the cause of the blow. On the other hand, a death may be the cause of a blow, as occurs in the (unusual) situation that someone deals a blow to a person when he knows him to be dead. Causality thus differs from "functions" which are non-directional: certain phenomena are positively or negatively correlated with one another, but no direction is ascribed to this relationship.[9]

Some modifications are in place here. A number of physical laws have no direction and can be described as functions but have, nonetheless, a causal application. Gravitation is, according to the mathematical formula, non-directional. However, in practice gravitation may operate in a way that allows us to call it directional. If an object falls down to the earth, the amount of mass of the earth is so much greater than that of the falling object that we are justified in saying that the gravitational force of the earth is the cause of the falling of the object.[10]

There are phenomena that are causally connected in both directions. We may say that a disease is causally connected with poverty at the same time as poverty is causally connected with the disease. If we describe such a state in causal terms, we will say that the two phenomena disease and poverty are reciprocally causal.[11] Depending on the circumstances, particularly whether we can change one event but not the other, we often consider the one that can be changed as the cause of the other.[12] If we do not want to commit ourselves to a notion of reciprocal causation, we can simply say that there is a positive correlation between the two phenomena. The latter description leaves open the question

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6 Cf. Bunge, op. cit. p. 26.

7 This seems to correspond to what Bunge calls the "genetic principle", op.cit. pp. 24 f.

8 Cf. von Wright, *Causation and Determinism* pp. 62 ff.

9 Bertrand Russell, in a well-known paper, *On the Notion of Cause*, in Myticism and Logic (1918, Pelican Edition pp. 171 ff.), argued that causality was no more acknowledged in modern science, which was only interested in functions. However, his arguments do not seem to be accepted any more.

10 See Bunge, op. cit. at pp. 148 ff.

11 Cf. Bunge, op.cit pp. 149 ff.

12 Cf. von Wright, *Causation and Determinism* pp. 68 ff.

whether and when the disease or the poverty is the cause or the effect or if both are the effects of a third factor.

There is also a direction in time. An effect cannot precede its cause. This feature may trouble philosophers more than lawyers.[13] Cause and effect may be contemporaneous, at least practically so, or reciprocal causation may operate over a period of time. In practice, this does not contradict the statement that an effect cannot precede its cause.

The characteristics of causality that have been mentioned until now can be summarized as follows. Causality depends on physical, lawful connections between events. It runs in one direction only, and an effect cannot precede its cause in time. It is at least fundamentally a relation between special events, not only a statistical connection between groups of events. These features can be said to describe "hard" or "strict" causality.

3. Although the short analysis presented above refers primarily to physics and other natural sciences, it is assumed that it holds also for a considerable part of the social sciences, as well as for a great number of everyday events and statements about such events. This assumption is only rarely associated with any conscious idea of causality, and even less of causation. If we light fires in order to heat our houses, we assume that there is a causal connection between fires and temperature. If we observe that some birds migrate between the North and the South depending on the seasons, we assume that this fact is due to causal connections, even if we cannot say what they are. If shortage of some kind of goods is followed by a rise in price, we also assume that there is a causal connection between the two events.

In everyday life, and more specifically in law, we admit a number of connections as being causal in a wide sense.[14] We call them by such terms as "influence", "acting upon", "bringing about", and "inducement". This kind of relationship can also be described from the point of view of the effect as something "arising from" or "being due to", etc. The word "cause" is sometimes used even when referring to such relationships. I shall use the expression "diffuse causality" and the corresponding expression "diffuse causation" to describe these relations.[15] Diffuse causality should be distinguished from statistical connections, since statistical connections refer to large groups, whereas diffuse causality can apply to a single case.

An important example concerns mental processes. We can say that the behaviour of X influenced the behaviour of Y, or even that X caused Y to behave in a certain manner. We assume then that there was some kind of causal connection, but the use of the word "cause", as in the latter example, does not

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13 Cf. von Wright, op.cit. pp. 62 ff.

14 Cf. von Wright, *Explanation and Understanding* pp. 135 ff., A.M. Honoré, *Causation and Remoteness of Damage*, International Encyclopedia of Comparative Law, Vol. XI:1 no. 7-31.

15 Honoré seems to use the expression "weak causal relation" with a similar meaning; see op.cit. no. 7-120. His discussion is influenced by the fact that he deals exclusively with tort liability. "Diffuse causality" may at least partly mean the same as what von Wright means by "quasi-causation"; see op. cit. pp. 142 f., 153. Von Wright also speaks of "lawlike uniformities"; see op.cit. p. 18.

mean that the connection is of the same kind as the one accepted as causal in the natural sciences or even in the social sciences.[16] Numerous varieties of causality in a wide sense can be found when looking at mental actions, ranging from unconscious reflexes to certain stimuli to well-considered actions undertaken after long deliberations. In my opinion it is sufficient when a case arises to examine whether a connection fulfils the requirements for the special situation or problem envisaged or not. An analysis of causality in a general sense is totally insufficient for solving problems of mental requirements in tort law. As an example can be mentioned the issue of deciding what kind of connection between the actions of two persons should be relevant for holding them liable for the tort of conspiracy.

Other types of diffuse causality concern relations between states, or between states and events. They are common in law, as will be seen later when e.g. connections between work and accidents are to be judged according to causal criteria (infra 9).

Such diffuse causality has important affinities with causality in a strict sense. Diffuse causality depends on lawfulness, although the laws are generally rather vague and subject to numerous exceptions. If we state that the summer weather influenced the crop, we assume that there is a causal connection, although it cannot be described with any precision. Diffuse causality has one direction only, except when we speak of reciprocal causality. The effect cannot precede the cause. However, the time relation may be somewhat uncertain, particularly when we speak of states rather than events as causes. An example is that the mental state of X is said to be the cause of his committing a crime.

4. It is in my opinion important to distinguish between the general notion of causality, which underlies our view of the world (or part of it), and causation, which refers to special issues that differ depending on the circumstances. If a Swedish legal scientist states that such "kausalitet" as is relevant in law is the same as that applied in philosophy or in the natural sciences, this may be true with regard to "causality", at least if the diffuse sense is included.[17] It is not true with regard to "causation". Whereas causality concerns the character of general laws or regular occurrences, causation concerns special problems that face us, many of them of a practical character.[18] Causation is not just subsumption of a special case under a general principle; it is generally an application of a general principle to a special case for a special purpose. One writer mentions as examples the following functions of statements regarding causation: 1) to explain the occurrence of particular events, 2) to predict future events, 3) to control events, 4) to attribute moral responsibility and legal liability, and 5) to fulfil certain technical applications of physical theory.[19] It can be noted that several of these functions have a direct application to law. However, statements

16 Opinions differ strongly regarding the causal element in mental processes. See e.g. Hart & Honoré, *Causation in the Law* (Oxford 1985) pp. 58 f., Mackie, *The Cement of the Universe* pp. 124 ff., von Wright, *Explanation and Understanding* pp. 83 ff.

17 Cf. Håkan Andersson, *Skyddsändamål och adekvans* (1993) pp. 162 ff. and pp. 305 ff.

18 See generally von Wright, *Explanation and Understanding.*

19 See J. Kim, *Causes and Counterfactuals* in Causation (supra fn. 1) pp. 205 ff. (p. 207).

regarding causation can be advanced without any claim that they are based on causality, as will appear in the following.

