

Application of deductive reasoning for determining relevancy of facts a new perspective of an old issue

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Abstract

The use of logic and reason has always been a topic of debate in the realm of evidence law. The paper dwells into the use of logic in the form of deductive reasoning to determine the relevancy of facts. It focuses on the feasibility of its application to facts which are causes and effects of a fact in issue or a relevant fact, and how that affects the relevancy of those causal and effectual facts. In order to decide on the question of its use in evidence law, a contrast is drawn to inductive reasoning along with the study of secondary sources. A study of S. 7 of the Indian Evidence Act, 1872 to find the applicability of deductive reasoning to facts that are causal or effectual with respect to another relevant fact or fact in issue. The same is also done with the use of expert evidence under S. 45 of the Indian Evidence Act, 1872. Lastly, the paper seeks to identify whatever pitfalls exist in this particular hypothesis. This paper tries to find out whether it is wise and enough to use deductive reasoning to find the relevancy. It also tries to find out whether this approach is safe so as to not hurt the end goal of justice.

Keywords: evidence law, Indian evidence act, deductive reasoning, relevancy of facts and Section 7 of the Indian Evidence Act, 1872

Introduction

The application of logic and reason has been a hotly debated topic in law in general, and the law of evidence in particular. Naturalists believed law to be a rational extension of nature's laws based on general principles of morality, while positivists considered law to be whatever the sovereign deems it to be. Evidence law, however by its very nature of being inquisitive and truth-seeking, does affirm more to naturalist principles than positivist ones. Some even consider a study of law of evidence to eventually end up on a path of veritism^[1]. This paper, however, does not cede to such a cynical view and rather concentrates on building a case for the application of the principles of deductive reasoning to relevancy of fact. As relevancy is a humongous chapter, it is not possible to focus on every single aspect, and so this paper is focused on the feasibility of its application to facts which are causes and effects of a fact in issue or a relevant fact, and how that affects the relevancy of those causal and effectual facts.

The paper is divided into three parts. In the *first* part, I discuss the legal provisions, basic jurisprudence, and the legal positions related to facts, relevant facts and facts in issue. I then proceed, in the *second* part, to form arguments on the application of deductive reasoning to law, by first examining the basic concepts of deductive reasoning contrasted with inductive reasoning, going on to prove using secondary sources that there is a case for applying deductive reasoning to law. I then extend that argument by establishing in the *third* and final part, on how the principles of deductive logic would apply to facts that are causal or effectual with respect to another relevant fact or fact in issue, as governed by Section 7 of the Indian Evidence Act, 1872. I suggest associating this methodology with the use of

expert evidence under Section 45 of the Act to ensure that the application is scientific and rational. I conclude with a brief discussion on the apparent pitfall associated with this hypothesis.

Part I

Fact, Relevant Fact

The term fact includes any mental condition of which a person is conscious as per its definition under Section 3 of the Indian Evidence Act^[2]. This was observed by Lord Justice Bowen when he said "the state of mind is as much a fact as the state of his digestion"^[3]. However, a person has to be conscious of a mental condition for it to be considered as a fact under the definition given by Section 3. This is based on the language of Section 14^[4] and the apparent objective of the provision then seems to be inference of relevance of acts from simple mental phenomenon, away from the distractions that constant interaction with complex mental issues of fear, anxiety, apprehension, etc. that the courts have to deal with on a daily basis. Then there is the extremity of unsoundness of mind. All these considerations put together make it seem that rational inference does not

² Section 3, Indian Evidence Act, 1872

"In this Act the following words are and expressions are used in the following sense,...

"Fact" means and includes-

(1) anything, state of things, or relation of things, capable of being perceived by the sense;

(2) any mental condition of which any person is conscious."

The definition is so inclusive that words, opinions, and even having a certain reputation is considered a fact.

³ *Edgington v Fitzmaurice* (1885), 29 Ch D 459.

⁴ Section 14, Indian Evidence Act, 1872

"Facts showing the existence of any state of mind, such as intention, knowledge, good faith, negligence, rashness, I will or good-will or good-will towards any particular person, or showing the existence of any state of body or bodily feeling, are relevant, when the existence of any such state of mind or body or bodily feeling is in issue or relevant."

