

Presumptions in Legal Argumentation

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Abstract. In this paper a theoretical definition that helps to explain how the logical structure of legal presumptions is constructed by applying the Carneades model of argumentation developed in artificial intelligence. Using this model, it is shown how presumptions work as devices used in evidentiary reasoning in law in the event of a lack of evidence to assist a chain of reasoning to move forward to prove or disprove a claim. It is shown how presumptions work as practical devices that may be useful in cases in which there is insufficient evidence to prove the claim to an appropriate standard of proof.

Recent work in the interdisciplinary area between artificial intelligence and law has advanced logical models of presumption and the burden of proof using an argumentation approach (Gordon and Walton 2009; Prakken and Sartor 2009). However, presumption and its companion notion of burden of proof have been said to be two of the slipperiest concepts in law (Strong 1992, 449). After surveying the various notions of presumption in the law of evidence, and showing how disparate they are, Allen (1981, 865) commented, “the ambiguity and confusion surrounding presumptions continued unabated.” However, Allen (1980) has argued that presumption can be understood in law as a device for shifting the burden of persuasion in a trial setting. This view represents the approach we take in this paper, basing our analysis on the theory that, in addition to the burden of persuasion and the burden of producing evidence, there is a third kind of burden in legal reasoning, called the tactical burden of proof (Prakken and

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Sartor, 2009). Both in law and in the argumentation literature generally, it is often said that a presumption is a device that shifts the burden of proof back and forth from one party to the other in a dialogue. Recent work in artificial intelligence and law has produced precise models of burden of proof that not only draw the traditional distinction between two kinds of burden of proof, the burden of persuasion and the burden of producing evidence (burden of production), but also introduce a third type of burden called the tactical burden of proof.

In the theory outlined in this paper, a presumption in evidential reasoning is an assumption that a fact obtains, an assumption that can be made without proof in some situations. Thus it will be shown by examples that a characteristic of presumption is that it is a proposition accepted as factual in law, even though it has not been proved. This characteristic links it to another one: a presumption is a statement that is accepted in law even though it does not meet the burden of proof that would normally be required for the statement to be acceptable to a standard of proof appropriate in a framework of legal evidence. It will be shown how presumptions are useful in situations where there is a lack of evidence.

Much recent work in artificial intelligence and law, and in the related field of argumentation studies generally, has now adopted a dialogical model of argumentation. In this paper we show how this dialogical model can be used to draw a much clearer distinction than was possible in the past between presumption and related notions in legal argumentation. We see our paper as a contribution to the new evidence scholarship, an interdisciplinary field of research that uses formal models of reasoning and computational tools for representing legal argumentation to move forward with the intention of supporting Wigmore's claim that there is a science of proof underlying the law of evidence (Park and Saks 2006). We begin with an outline of recent work on the burden of proof in artificial intelligence and law that briefly shows how this approach is based on an argumentation model. In this model an argument is seen not only as an inference from premises to a conclusion, but also as presupposing a context of dialogue in which two or more parties take turns, making moves in the form of speech acts.

1. The Dialogical Framework

Prakken and Sartor (2009, 228) have built a logical model of the burden of proof in law. The burden of persuasion specifies which party has to prove an ultimate *probandum* in the case, and also the standard of proof that has to be met. The burden of production specifies which party has to offer evidence on some specific issue at some stage during the argumentation in the trial. Both the burden of persuasion and the burden of production are assigned by law, whereas the tactical burden of proof is decided by the

party putting forward an argument during a move. The judge is supposed to instruct the jury on the standard of proof to be met at the beginning of the trial. The burden of production may in many instances only have to meet a low standard of proof. If the evidence produced does not meet the standard, the issue can be decided as a matter of law against the relevant party, or decided in the final stage by the judge. Both the burden of persuasion and the burden of production are assigned by law. The tactical burden of proof, on the other hand, is decided by the party putting forward an argument at some stage during the proceedings. The arguer must judge the risk of ultimately losing on the particular issue under discussion at that point if he or she fails to put forward further evidence concerning that issue.