For causation, causal chains are particularly important. The event A is a cause of B, and B is a cause of C. The chain can of course continue much farther. This fact raises problems connected with diffuse causality. Even if we accept both the links that connect A and B and the link between B and C as causal in a diffuse sense, it is doubtful whether we can accept the combined link between A and C as causal even in a diffuse sense. It will appear later that accepting diffuse causation gives rise to special problems in law.

A failure to distinguish between causality and causation can easily lead to confusion. This is obvious when the statement "no event occurs without a cause", which is often discussed with regard to the natural sciences,[20] is supposed in legal writings to lead to the conclusion that a damage cannot be caused by the absence of an event, or, more specially, that a person's omission to act cannot be a cause of a harm that ensues later.[21]

A different kind of confusion may occur when problems relating to "multiple causation" and "compound causation" are treated under the heading of "cause in the logical sense", as if they were independent of legal rules.[22] The underlying idea seems to be that there are logical arguments that decide what is "real" causation, although the results may be modified when law is concerned. In my opinion this view is untenable. The fact that causation in law can be analysed to some extent in logical terms does not justify the conclusion that logic as such is part of the legal rules.[23] On the other hand, facts, including causal relations that can be analysed in logical terms, may be decisive for the legal judgement. This will be subject to further inquiry later on.

Still another type of confusion is found when causation is assumed - sometimes (mistakenly) with reference to the analysis carried out by John Stuart Mill - to embrace the notion that all the necessary conditions of an event are equal as causes.[24] Even if this is true for causality - a matter on which I will not express any opinion[25] - it is not true for causation.[26]

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20 See e.g. Bunge, op. cit. p. 4, von Wright, *Causation and Determinism* pp. 99 ff.

21 Cf. A.V. Lundstedt, *Culparegeln* (1955) pp. 164 ff, H. Andersson, op.cit. pp. 292 f., B. Dufwa, *Flera skadeståndsskyldiga* (1993) no. 2423 f. For the international discussion see Honoré, op.cit. no. 7-24 ff. See further Peczenik, op.cit. p. 361.

22 See, e.g., Hj. Karlgren, *Skadeståndsrätt* (1972) pp. 37 ff. However, eventually he admits that even the kind of causation that he treats under this heading is subject to legal rules.

23 Cf. Peczenik, op.cit. p. 59 (regarding a special problem): "No analytical skill is sufficient to justify a choice between those - and in fact some additional - alternatives."

24 See for Scandinavian tort law particularly F. Stang, *Skade voldt av flere* (Kristiania [Oslo] 1918) pp. 8 ff. Regarding Stang's notions of causation, cf. B. Dufwa, op.cit. no. 2439, 3202, 3217 ff., with references.

25 Cf. Feigl, op. cit. (fn.l) p. 410.

26 See particularly Honoré, op.cit. no. 7-58, 7-60 ff.; cf. Dufwa, op.cit. no. 2439 ff.

5. This leads us to the fundamental question concerning the relationship between causality, as outlined above, and causation in law.[27] The basic features of causality in a strict sense, which also belong to diffuse causality, are found in causation in the law. Consequently, logical and accidental connections between events or states cannot be considered to be causal. The asymmetry, which is apparent in the feature that the effect cannot precede the cause, holds also for causation in law.[28] However, the fact that states, rather than events, can function as causes, weakens the practical importance of this requirement.

Granting these similarities, it remains to consider whether we can identify any more features that characterize all causation in the law. It will appear in the following that it is difficult to find such common features. This is perhaps not so surprising when we consider the lack of consensus regarding the analysis of causation in general.[29] However, this does not answer the question of whether the difficulties depend on facts or on the lack of skill on the part of the analyst.

When attempting an analysis, we find two main possibilities, both of which have their counterparts in the more general analysis of causation in fields other than that of law. Each of these can be developed in various ways.

6. One such possibility is to base causation in law on general notions of causality. The main requirement that a judgement of causation has to meet will then be that of being based on external "lawfulness" Any particular case is then seen as an application of a general law. An analysis of this type is common in the treatment of causation having in mind its role in explanation.[30] In the discussion of historical explanation such a view is expressed in the "covering law" theory.[31] However, the role of "lawfulness" as a basis for explanation in historical science differs considerably from the use of causation in law, and drawing parallels is therefore not very helpful.[32] Among those who have written on causation in law, H.L.A. Hart & A.E. Honoré can be mentioned as

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27 A number of the points at least resembling those that can be made with regard to law can be made with regard to other fields of inquiry as well. See the various essays in Causation (supra fn. 1). However, it is not possible to attempt here to examine similarities and differences.

28 Cf. P. Horwich, *Lewis' Programme*, in Causation (supra fn.l) pp. 208 ff.

29 The differences of opinion appear clearly in Causation (supra fn. 1).

30 Cf. R.B. Braithwaite, *Scientific Explanation* (Cambridge 1953) p. 2: "To emphasize the establishment of general laws as the essential function of science is not to overlook the fact that in many sciences the questions to which the scientist attaches most importance are historical questions about the causes of particular events rather than questions directly about general laws. Biologists ask for the origin of life upon the earth, astronomers for the origin of the solar system. But the statement that some particular event is the effect of a number of circumstances involves the assertion of general laws; to ask for the cause of an event is always to ask for a general law which explains the particular event. Though we may be more interested in the application than in the law itself, yet we need to establish the law in order to know what law it is which we have to apply."

31 See C.G. Hempel, *The Function of General Laws in History*, in: Readings in Philosophical Analysis (Feigl & Brodbeck eds., New York 1949) pp. 459 ff. Cf von Wright, *Explanation and Understanding* pp. 18 ff., 24 ff. This theory has been contradicted particularly by W. Dray, *Laws and Explanations in History* (Oxford 1957).

32 Cf. J.L. Mackie, *Causes and Conditions*, in Causation (supra fn.l) p. 53 n. 28.

representatives of a "covering law" theory.[33] However, their opinion must be seen in the light of the fact that their study is limited to tort liability. In this field, particularly with regard to personal injury and damage to property, the role of lawfulness is strong.

Lawfulness, even in the strict sense, plays an important role in judgements regarding causation in law. The legal problem is then more or less identical with a scientific problem. An example is provided in a well-known Swedish case (see *Nytt Juridiskt Arkiv*, 1982, p. 421). Patients who had suffered injuries from X-ray examinations of the spine sued the manufacturer of the contrast liquid used in the examinations, alleging that a defect in the liquid had caused the injuries. The controversy concerned the question of whether there was a causal connection between the liquid being defective and the sustained injuries. Medical expertise had an important role in providing the basis for the court's decision. In addition the court made its own judgement, and as in many such cases the court's decision was based on questions of proof. The decision took also into account the possibility that the contrast liquid was not the principal causing factor but a contributory factor to the injuries.

Whereas the case mentioned illustrates that causality in the strict sense can be relevant in law, it certainly does not prove that strict causality is always required. Diffuse causality, including mental connections, must be recognized as being sufficient for basing judgements of causation in law. We must therefore decide which kinds of relations can be considered to belong to the "cause family". This is mainly a legal problem that cannot be solved by any reference to causality and causal laws.