¹ Mike, R. Rationality, Naturalism and Evidence Law, 2003 L. Rev. M.S.U.-D.C.L. 849 (2003). Pp. 883.

share an equal footing with mental condition, as per the definition given in Section 3 of the Evidence Act ^[5]. Merely its existence does not grant the fact any status, however. It is only the fact that is relevant which will interest a court of law ^[6]. “[W]hen an inference is to be founded upon the existence of such a connection, every step by which the connection is made out must either be proved, or be so probable that under the circumstances of the case it may be presumed without proof” ^[7]. Therefore, a fact must have a certain probative quality for it to be considered relevant. But, relevance in itself does not bestow on a fact the quality of admissibility. That has to be earned by the fact. It has to ensure that it does not fall within any of the exclusionary provisions under Chapter II of the Evidence Act. In other words, any fact connected in one or more of the conditions laid down by the provisions of the act, specifically the sections 5 to 55 that relate to relevancy of facts. The general rule for determining where the boundaries of legal relevancy, though extremely obsolete, lie is to observe the dictum of *res inter alios actae alteri nocere non debent* ^[8]. So evidence must not be admitted if it pertains to something which was said or done behind the back, or in the absence of a party.

Facts in Issue

However, our focus is not on the entire set of facts but a unique subset of the facts in issue, which too is defined under Section 3 of the Act as any fact which is connected, by itself or through further facts, with the existence, nature or extent of any legal rights or duties ^[9]. The connection can be established in two ways. One, that they may by themselves or with the help of other facts establish legal inference of the existence of a legal right or duty. For example, presence of motive, opportunity, and murder weapon on P_x makes it a likely conclusion to draw that P_x has in fact committed the murder. Or, facts which themselves are not in issue can affect the chance of another fact to come into issue and can be used as relevant fact. Those facts in issue which are necessary to establish the existence, nature and extent of a legal right or duty are considered as principal while all other facts in issue are secondary. Thus, the determination of their principality is based primarily on substantive law and secondarily on the subject-matter of the parties’ pleading ^[10]. Indian courts have had a very open-minded/ liberal approach towards inferring relevance and acknowledging a fact as a fact in issue on the basis of another fact in issue. For example, witness testimony based on listening to another witness who had been present on the scene and had recounted immediately after occurrence, the version of events that had

occurred in their opinion, including the name of the accused involved, has been considered to be a relevant fact ^[11]. It needs to be clarified that though a fact based on personal knowledge can be relevant, but it should be devoid of guesswork if it is mentioned in a sworn statement ^[12]. Admissibility of a fact no matter how relevant, however, is subject to public policy and any fact could be thrown out unless it is shown that it is proved by the prescribed or the best evidence. A relevant fact may also be inadmissible for want of preliminary proof ^[13].

Part II

Deductive Reasoning and Its Contrast with Inductive Reasoning

The Greek philosopher Aristotle, who is considered by many to be the father of deductive reasoning, wrote the following classic example to explain this logical process:

Syllogism No. 1

All men are mortal.

Socrates is a man.

Hence, Socrates is mortal.

Aristotle’s logic exercise, an example of what is also known as a syllogism, in a common form of which a main premise is followed by a minor premise, both self-evident truths that logically lead to a conclusory statement. Deductive logic requires doing a top-down reasoning where the premises of his argument - the universal mortality of man and the masculinity of Socrates -- are both correct, as is self-evident. Since the premise establishes that Socrates is an individual of a larger group that consists of men, and that every individual member of this group being a human is mortal, it leads us to the inevitable conclusion that Socrates, by virtue of him being both a human being and masculine, is a mortal man. Two kinds of reasoning are used in a scientific process which seeks to accomplish a true conclusion in a logical manner. They are the two antonymous reasoning methods of scientific reasoning, deductive and inductive. It is easy to confuse the two and hence a deliberation on their differences is mandated.