The relationship between the burden of persuasion and the burden of production works differently in criminal and civil cases (Prakken and Sartor 2009, 225–6). In civil cases the general rule is that the burden of persuasion is on the party making the claim, as well as the burden of production for any claim made, while both burdens are on the other party for an exception. For example, in the case of a dispute over a contract, the party claiming that a contract exists has to prove that there was an offer that was accepted. These are the two elements of proving a contract. However, there can be exceptions to this rule: for example, one party might claim that the other party deceived him. In such a case, both the burden of production and the burden of persuasion that there is a contract are on the party making the claim, but then the burden of production shifts to the party claiming an exception. In criminal cases, on the other hand, the burden of production and the burden of persuasion may be on different parties. In criminal cases, the prosecution has to meet the beyond reasonable doubt standard to prove that the defendant is guilty. This principle also covers the nonexistence of exceptions. No weakness in its argument can be left by the prosecution, or proof beyond reasonable doubt will not be established.

For example, in a murder case, the burden of persuasion is on the prosecution not only to prove the two elements that there was a killing and that it was done with intent, but also to prove the nonexistence of an exception, such as the claim that the killing was in self-defense. However, the burden of production for proving an exception is on the defense. For example, a defendant who has pleaded self-defense will have to produce evidence to support this claim. Once this burden of production has been met, even by means of a small amount of evidence, not large enough to meet the requirements of the beyond reasonable doubt standard, the burden of persuasion that there was no self-defense is then on the prosecution. It is in this kind of case that the language of shifting the burden of proof is often used to describe the logical mechanism of what has happened.

According to Prakken and Sartor (2009, 227), the distinction between the burden of production and tactical burden of proof is usually not clearly made in common law, nor explicitly considered in civil law countries. However, they add that the distinction is relevant for both systems of law, because it is induced by the logic of the reasoning process. Certainly it is not easy at first to clearly grasp the distinction between the burden of production and the tactical burden of proof, but from the point of view of understanding the burden of proof as a concept of logical reasoning, both in law and in everyday conversational argumentation, it is important to attempt to do so.

The distinction can be clarified by going back to the example of a murder trial in which the prosecution has provided evidence to establish killing and intent, and the defense has produced evidence in favor of a plea of self-defense. In such a case, if the prosecution does not rebut the claim of self-defense by putting forward a counterargument, they stand a good chance of losing the case. In such an event, we can say that not only is the burden of persuasion on the prosecution, but also the tactical burden of proof with respect to the plea of self-defense (Prakken and Sartor 2009, 227). What is especially interesting is the observation that such a tactical burden can shift back and forth between the parties any number of times during the trial, depending on “who would be likely to win if no more evidence were provided” (Prakken and Sartor 2009, 227). To revert to the example, suppose that the prosecution has now produced evidence that goes against the previous argument for self-defense, and the defendant has not rebutted that argument. It is now the defendant who stands to lose. The tactical burden of proof, it can be said, has now shifted to the defendant. However, it is important to note that according to Prakken and Sartor (2009, 227) the burden of production never shifts. Once it has been fulfilled, it is disregarded for the rest of the trial. In their view, the tactical burden is the only one of the three burdens that can properly be said to shift.

The Carneades Argumentation System is an extremely useful instrument for analyzing the burden of proof. This is a mathematical model consisting of definitions of mathematical structures and functions based on these structures (Gordon, Prakken and Walton 2007). It is also a computational model, meaning that all the functions of the model are computable. It defines the mathematical properties of arguments that are used to identify, analyze and visualize real arguments. Carneades models the structure and applicability of arguments, the acceptability of statements, and proof standards. It has been implemented using a functional programming language, adopting a graphical user interface.¹ Carneades models argumentation as a dialogue in which two parties (in the simplest case) take turns to perform moves in the form of speech acts, such as asking a question or putting forward an argument (Table 1).

¹ <http://carneades.github.com>

Table 1 Some Types of Speech Act in a Dialogical Format

Speech act	Dialogue form	Function
Question (yes-no type)	S?	Speaker asks whether S is the case.
Assertion (claim)	Assert S	Speaker asserts that S is the case.
Concession (acceptance)	Accept S	Speaker incurs commitment to S.
Retraction (withdrawal)	No commitment S	Speaker removes commitment to S.
Challenge (demand for proof of claim)	Why S?	Speaker requests that hearer give an argument to support S.
Put Argument Forward	P_1, P_2, \dots, P_n therefore S.	P_1, P_2, \dots, P_n is a set of premises that give a reason to support S.