It might be argued that, even if diffuse causality is admitted as the basis of judgements of causation, at least a connection based on lawfulness of some kind should exist between what is accepted as cause and effect.[34] Depending on the contents of a legal rule, the requirement of lawfulness can be made more or less precise. However, there must be a limit somewhere as to what can be considered as lawfulness.[35] I shall draw the line pragmatically: if evidence of general connections are considered relevant, there is in my opinion an element of lawfulness. On the other hand, if general connections are wholly irrelevant, we cannot describe the relationship as being causal.

Causation in law cannot be reduced to the question of whether lawfulness, either strict or diffuse, accounts for an effect. Even if there is no doubt as to the existence of lawfulness in a general sense, there remains the question of whether that lawfulness is relevant to the occurrence of an alleged effect in the actual circumstances. It is well known that water freezes to ice at a certain temperature,

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33 See Hart & Honoré, op.cit. pp. 15 ff. See also Honoré, op.cit. no. 7-53. The covering law theory has been criticised by J. Mackie, *The Cement of the Universe* pp. 40 ff., with some examples that do not seem to be relevant for tort liability. Cf. Hart & Honoré, op.cit. pp.xl f.

34 Cf. Peczenik, op.cit. p. 7, who requires "a law of nature, or a common-sense quasi-law-of-nature, or at least a convincing analogy" as connecting the cause with the effect. See further op.cit. pp. 335 ff.

35 E. Sosa, *Varieties of Causation*, in Causation (supra fn. I) pp. 234 ff., discusses whether the joining of a stump to a board, by which act a table is produced, should be considered to be the cause of the existence of the table. Clearly nothing resembling a natural law enters into the procedure.

and that salt prevents roads from becoming slippery because of ice. However, this knowledge is not sufficient for judging whether a failure to spread salt on a road was the cause of a car sliding on that road and being damaged.

As any question about causation depends on the purpose for which it is asked and on the context in which it arises, the answer also depends on these circumstances. Sometimes an event has occurred, and the question is whether another event can be considered to be its cause. In other cases an event has occurred, and the question is what its effects are or will be. The former kind of situation is by far the more common in legal contexts. But even when we ask about the cause of an event, the answer will often depend on the particular circumstances.[36] Hart and Honoré give an example.[37] A famine may from the point of view of the peasant be caused by a drought. From the point of view of the World Food authority, the cause may be the government's failure to build up reserves. In a lawsuit the parties and the claim, as it has been formulated by the plaintiff, will often decide what questions of causation, including the type of lawfulness, are relevant.

7. We shall now pass on to the second possibility, which is to examine questions of causation in the light of the logic of conditions.[38] In view of the value that is attached to this system with regard to the analysis of causation in a great number of contexts, it seems plausible that the system may be valuable when applied to law as well.[39]

The two main components of the logic of conditions are *the sufficient condition* and *the necessary condition*. Applied to connections between events, event A is the sufficient condition (*causa efficiens, causa causans*) of event B if events of type A are always followed by events of type B. Event A is a necessary condition (*conditio sine qua non*) of B if B would not have occurred if A had not occurred.

Whether the circumstances correspond to either or both of these situations can sometimes be established on the basis of the findings of science, as in the case reported in *Nytt Juridiskt Arkiv* 1982, p. 421, cited previously. In other cases such a question must be answered on the basis of common-sense considerations. In law we are hampered by the fact that experiments can rarely be carried out,

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36 This was recognised already by John Stuart Mill; see *A System of Logic*, Book III, Chapter IV, § 3, unnumbered footnote (p. 216 f. of the standard edition, impression of 1959). Mill discusses whether having a body can be the cause of an event and gives the following example: "If Faust and Mephistopheles together took poison, it might be said that Faust died because he was a human being and had a body, while Mephistoteles survived because he was a spirit."

37 See H.L.A. Hart & Tony Honoré, op.cit. pp. 35 ff.

38 An introductory work on the logic of sufficient and necessary conditions is K.E. Tranøy, *Vilkårslogikk* (Oslo 1973), on which much of the following is based. For a more advanced treatment of the subject see G.H.von Wright, *A Treatise on Induction and Probability* (London 1951) pp. 66 ff. and *Explanation and Understanding* (London 1971) pp. 43 ff. Cf. Peczenik, op.cit. pp. 331 ff.

39 Cf. von Wright, *Explanation and Understanding*, pp. 38 ff, and *Causation and Determination* p. 2.

and we are therefore left to draw more or less exact conclusions from our general knowledge of the past.

The normal way of establishing a sufficient condition is to examine cases that are different from one another, except for the fact that an event resembling A has occurred, and in which an event resembling B has followed. In the same way the normal way of establishing a necessary condition is to examine cases that are similar to each other, except for the fact that an event resembling A was not present, and an event resembling B has not followed.[40]

When event B has occurred, i.e. when we see the effect and ask for its cause, a judgement regarding sufficient and necessary conditions must be based on hypothetical considerations. The question will often be whether some other circumstance that would account for the presence or absence of B was present or absent. Conditions then correspond to "counterfactuals".[41] Arguments regarding causal connections in law can be based on investigations of the type mentioned above, subject to rules regarding proof. The kind of condition involved is therefore reflected in the way in which the condition's presence is demonstrated.

A number of modifications must be made when law is concerned. If we ask for a sufficient condition, the answer will depend on how much we take for granted as the background for our decision. If event B has occurred there must have been a total sufficient condition of its occurrence. However, this is rarely of any interest to a lawyer. His problem will generally be to establish whether a certain event A preceding B can count as a sufficient condition for B. In law as in everyday life the sufficient condition is often assumed to be identical with a marginal circumstance that leads to an effect, other circumstances remaining unchanged. If a glass is empty, pouring water into it may be considered the cause of water overflowing. If the glass is already absolutely full, one drop more into the glass is a sufficient condition for it to overflow. Depending on the circumstances both events may count as sufficient conditions and thus as causes. This corresponds to the normal situation in tort liability. However, in other cases the question of cause will not concern a marginal occurrence but deal with the issue whether an event has contributed to another event. The legal requirement is often that the contributory factor be more than an insignificant part of the total sufficient condition.

In a similar vein, a requirement of a necessary condition must be modified in order to correspond to law. Since strictly speaking each event is singular, every circumstance that occurred before the event and that is in any way related by lawfulness to the occurrence, would be a necessary condition for the event. The notion of a necessary condition must therefore be adjusted in order to exclude circumstances that are considered as insignificant.

The logic of conditions is on the one hand more general than the arguments relating to causation, since it takes no account of, e.g., a direction of events.

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40 As for the methods of establishing what are necessary and what are sufficient conditions, see von Wright, *A Treatise on Induction and Probability*, Chapter 4. The methods of "elimination" to which he refers are in practice often employed even by writers who do not mention the logic of conditions. See e.g. Honoré, op.cit. no. 7-117.

41 Cf. e.g. von Wright, *Explanation and Understanding* pp. 21 f., D. Lewis, *Causation*, in Causation (supra fn.l) pp. 193 ff., Kim, op.cit. pp. 205 ff, P. Horwich, op.cit. pp. 208 ff.

According to the logic of conditions, a sufficient condition can be defined in terms of a necessary condition and vice versa.[42] A cause, on the other hand, cannot be described in this way. The fact that a shot by X was the cause of Y's death may be analysed as the shot being a sufficient condition of the death, but not as the death being a necessary condition of the shot. The fact that oxygen was present can be analysed as a necessary condition of a fire, but one would hardly say that the fire was a sufficient condition of the presence of oxygen. The most that we can say is that the presence of oxygen was a necessary part of the total sufficient condition of the fire. For this reason the theorems of the system cannot be accepted when describing connections for which the asymmetry of causation is important.