Deductive reasoning is considered to be one of the basic forms through which a reasoning exercise that is valid can be undertaken. Deduction, requires beginning a thought exercise with a hypothesis (which could easily be a general statement) and examining the probability of reaching a particular, rational conclusion.¹⁴ This scientific methodology utilises the science of deduction to test whether the assumed theories and hypotheses are both rational and true. The scientific method often uses deduction in order to test hypotheses and theories. "In deductive inference, we hold a theory and based on it we make a prediction of its consequences. That is, we predict what the observations should be if the theory were correct. We go from the general — the theory — to the specific — the

⁵ *Anant Babu Rao Sawant v. State*, AIR 1967 Bom 109, pp. 116-117.

⁶ Woodroffe and Amir Ali’s Law of Evidence, 19th Ed., Vol. 1, edited by BM Prasad, LexisNexis Butterworth Wadhwa, 2013, pp. 211.

⁷ *Ibid*, pp. 212, (quoting Sir JF Stephen, Introduction to Evidence Act, 1893, p.70)

⁸ Latin for “things done between strangers ought not to affect a third person, who is a stranger to the transaction,” as expressed in *C D Field’s Commentary on Law of Evidence Act, 1872 (act 1 of 1872)*, 13th Ed., Vol.1, edited by Justice Arijit Pasayat, Delhi Law House, 2011, pp. 352.

⁹ According to Section 3 of the Evidence Act, “[t]he expression “facts in issue” means and includes –

any fact from which, either by itself or in connection with other facts, the existence, non-existence, nature or extent of any right, liability, or disability, asserted or denied on any suit or proceeding, necessarily follows.”

¹⁰ *Supra* 8, 353.

¹¹ *Jetha Ram v. State of Rajasthan*, AIR 1979 SC 22, 24.

¹² *Sitaram Srigopal v. Smt. Daulati Devi*, AIR 1979 SC 1225, 1227; *Anant Baburao Sawant v. State*, AIR 1967 Bom 109, 116-117.

¹³ *Halsbury’s Laws of England*, 3rd Ed., Vol. 15, 482, pp. 263-64 (as quoted by *Supra* 8, 355).

¹⁴ California State University, *Deductive Reasoning*, Internet Resources to Accompany the Sourcebook for Teaching Science, available at <http://www.csun.edu/science/ref/reasoning/deductive_reasoning/index.html> Last accessed on April 20, 2020.

observations."¹⁵

Deductive reasoning is undertaken by assuming a premise, followed by another, then another, and so on until a logical inference is reached. A usual method of using deductive logic is through the use of syllogisms.

Syllogism No. 2

All bats are mammals.

All mammals can walk.

All bats can walk.

Syllogisms are perhaps a nice way to establish whether a logical conclusion is rational or not. If the premises are true and the conclusion is a direct logical inference from those premises, then the conclusion is true and the deductive process yields a true result, as exemplified by syllogism No. 1. However, if any of the premises are false, as in syllogism no. 2, then the conclusion will be an absurd statement that does not make any sense.¹⁶

Inductive Reasoning

Inductive reasoning, by contrast, requires one to make generalization that are broad in nature from specific observations. It consists of inferring conclusions from the available data.¹⁷ "In inductive inference, we go from the specific to the general. We usually make many observations, try to find out a pattern, make a generalization from it, and infer an explanation or a theory. In science, there is a constant interplay between inductive inference (based on observations) and deductive inference (based on theory), until we get closer and closer to the 'truth,' which we can only approach but not ascertain with complete certainty."¹⁸ An example of inductive reasoning would be:

Syllogism No. 3

Evidence 1 from crime scene is in favour of P_p.

Evidence 2 from crime scene is in favour of P_p.

Evidence 3 from crime scene is in favour of P_p.

Therefore, all Evidence from crime scene is in favour of P_p.

Even if all the premises assumed in a logic experiment are true, inductive reasoning leaves the possibility of reaching a false conclusion. To make a point,

Syllogism No. 4

P is a murderer.

P used a knife.

Therefore, all murderers use knives.

The conclusion is not a logical inference from the premises even though the premises are true. Both deductive and inductive reasoning are important in the scientific process. Induction helps form theories and hypotheses, and deduction allows one to test them in specific conditions.