On the other hand, the system of sufficient and necessary conditions is also more specific than causation, at least in law, since it does not allow for the various shades of meaning that are exemplified here by extending causation to cover also diffuse causation.[43] This has important consequences for the analysis. Generally speaking, the more the issues of causation in law depend on diffuse causation, the smaller are the possibilities of making use of the logic of conditions. However, this observation does not show us the extent to which it might be worthwhile to employ this method of analysis.

In a normal case cause corresponds to a both sufficient and necessary condition, although the stress in the particular case may be laid on either aspect, depending on the circumstances, particularly on the purpose for which the question of causation is raised.[44]

The theoretical system of sufficient and necessary conditions is valuable for the analysis of law in particular because it corresponds to the reality of control of, or power over, the development of events. By acts that constitute sufficient conditions, we can exercise positive control, i.e. cause events to happen, including the suppression of obnoxious effects of previous events that would otherwise have occurred. By acts that constitute necessary conditions, we can exercise negative control, i.e. prevent events from happening. We can prevent a fire from burning an object either by withdrawing the object from the source of the fire, or by eliminating oxygen from its environment.[45]

In my opinion the primary value of observing the logic of conditions in law consists in the fact that it draws our attention to the importance of control over events and to the type of control that is exercised. The logic of conditions is therefore associated with issues of legal policy to a greater extent than many other theoretical systems. Both our responsibility for the occurrence of harms and our credit for events that are desired depend largely on our having control

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42 Cf von Wright, *Causality and Determination* pp. 10 ff., Tranøy, op.cit. pp. 32 ff. The fact that sufficient and necessary conditions are defined reciprocally is a reason why the article by K. Marc-Wogau on *Orsak och huvudorsak* in Festskrift till Ekelöf (1972) pp. 485 ff. makes strange reading for many lawyers.

43 See further Tranøy, op.cit. pp. 103 ff, von Wright, *Explanation and Understanding* pp. 135 ff. Cf. Marc-Wogau, op.cit.

44 Cf. Tranøy, op. cit. pp. 86 ff.

45 See Tranøy, op.cit. pp. 19 ff., von Wright, *Causality and Determinism* pp. 44 ff., 50 ff.

over the chain of events that has led to the ultimate effect. It remains to be seen how far this element of control can explain the rules of causation in law.[46]

Making use of the theoretical system of sufficient and necessary conditions does not mean that an analysis applying its terms will provide complete answers to legal problems. In fact, a theoretical system can never do that, but it can help us in our understanding of the content of the rules so that we do not have to rely on intuitive notions of causation alone. In addition it can assist us for systematizing various problems according to exterior criteria.[47]

Necessary conditions are particularly important with regard to undesired events. They are therefore especially important for the law of torts. If we can eliminate a necessary condition of a harm, we can prevent that harm from occurring. Since a great number of circumstances will correspond to necessary conditions, control over any one of them can have the desired effect. The importance is enhanced by the fact that the relation of a necessary condition appears to be transitive, whereas more doubt attaches to the transitiveness of a sufficient condition. To be born is a necessary condition of a person's being alive at a certain time, and being alive is a necessary condition for that person's committing a crime at that time. Being born is thus a necessary condition for committing the crime. In this case the connection is trivial, but the example illustrates that the practical importance of necessary conditions depends largely on their transitivity. On the other hand, an event being the sufficient condition for another event, in the sense of it being the marginal circumstance for the occurrence of the latter event, hardly suffices for calling it the sufficient condition for each later event in a chain of events.[48] This is a consequence of admitting diffuse causation into the system. The fact that the ground is slippery may be considered a sufficient condition for a person falling, and the fall may be a sufficient condition for the person breaking his leg when falling. Yet we should hesitate to claim that the ground being slippery was a sufficient condition for the breaking of the leg. This latter prerequisite of liability is expressed in the legal context either by limiting the meaning of "cause", or by explicitly introducing extra requirements of liability such as that of "proximate cause" or "adequate causation". Another reason for the apparently minor importance of sufficient conditions in the law of torts is that the facts that correspond to a given act constituting such a condition have generally been considered already when deciding whether intention or negligence had occurred. See further infra 15.

However, control by human actions is not the only aspect that may lead to the use of causation in legal rules, as will appear later.

It is dubious whether the particular theorems of the logic of conditions have any value for analysing the details of legal rules relating to causation. For such

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46 The element of control should be of particular importance for the study of law and economics. How could statutory rules and precedents influence economy in the long run if they did not influence human behaviour? How could compliance with or breaches of legal rules influence economy if they were neither sufficient nor necessary conditions for the development of future events?

47 Cf. e.g. H. Andersson, op.cit. pp. 293 ff.

48 In the logic of conditions, a sufficient condition is a transitive relation. If A is a sufficient condition of B and B is a sufficient condition of C, A is a sufficient condition of C. See Tranøy, op.cit. pp. 55 ff.

details, historical reasons and various kinds of legal policy factors will play the main role.

8. The majority of legal writing on causation in the law has been (as has appeared already) focussed on responsibility, perhaps chiefly tort liability.[49] Although the leading monograph by Hart & Honoré is entitled "Causation in the Law", it is limited to responsibility problems.[50] The work by Aleksander Peczenik mentioned at the beginning of this essay is expressly limited to tort law, although he sometimes touches upon other fields of law as well. Thanks to these and other writers, causation in the context of responsibility has been analysed thoroughly. Much less energy has been spent on the analysis of causation in other fields. Knut Rodhe has mentioned the generality of the problem of causation, but the main part of his analysis is devoted to the foreseeability of the effects of an action.[51]

This leads us to the question whether there is any common connecting bond between the various uses of "causation" in legal rules, apart from what relates to responsibility. In order to find a basis for an answer to this question, I shall submit a number of rules to an elementary analysis, without going into details. The object here is solely to identify the kind of considerations that enter into judgements of causation. It is assumed that, as a matter of agreement with the accepted notions of causality, causation always implies non-accidentality, logically independent elements, asymmetry and a direction in time. Purely statistical relations will be excluded.

Two possibilities of finding unifying features have been mentioned: relying on lawfulness in a general sense, and making some use of the logic of conditions. To these can be added the element of control that, since John Stuart Mill, has been seen as the essence of the quest for causation. The discussion will therefore be focussed on these aspects. It may be noticed that most rules apply primarily to situations in which an event, B, has occurred, and the question will be whether another event, A was the cause of B. This means that the analysis may be different from what it would have been if we had looked for the effects of A under similar circumstances. Control is thus seen in retrospection.

9. A reference to causation is found in the *Act on Work-Connected Injuries (Lag 1976:380 om arbetsskadeförsäkring)*. Under this statute compensation presupposes in the first place an event described (somewhat vaguely) in Chapter 2, Section 1, para. 1, as an injury due to an accident or other harmful effect of the work ("*skada till följd av olycksfall eller annan skadlig inverkan i arbetet*"). If such an event has occurred, an injury that has been suffered is considered to be caused by the event if there are preponderant reasons supporting this view ("*skall skada som han ådragit sig anses vara orsakad av den skadliga inverkan,*

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49 Most systematic treatises on tort law contain parts on causation. As for myself, I wrote on causation at considerable length in the first three editions of my *Skadeståndsrätt* (1972-1976). In later editions (1985, 1995) I have abbreviated the treatment, in the hope that those who took an interest in the subject would partake of the earlier editions.

50 H.L.A. Hart & A.M. Honoré, *Causation in the Law* (2nd ed. Oxford 1985).

51 See K.Rodhe, *Obligationsrätt* (1956) pp. 297 ff.

om övervägande skäl talar för det"). This formula was introduced by an amendment of 1992, after previous practice - which also employed the notion of cause - had been found to benefit too extensively those who suffered injuries. As we see, there are two links of causal connection here: the first that the accident or some other event was work-connected, and the second that the injury was caused by the accident or the event. For the second link, the burden of proof is used to characterize the relationship. In practice, the two requirements are often examined together. The content of the principles can be better understood from case law than from the wording of the statute.

A recent case illustrating the aspects of causation can be found in *Regeringsrättens årsbok* 1996, not. 50. The courts discussed in great detail whether work in front of a computer screen could give rise to the symptoms of which the claimant complained. The decision of the Supreme Administrative Court was based on the prevailing opinion found in the international medical literature on the subject, according to which a connection of the alleged kind had not been proved.

In this case the judgement was based on lawfulness contained in the connection. The conclusions are based on empirical findings of the medical science. The relevant connection clearly corresponds to a sufficient condition of the harm. The possibility that the work acted as a contributory factor was also taken into account. The question of whether the work was a necessary condition was apparently not raised; it was probably considered irrelevant whether the claimant would have developed similar symptoms even if she had had some other occupation.

In this case the judgement regarding causation was based on lawfulness understood in the strict sense of the term, having been proved by medical expertise. The same is true of several other cases.[52] In yet other cases diffuse causation, in the form of a somewhat loose connection between the work and the injury, has been considered sufficient to make a given injury fall within the ambit of work-connected injuries. See e.g. *Regeringsrättens årsbok* 1995, ref. 75 (suicide due partly to personal reasons, partly to stressful work conditions).[53] In such cases it seems to be relevant not only whether the work was part of a sufficient condition but also whether it was a more or less necessary condition. This conforms to the general requirement of lawfulness as a basis of the rule. The element of control hardly appears in the field of work-connected accidents, since the social insurer has no control over the events that may lead to work-connected accidents. The main reason for referring to causation seems to be that it serves as a means of delimiting the range of injuries that the insurance covers. The reference to, and the reform of, the rule regarding the burden of proof seems a somewhat peculiar method of adjusting the scope of the insurance to the political decisions.

A connection of a more temporal than causal character is relevant when accidents suffered on the way to or from work are to be compensated for (Chapter 2, Section 1, para. 3). The connection with work is a necessary condition of the right to an indemnity, although risks at work, and thus the

52 See, e.g., *Regeringsrättens årsbok* 1996 not. 185, 223.

53 The claim was based on earlier law, yet the decision demonstrates the essential problems.

sufficient conditions of an accident, are irrelevant. The special coverage afforded for these accidents can be seen more as part of the wages or salary of an employee than as being connected with the work as such. There is no lawfulness in the connection.

10. A widespread use of the concept of causation is made in *insurance contract* law.[54] The details are generally specified by statute or by the insurance conditions. Only some general indications will be made here. There are two questions to be considered.

One concerns the delimitation of the coverage. The risk covered by insurance is generally described in the policies by indicating certain events, such as fire, theft (or burglary) and personal accident. When deciding what consequences of the insured event should be covered, there is a variety of choices, and most of them depend more or less on causation. The details vary according to the insurance conditions, but if these are not clear some general principle must be applied.

If an event of the indicated type constitutes a sufficient and necessary condition of a harm, it is generally indemnified. However, there are more complicated situations in which several factors contribute to a harm.[55]

The requirement that an event of the indicated type should constitute the "main cause" of the harm was common earlier on but it is not favoured now, except when the issue is to decide which of several possible types of insurance should cover a damage. Thus a personal accident insurance will cover the consequences of an accident, even if they are aggravated by a previous illness.[56] An alternative to the "main cause" principle is to limit the consequences that are indemnified by referring to the concept of "adequate causation", which, although belonging primarily to tort law, has been discussed in the context of insurance law as well. Both these two additional requirements fulfil several functions. They can restrict the insurer's liability to losses that will not endanger the economy of the insurance. They can also be employed for reasons of insurance technique, by providing workable, even if somewhat arbitrary, criteria for deciding what claims should be allowed. However, it has been objected that both the requirements mentioned here restrict too severely the right to an insurance indemnity. As a general rule it is therefore sufficient to decide that an insured event "contributed" to the harm.[57] This means that the insured is entitled to an indemnity if there is a loose causal lien between the event and the harm. Lawfulness is thus not excluded entirely. This lien includes elements both of sufficient and of necessary condition. Consequently, distinguishing between these two factors does not seem to make much sense.[58]

When an insured does not comply with a duty that has been imposed on him, Swedish law offers a variety of remedies. One is called the "causal rule" or (in

54 Cf. Peczenik, op.cit. pp. 21 ff.

55 The following is based mainly on J. Hellner, *Försäkringsrätt* (1965) pp. 100 ff.

56 See Hellner, op.cit. pp. 100 ff; cf. Peczenik, op.cit. pp. 189 ff., Dufwa, op.cit. no. 2462.

57 See Hellner, op.cit. pp. 103 ff.

58 See Hellner, op.cit. pp. 105 ff.

English parlance) the "but for" rule, under which no indemnity is paid unless it is proved that the harm would have occurred even if the duty had been fulfilled.[59] In terms of insurance conditions, this means that the breach of the duty was not a necessary condition for the harm. As an explanation of this rule, it may be argued that if the harm would have occurred even if the insured had complied with his duty, his non-compliance did not control the chain of events. It is not self-evident that such a circumstance should be of decisive importance. On the contrary, we find in other legal systems, and to some extent in Swedish law as well, rules that are less favourable to the insured.[60]

Another method of dealing with breaches of duty, which can be found in the Consumer Insurance Act (*Konsumentförsäkringslagen 1980:38*) Sections 30-34, is to reduce the indemnity according to the circumstances, among which the causal lien between the breach of duty and the damage is an important, but not a solely decisive factor.[61] Probably both sufficient and necessary conditions can be considered. Those who have objected to the leniency of the rule towards the insured can be assumed to be influenced by ideas regarding the importance of control.

It should be clear from this short survey that although causation plays an important role in insurance law, it can be fully – or almost fully – analysed by the means of conditions only in special cases. For particular judgements, lawfulness is often relevant.

The right to insurance benefits does not always depend on causal or even quasi-causal connections. Life insurance offers the best example: it generally covers death from all causes, and exceptions, e.g. in case of suicide, are comparatively insignificant.