Legal Application of Reasoning in General And Deductive Reasoning In Particular

Naturalists considered law to be one of the sciences. In the nineteenth and early twentieth centuries, scholars used to believe that the laws of a society should reflect the laws of nature. By extension, the laws of society should be in accordance with the principles of logic and scientific reason that governed the goings on in nature, as was believed by most educated people born of and after the Renaissance and Enlightenment. And just like they considered laws of society to be an extension of laws of nature, they also believed that since law was derived from the general principles of natural justice it was but a science deduced from general principles of morality.¹⁹ Some scholars have traced this tradition back to the fourteenth and fifteenth-century schools of jurisprudence.²⁰

While there is a case to use syllogisms in order to bring more rationality to our jurisprudence and to bridge the gap between law and science by increasing the rationality of the former to bring it at par with the latter, it would be more prudent to think of the brief of a particular case as not one standalone deduced syllogism, but as a garland of individual strands of syllogism, which can be called "multisyllogisms" or "polysyllogisms". The multisyllogistic approach to a case is a useful method to clearly describe the basic foundational structure of the method of legal reasoning. This methodology can lead us to making connections such that items of evidence that establish the nature of the law could be minor premises on which legal arguments could be based, while the various kinds of legal arguments that make up a case could form the major bases for making more rational legal arguments.²¹

Part III

The Provision

"Facts which are the occasion, cause, or effect, immediately or otherwise, of relevant facts, or facts in issue, or which constitute the state of things under which they happened, or which afforded an opportunity for their occurrence or transaction, are relevant."²² This provision is based on the principle that a fact can be properly appreciated only if the state of things under which that fact occurred could be determined with certainty. There are two ways to establish whether some evidence is admissible, either list all the admissible kinds of evidence or the inadmissible kind and match the disputed evidence with the list to figure out whether it is admissible. The bulk of the law, however, is negative and majorly consists of deliberating upon what kind of evidence should be excluded and the reasons for the same.²³ The most obvious reason for academicians and jurists alike doing this seems to be a hesitation in boxing the space of admissibility of a piece of evidence. Nobody wants to form a general principle of what kind of evidence should be admitted, because there can always be a case which does not fit any of the conceivable circumstances which seemed fantastically related when developing such principle.

¹⁵ *Deductive Reasoning v. Inductive Reasoning*, Live Science, (quoting Dr. Sylvia Wassertheil-Smoller, a researcher and professor emerita at Albert Einstein College of Medicine). Available at <<https://www.livescience.com/21569-deduction-vs-induction.html>> Last accessed April 20, 2020.

¹⁶ *Supra* 13.

¹⁷ *Inductive and Deductive Reasoning*, Utah State University, available at <<http://ocw.usu.edu/English/introduction-to-writing-academic-prose/inductive-and-deductive-reasoning.html>> Last accessed on April 20, 2020.

¹⁸ *Supra* 14.

¹⁹ Wilson, H. *The Use and Limits of Deductive Logic in Legal Reasoning*, Santa Clara Law Review. 2002; Vol. 42: pp. 818.

²⁰ Roscoe Pound, *Introduction to the Philosophy of Law* 13, 15-16 (1965)

²¹ *Supra* 18.

²² Section 7, Indian Evidence Act, 1872.

²³ *Supra* 6, pp. 745 (discussing Sir James Stephen, *Introduction on Indian Evidence Act*)

Section 7 solves the problem created for judges when considering the admissibility of a fact by widening the scope of the connection between facts by including facts which are not part of the 'same transaction'.²⁴ This new mode of connection can either be one of the causes of a fact, or one of its effects. It could be providing an opportunity that would lead to the occurrence of the fact, or it could even be a constituent of the state of things which were present when the occurrence of the fact took place.

Occasion, Cause and Effect

A cause or an effect may have evidentiary value in circumstantially establishing the occurrence of an event. There are three modes by which this inference can be made, prospectively, retrospectively and concomitantly.²⁵ Presence of a storm in the area prospectively evidences a ship's sinking; the charred remains give retrospective evidence of a fire; a person sitting in a car is concomitantly made aware of the car's motion by the revolution of its wheels. There is a dearth of judicial rulings on this kind of inference despite its practicability, mostly because for most external events testimonial evidence is readily available.²⁶

There are two ways how such a cause and effect could be the basis of inference of an event in an evidentiary way. First, prior cause could show an inference of a future event.

Syllogism No. 5

Traffic rules violations are fined.

P_f violated traffic rules.

P_f will pay fine.