11. *A broker's right to a commission* for his work depends, under the general principles governing the contract of brokerage, on his work having caused the sale.[62] According to the formula found in Section 21, para. 2, of the Swedish Estate Agents Act (*Fastighetsmäklarlagen 1995:400*), an estate agent is entitled to a commission only if the contract of sale has been entered into as a result of the agent's services as an intermediary between the retainer of his services and a person indicated by the agent. In earlier law there are numerous cases in which reference is made to a causal relation (*kausalsammanhang*) between a broker's work and the sales contract.[63] The wording of the decisions of the Supreme Court of Sweden indicates that the core of the argument concerns the fact that the broker's work has been a sufficient condition *in abstracto* for reaching a

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59 See Hellner, op.cit. pp. 206 ff.

60 Under English law, which regards insurance contract as a contract "uberrimae fidei", any breach of warranty is sufficient to make the contract void.

61 See Proposition 1979/80:9 pp. 62 ff; cf. *Konsumentförsäkringslag* (Statens offentliga utredningar 1977:84) pp.145 ff.

62 The principle is stated for Swedish law by M. Fehr, *Mäklarens rättsliga ställning*, Svensk Juristtidning 1925 pp. 89 ff. (pp. 102 ff.), and N. Beckman, *Rättspraxis om mäklarprovision*, Svensk Juristtidning 1970 pp. 605 ff. (pp. 613 ff.). For Scandinavian law in general see Sj. Brækhus, *Meglerens rettslige stilling* (Oslo 1946) pp. 396 ff.

63 See *Nytt Juridiskt Arkiv* 1975 p. 748, 1981 p. 259 and 1985 p. 219.

contract. He is thus entitled to the commission, even if the retainer of his services later turns to another broker who concludes the contract, or even when he concludes the contract himself without any assistance from a broker.[64] On the other hand, if one broker puts two parties in touch with each other but his efforts do not lead to a contract, whereas the work of another broker leads to the contract, the former broker is not entitled to a commission.[65] Under the general principles of the law of brokerage, the broker's services can entitle him to a commission even of they are not a necessary condition for the making of the contract. Sometimes the right to a commission under the terms of a contract can arise even without any causation whatsoever. This is often the case when a broker has been granted an exclusive right to sell property.

It may be asked how such rules, which as mentioned are explicitly explained by reference to causation, should be analysed. Clearly no "lawfulness" - either physical or social - is involved here. As far as I can see there are only two possibilities. One is to regard a sufficient condition *in abstracto* as a decisive factor for including the relation in the "cause family". The other is simply to regard the reference to causation as a convenient but incorrect label for the relevant relationship, in order to distinguish this type of contract from others in which the remuneration due to an agent is governed by other principles. In my opinion, the reference to causation is misleading, at least until the exact meaning has been explained.

12. A situation that has some similarity to brokerage occurs with regard to *salvage* in maritime law. Both the broker and the salvager perform their services on a basis of speculation, assuming that their efforts often will not receive any pecuniary compensation, but that if they succeed they will be rewarded with an amount that often exceeds greatly the value of the work performed in the given case.[66] Salvage is regulated in Chapter 16 of the Swedish Maritime Code (*Sjölagen 1994:1009*). The rules are based on an international convention.

A well-known principle in the law of salvage is that of "no cure - no pay".[67] The party that attempts salvage is not entitled to any compensation if his efforts do not succeed. This principle is assumed to include a requirement of causation existing between the salvager's act and the rescue.[68] Causation seems to signify here that the salvager's act constitutes a sufficient condition of the rescue, even though, contrary to the broker's commission, several parties can share the reward if they have all contributed to the success. Since sometimes several would-be salvagers compete for earning the reward, the right to a reward does not presuppose that the act of the salvager who actually carried out the salvage was a necessary condition for achieving the result.

The rules regarding salvage may seem to confirm a hypothesis stating that when a causal lien is relevant for obtaining a desired result, the predominant

64 See particularly *Nytt Juridiskt Arkiv* 1975 p. 748 at p. 755.

65 See *Nytt Juridiskt Arkiv* 1985 p. 219.

66 Cf. Sj. Brækhus, *Uaktsom berge*r, in: Festskrift till Hellner (Stockholm 1984) pp. 147 ff.

67 See for Scandinavian law Sj. Brækhus, *Bergning* (Oslo 1971), Th. Falkanger & H.J. Bull, *Innføring i sjørett* (Oslo 1995) pp. 406 f. with further references.

68 See Brækhus, *Bergning* pp. 20 f.

element is whether the alleged cause is a sufficient condition for attaining the result. However, it seems clear that the reference to causation - as well as an analysis in terms of conditions - describes the actual rules only imperfectly, especially with regard to cases in which several parties compete for a reward. In my opinion the reference to causation is misleading for the same reasons as those mentioned in connection with the broker's right to a commission.

13. In the law of contract, causation is intimately associated with the concept of *reliance*. It is impossible to analyse this concept in detail here, but a few words should be said. Reliance in a strict sense includes a causal element. The statement that a person has relied on a promise implies that the promise has had a causal effect on his behaviour.

Rules under which a causal effect is relevant should be distinguished from those that are intended to protect reliance, even when no such causal effect is found in a given case. Section 32, para. 1, of the Swedish Contracts Act, 1915, provides an example. This provision is generally considered to embody a "theory of reliance". It operates in favour of the recipient of a promise that by a mistake has gained content different from what the promisor intended, if the recipient did not and should not be aware of the mistake. However, reliance is not mentioned in the text of the provision, and the rule can presumably be invoked even if the mistake did not cause any change in the behaviour, or even in the expectations, of the recipient of the promise.

The law of sales offers other examples of rules for which no certainty exists with regard to the importance that should be attributed to the causation implied by reliance. In so far as it appears from the text of the Swedish Sale of Goods Act (*Köplagen 1990:931*), Section 17, para. 1, a seller is liable towards the buyer when goods sold lack qualities that are agreed upon. No proof or indication of a causal lien between a statement regarding qualities and the buyer's entering into the contract seems to be required. Such a connection is probably present in most cases in which a party claims that there is a breach of contract by the other party. The question of a connection becomes relevant particularly in cases when the real reason for invoking a breach of contract is that a party has changed his mind, or that the contract has become disadvantageous to him because of a change in business trends.

Section 18 of the Sales Act provides, on the other hand, expressly that the seller is liable for statements, including those given by certain other parties, if these statements can be assumed to have inf1uenced the sale *("kan antagas ha inverkat på köpet*").[69] The requirement of causation has thus been introduced into the rule. This rule relates to all the remedies for non-conformity of goods.

When a buyer claims damages, the requirement of damage implies that the breach of contract has had a causal effect on his actions, even though there is no such requirement for the exercise of other remedies. In this respect the contract rules concerning damages agree with the tort rules, even if the requirement of causation may not be identical.

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69 Similar statements of causal requirements are found in other provisions, e.g. Sale of Goods Act Section 19, para. 1, numbers 1 and 2, Consumer Sales Act (*Konsumentköplagen* 1990:932) Section 19, para. 1.

The requirement of causation that follows from reliance is based on "lawfulness", understood in the sense that is given to this term here, only to the extent in which mental influence can be said to imply lawfulness. The rules on contracts thus illustrate the problems characteristic of diffuse causation.

The expression "can be assumed to have influenced the contract" makes it clear that a statement is relevant whenever it is a necessary condition of the contract, in the sense that the buyer would not have bought the goods if he had been aware that the statement was incorrect. It appears further from the wording of the provision that a statement can also be relevant if it forms at least a part of a sufficient condition, i.e. if it has had a positive effect on the decision of the buyer to buy the goods.[70] Requirements of proof of the causal lien can be varied in order to suit the application of such provisions to different circumstances.[71]

14. Another situation, well-known in contract law, concerns *exemptions from liability, especially in the law of sales*. Even if a seller (or another party) according to the general rules is strictly liable for losses due to a breach of contract, an exception is generally made for certain circumstances, characterized as *force majeure*. These circumstances include war, labour conflicts, natural catastrophes, etc. Under the Swedish Sale of Goods Act (*Köplag 1990:931*) these events are described as those that lie beyond the seller's control and are also unforeseeable to him. Exemption presupposes further that such an event has influenced the non-performance of the contract, i.e. that it has had some kind of causal influence. There are a number of possibilities, the choice among which depends in the first place on the wording of the statute or contract, and in the second place on case law. These possibilities can be regarded as various types of diffuse causation. Only a few of these possibilities will be mentioned here.[72] One is that the seller is exempted only if performance of the contract has become impossible.[73] Another provision of a similar character exempts the seller if the event in question has prevented the performance.[74] Both these conditions indicate that the causal link between the event that provides exemption and the non-performance must be strong. More lenient to the seller are conditions under which he is exempted if performance has become "commercially impracticable" or "unfairly burdensome".[75]

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70 Cf. Proposition 1988/89:76 p. 88, B. Lehrberg, *Förutsättningssynpunkter på köprättens felbegrepp*, Svensk Juristtidning 1990 pp. 549 ff, J. Ramberg, *Köplagen* (1995) p. 279.

71 See Hj. Karlgren, *Avtalsrättsliga spörsmål* (l954) p. 93.

72 See e.g. Rodhe, op.cit. pp. 716 f. Eric M. Runesson, *Rekonstruktion av ofullständiga avtal* (1996) pp. 281 ff.

73 This was the rule under the Swedish Sales Act of 1905, Section 24. Cf. T. Almén, *Om köp och byte av lös egendom* (1960) § 24 at fn. 11 ff.

74 The Swedish provision (Sale of Goods Act sec. 27) has an expression which is a literal translation of United Nations Convention on Contracts for the International Sale of Goods, Article 79: "... that the failure was due to an impediment beyond his control and that he could not reasonably be expected to have taken the impediment into account at the time of the conclusion of the contract or to have avoided or overcome it or its consequences".

75 The commentary to the American Uniform Commercial Code § 2-615, section 1, uses the expression "commercially unpracticable". The expression "unfairly burdensome" occurs in standard form contracts.

These various exceptions can hardly be analysed profitably with reference to lawfulness, except possibly in such a wide sense that would make the concept almost void of meaning. On the other hand he exceptions seem to be intimately connected with the function of control. The various possibilities demonstrate the amount of a lack of control that will exempt the seller. Expressed positively the exceptions provide that control generally leads to liability.

However, the causal element that is common to all these possibilities, even though it may vary, becomes apparent when we compare them with rules and contractual clauses that do not contain any requirement of causation. This is the case when an exempting event forms part of a condition (in the strict legal sense of contract law). If a provision prescribes e.g. that a seller be no longer bound to perform the contract if a war breaks out in a certain region, this means that all notions of causation have been abandoned.[76]

One can then ask whether in a normal case, when a causal link of some kind is required, this link can be described in terms of sufficient and necessary conditions. My own contention would be that if the debtor would not have performed the contract even if the special event had not occurred, he can hardly be exonerated. This event must then be at least a necessary condition for non-performance. On the other hand, the effect of the event on the possibility of performance might also be examined from the point of view of the sufficiency of conditions for non-performance. However, it is dubious whether such an approach would contribute to the clarification of the various possibilities.

15. It is time to return to *tort law*. It can be assumed that the general features of causation, such as the fact that an effect cannot precede its cause, apply here, and it is not necessary to examine them further. It can also be assumed, without further argument, that judgements of causation in tort law can be made to cover a number of circumstances that are normally dealt with under other headings. This is especially true of negligence or circumstances that give rise to strict liability (cf. supra 7). The study of these questions lies beyond the scope of this essay.[77]

Some of the questions that were initially raised have already been discussed with regard to tort law. What remains to be dealt with in this context can be reformulated in the following questions: 1) Is there a general requirement of "lawfulness" as a basis of causation that would agree with the importance of this concept outside the field of law? 2) What is the role of the requirements of sufficient and necessary conditions?

1) My answer to the first question is that causation in tort law depends generally on "lawfulness".[78] It would be difficult to imagine a case in which a court should find that a connection which is purely accidental fulfils the law's requirement of causation. A merely temporal connection is generally irrelevant in tort law (*post hoc* is not considered equivalent to *propter hoc*). Causation can be diffuse, and mental connections are admitted as causal to an extent that varies

76 Cf. Almén, op.cit § 24 at fn. I00b.

77 Cf. Hart & Honoré, op.cit. pp. xliii ff., in response to criticism of the first edition of their work.

78 See supra 3, with reference particularly to Hart & Honoré.

according to the circumstances. A definite opinion on this question cannot be given without an extensive analysis of case law dealing with the subject.

Some of the problems relating to diffuse causation are in Swedish law referred to the special area of "adequate causation". The rules cannot be summarized in any few words, nor can they be reduced to a simple formula.[79] For those who are interested in the analysis of diffuse causation, "adequate causation" offers a large body of empirical material. Another common procedure for modifying the requirements of causation is to rely on rules of proof.[80] Although exceptions from the requirement of lawfulness are rare in tort law, they may be found when a guarantee is considered relevant, as occurs in product liability.

Statistical determinism is generally not considered sufficient for satisfying the requirement of causation in tort law. Statistical connections can, however, be considered as at least part of the proof of one-to-one connections. In modern law there are also examples of purely statistical connections being admitted as a basis for liability.[81]

2) It is more difficult to answer the second question. Various writers have expressed different views on the meaning of "cause". Some emphasize the necessary condition, others the sufficient condition.[82] "Cause" in tort law signifies in my view a condition that is both sufficient, in the sense of the tortfeasor's act being the marginal circumstance for producing the harm in the given case, and necessary, in the sense that the harm would not have occurred if the tortfeasor had not acted as he did.[83]

The importance of the concepts of sufficient and necessary conditions for the control of a chain of events has been mentioned before (supra 7). I have drawn attention to this aspect of the analysis of causation in my textbook on torts.[84] This example confirms the general thesis that tort law furnishes the best empirical material for understanding causation in law.

The term "necessary condition", or in Latin "*conditio sine qua non"*, is a frequently occurring expression in works on tort law. The term "sufficient

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79 Other questions that cannot be discussed here concern restrictions on liability which are discussed under the heading "scope of the rule" ("*Normzweck*", "*Schutzzweck*" and other terms in German, "*normskydd"* and other terms in Swedish). They can be regarded either as part of causation, assimilated with adequate causation, or considered an independent subject on their own. See e.g. Honoré, op.cit no. 7–99 and for Swedish law H. Andersson, op.cit. passim.

80 See A. Agell, *Orsaksrekvisit och beviskrav i skadeståndsrätten*, Valda skrifter ("de lege", Juridiska fakulteten i Uppsala årsbok 3, 1993) pp. 159 ff. Cf. generally Hart & Honoré, op. cit. pp. lii ff.