Secondly, subsequent effect could be used as an evidence to prove that a prior event, that caused such an effect, occurred.

Syllogism No. 6

All evidences point to P_y committing the crime.

P_y was present at the scene, had motive, and opportunity.

P_y committed the crime.

To take another example,

Syllogism No. 7

An arson destroyed all buildings on MG Road.

P_m shop was in a building on MG Road.

P_m shop was burnt in an arson.

While determining the occurrence of an event from its prior cause is easier given the relative abundance of evidence that one should naturally assume would be available in such a case (it is much easier to analyse a fire by the charred ash it leaves behind than using its nascent fumes to gauge the extent of damage it will cause in the future). But it is the exact opposite when it comes to determining the occurrence of an event from its subsequent effect. One has to enquire into the state of things in which the subsequent effect was caused by building upon other facts and other events. This can most rationally be done with the help of deductive

reasoning, by undertaking a top-down analysis of the circumstances and establishing a probable causation between the subsequent effect and the event which caused it. Then comes the consideration of whether the cause could have occasioned the subsequent effect. If one takes the true result, and works his way up towards a primitive event which could prove causation, taking self-evident truths as the intermediary assumptions at every stage, until one finally comes at a point when all probable causes except the one remaining have been invalidated by the presence of contradictory evidence or by using one's reasoning faculty, then the probable cause which is left, no matter how improbable, is the only probable reason that could be deduced.

The efficacy of this method depends on the logic and rationality of the premises as well as testing whether the conclusion inferred from the premises is logical and true. This requires use of reliable methodology by properly qualified witnesses to offer relevant and informed testimony which would assist the finder of fact.²⁷ This is where jurors and lawyers require the help of expert witnesses in trying to establish the properties and circumstances of the end-result and then figuring out what could have been the cause of it. It must, for instance, be shown that Z was travelling on his motorcycle in a risky way at dangerous speed, or that the fire had the ability to destroy the house that it engulfed, which can be determined only if the subsequent event is analysed by an expert who then uses his expertise to offer an opinion on how the occurrence of that subsequent event could have been brought about by the presence of the specific set of conditions and circumstances that would have created the disputed legal right or duty.

Conclusion

Even though deductive reasoning plays a crucial part in the science of legal reasoning, logic alone is not enough to solve difficult cases. An attempt towards reducing each verdict of each and every case to an argument that is constructed by employing the use of deductive reasoning, the non-deductive aspects of legal reasoning could be vulnerable to exposure. It is only in cases where the law is unquestionably valid and consists of unambiguous ruling terms that such a system built on pure logic could be feasible. Resolution of complex cases requires maintaining a balance between inter and intra-modal arguments, in which it is not only the individual arguments and their strength that is evaluated, but the relative weight is examined of the moral values that form the supporting base for our justice system, as necessitated on a case-by-case basis and the the relative weight of these moral values that hold our very own legal system, as implicated in the case at instance. Which is why I have suggested that it could be applied to determine the relevancy of a fact connected in a causal or effectual way with a fact-in-issue, in the event that they are not part of the same transactions, a situation governed by Section 7 of the Indian Evidence Act. Though courts have been reticent in applying deductive reasoning effectively in their jurisprudential exercises, it can be used in corroboration with expert testimony to establish the effect of deductive reasoning on the weight of a certain piece of evidence. However, one must also proceed with caution, as "[i]t is a capital mistake to theorize before you have all the evidence.

²⁴ Section 6, Indian Evidence Act, 1872.

²⁵ "Relevancy of facts forming part of same transaction. - Facts which, though not in issue, are so connected with a fact in issue as to form part of the same transaction, are relevant, whether they occurred at the same time and place or at different times and places."

²⁶ George, Gordon B. *Book Review of The Science of Judicial Proof by John Henry Wigmore*, Virginia Law Review. 1938; 25(1): pp. 123

²⁷ *Supra* 8, pp. 832

²⁷ *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993).

It biases the judgment”²⁸. I leave with one last naturalist syllogism.

Syllogism No. 8

All law should be rational.

Law of Evidence is a law.

Law of Evidence should be rational.

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²⁸ Another aphorism by Sherlock Holmes, *A Study in Scarlet*, Chapter 3.