81 See Dufwa, op.cit, no. 2909.

82 See Hellner, *Skadeståndsrätt* (1st ed. 1972) pp. 141 ff.

83 A possible modification is that causation should be said to represent an "INUS" condition, which means the insufficient but necessary part of a condition that is unnecessary but sufficient for the result. See generally, Mackie, op.cit. pp. 34 ff. Cf. Peczenik, op.cit. pp. 14, 331. This appears to me to be an unnecessary refinement. Anyhow it does not provide any guide for solving the practical problems that emerge in tort law.

84 Hellner, *Skadeståndsrätt* 1st ed. (1972) pp. 141 ff., and more briefly 5th ed. (1995) pp. 195 ff.

condition" is more rarely used, but this does not mean that the concept does not play any role in the analysis of tort law. It can be used by implication.[85]

If the tortfeasor's act (or another event giving rise to a claim in tort) is both a sufficient and a necessary condition of the harm, in Aleksander Peczenik's terminology that would stand for *strong* causation. If, on the other hand, the act is not a necessary condition, because the harm would have arrived in some other way, the causation is *weak* in Peczenik's terminology.[86] This terminology seems to imply that in his view the sufficient condition is the more important aspect, since the lack of necessity can transform causation from strong to weak, but does not exclude causation altogether. My own view - even if not stated in exactly the same terms - agrees with Peczenik's. Most writers do not seem to take any clear position on this point, or may be that they frame the problems in other terminology.

The notion of a sufficient condition provides a general approach to problems of "adequate causation".[87] Both diffuse causality occurring in relations between contiguous events and causal chains connecting linked events are judged by such criteria.

The notion of a necessary condition has special importance for the analysis of multiple and compound causes, As indicated before, Peczenik deals with these by distinguishing between "strong" and "weak" causation.

Even if the general approach in which considerations of sufficient and necessary conditions is accepted as a means of analysis, the questions of detail must be discussed with the help of more specific arguments. As appears from writings on causation in Swedish law, especially those of Peczenik, a main consideration will be to decide what differences and similarities are justifiable from a functional point of view. An important aim of the arguments is to avoid that coincidence and arbitrary considerations determine who will receive an indemnity. Any further discussion of these subjects lies beyond the limits of this study. It is worth noting, however, that a number of questions that in philosophical literature are discussed as pertaining to the notion of causation, have their counterparts in practical legal problems, which are decided according to legal rules and principles.[88] This fact indicates that some of the philosophical discussion is concerned mainly with terminology.

A reference to sufficient and necessary conditions cannot be considered to imply that a given writer has accepted the logic of conditions as a basis for his analysis, for reasons that have already been indicated. If we study Tony Honoré and Aleksander Peczenik, the two writers who, as far as I know, have examined causation in tort law most thoroughly from a theoretical point of view, we find

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85 Cf. Hellner, op.cit. (5th ed. 1995) pp. 196 ff.

86 See Peczenik, op.cit. p. 6 and passim; cf. Hart & Honoré, op.cit. pp. lxv ff. Peczenik mentions also "redundant causal factors" (ch. 5), which are neither strongly nor weakly causal in the actual case but might be relevant if certain circumstances are changed. Cf. Mackie, *Cement of the Universe* pp. 43 ff. and Horwich, op.cit. p. 210, who speak of "causal overdetermination" for the case where the effect arrives in two different ways (a person is shot at the same time by two persons acting independently of one another).

87 Cf. Hellner, op.cit. (1995) pp. 202 ff. with references.

88 See e.g. Causation (supra fn. 1), the contributions by Lewis (pp. 193 ff.), Horwich (pp. 208 ff.) and Bennett (pp. 217 ff.).

that neither of them refers to the logic of conditions.[89] Their systematics are more pragmatic. Both recognize primarily the importance of the element of sufficient condition, although in different ways.

For Honoré the difference between "conditions" and "causes" is a starting point.[90] "Cause" corresponds to sufficient condition. Within the latter group he distinguishes between several subordinate groups (for instance "hypothetical alternative causes", "additional positive causes", "additional negative causes" and "additional frustrating causes").[91]

Aleksander Peczenik mentions the logic of conditions, but does not make any explicit use of it.[92] Much of his analysis is devoted to the study of differences between "strong" and "weak" causation. These appear particularly in problems concerning "overtaken causes", i.e. in situations in which two or more causes appear during the same period. Such rules as those concerning "*perpetuatio obligationis"* and "*casus mixtus cum culpa*" are also discussed from this point of view.[93] Even Peczenik's analysis of "adequate causation" is somewhat influenced by his focus on strong and weak causation.

16. The answers to the three questions posed initially appear to be the following:

1) Causation in law is primarily based on "causality" in a general sense, exhibiting the features that characterize this notion. It is thus a non-logical, deterministic, directional relation between actions, events and states. The place of "lawfulness" in the general description of causality includes in law the kind of regularities that characterize diffuse causality. However, it is uncertain to what extent even diffuse causality is required.

Similarly to causation in other areas, causation in law is concerned not with the character of general regularities but with special problems, among which ascription of responsibility and liability has a prominent place.

2) Causation in contexts other than those of ascribing responsibility covers a number of relations of varied character. This is due partly to the differences among various kinds of diffuse causality, partly to the differences in the purpose for which the notion of causation is employed. In some cases, the function of causation may be understood best by distinguishing it from other connections, such as temporal connections.

There are some legal rules that, according to the prevailing view, refer to "causation" but in which lawfulness does not play any role. The rules relating to a broker's right to a commission and to salvage in maritime law can be mentioned as examples. It has been argued here that it is doubtful whether we should retain the causation terminology for such rules.

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89 Several other writers, most recently B. Dufwa, op.cit. no. 2400 ff., and H. Andersson, op.cit., have analysed causation in Swedish tort law, but none of them seems to have approached the subject from the point of view of logic. A logical analysis of causation has been undertaken by Lennart Åqvist, but his analysis is technically too advanced for me to follow.

90 Honoré, op.cit. no. 7-16, 7-60, 7-107 and passim.

91 See Honoré, op.cit. 7-126, 7-132–135.

92 See Peczenik, op.cit. pp. 331 ff.

93 See op.cit. pp. 90 ff., 265.

3) The main features of the logic of conditions, i.e. distinguishing between sufficient and necessary conditions, can in my opinion often be valuable enough by drawing our attention to the importance of control. An analysis performed on this basis may also clarify other issues, even though many of them can be satisfactorily examined on an intuitive basis. The value of a theoretical analysis is therefore often limited. This fact can be compared with a situation in which an experienced lawyer can argue satisfactorily without having had any instruction in legal theory. It is unclear how valuable the details of the logic of conditions are to the lawyer. Nevertheless, on the basis of the slight evidence offered by this study one cannot preclude the possibility that such an analysis can be useful in some cases. The relationship between logic and common-sense reasoning seems to be still under dispute, and the same is true for logic and the law.

17. There remains a fundamental question: is there some unifying bond between all causation in law, whose presence or absence would enable us to say with any conviction that the use of the causal terminology is justified or that it is not? As can be seen from the preceding analysis, no definite answer can in my opinion be given to this question. The conclusion is that "causation in law" is not a uniform phenomenon and that it differs according to the context, within the boundaries set up by the fundamental requirements for causality and causation. Causation in law can thus be seen as a "family resemblance" concept in the Wittgensteinian sense.