A dialogue is formally defined as an ordered 3-tuple $\langle O, A, C \rangle$ where O is the opening stage, A is the argumentation stage, and C is the closing stage (Gordon and Walton 2009, 5). Dialogue rules (protocols) define what types of speech acts are allowed in moves by the parties during the argumentation stage (Walton and Krabbe 1995). The initial situation is framed at the opening stage, and the dialogue moves through the opening stage toward the closing stage. The burden of persuasion is established at the opening stage of a dialogue, while burdens of production and tactical burdens are brought into play at the argumentation stage. The shifting back and forth of the tactical burden during the argumentation stage has an effect on whether the burden of persuasion specified at the opening stage is met or not. This effect is calculated and summed up at the closing stage, determining which side has won the case by producing evidence sufficient to meet the standard of proof that has been set for it.

Carneades uses this dialogue structure to model standards of proof that can be met by arguments. For an argument to meet the scintilla of evidence (SE) standard, there must be at least one applicable argument² for a claim made. For an argument to meet the preponderance of evidence (PE) standard, SE should be satisfied and the maximum weight assigned to an applicable *pro* argument (for the claim) needs to be greater than the maximum weight of an applicable *con* argument (against the claim). For an argument to meet the clear and convincing evidence standard (CCE), PE should be satisfied, the maximum weight of applicable *pro* arguments should exceed some threshold α , and the difference between the maximum weight of the applicable *pro* arguments and the maximum weight of the applicable *con* arguments should exceed some threshold β . Finally, for an argument to meet the beyond reasonable doubt (BRD) standard, CCE must be satisfied and the maximum weight of the applicable *con* arguments must be less than some threshold γ . The thresholds α , β and γ are left open, and not given fixed numerical values.

² An argument is considered to be applicable if its premises are not defeated and there is no exception to the inference.

It is highly questionable whether a precise definition of the beyond reasonable doubt standard suitable for use in the courts can be given. Courts have often held that the legal concept of reasonable doubt cannot be defined precisely, for example by citing numerical probability values (Tillers and Gottfried 2006). However, presumptions have been analyzed in argumentation theory considering their dialogical function of shifting the burden of proof (Pinto 1984; Walton 1993, 2008b). Thus, by formulating standards of proof in a dialogue model of argumentation like Carneades, part of the work is done to gain a better understanding of how presumptions work by shifting the burden of proof in dialectical settings. It is precisely this sort of dialectical model that can be used to analyze how presumption functions in reasoned argumentation.

2. The Two Dimensions of Presumption: Defeasible Inference Structures

Godden and Walton (2007) summarized several different theories of presumption in argumentation studies from Whately onwards. However, the approach taken in this paper defines presumption in terms of an inference with three components (Ullmann-Margalit 1983, 147): (1) the presumption-raising fact in a particular case at issue, (2) the presumption formula, i.e., a defeasible rule that sanctions the passage from the presumed fact to the conclusion, (3) the conclusion, a proposition that is presumed to be true on the basis of (1) and (2). Rescher (2006, 33) helpfully outlined the structure of this type of inference as follows.

Premise 1: *P* (the proposition representing the presumption) obtains whenever the condition *C* obtains unless and until the standard default proviso *D* (to the effect that countervailing evidence is at hand) obtains (Rule).

Premise 2: Condition *C* obtains (Fact).

Premise 3: Proviso *D* does not obtain (Exception).

Conclusion: *P* obtains.

This analysis is on the right track, in our view, because it defines a presumption using a defeasible rule. The problem is that it does not go far enough to enable us to tell what the difference is between a defeasible rule and a presumption. In our view a presumption is a special type of defeasible rule. In contrast, the Prakken-Sartor (2006) model represents presumption as equated with the rule that is part of a defeasible inference, and that takes the form of a defeasible generalization. As an example, they use a case where the plaintiff demands compensation on the ground that the defendant damaged his bicycle. The burdens of production and persuasion that the bicycle was damaged and that he owned it are on the

plaintiff. One way he can prove that he owns the bicycle is to demonstrate that he possesses it. According to Dutch law in such a case, given possession, ownership of the bicycle can be presumed. The presumption in such a case can be expressed by the proposition that possession of an object can be taken as grounds for concluding that the person who possesses the object owns it. According to the Prakken-Sartor theory, this proposition has the form of a defeasible rule, and generally speaking, any legal presumption can be cast in the form of such a defeasible rule. The defeasible rule is this proposition: normally if a person possesses something, it can be taken for granted that he owns it, unless there is evidence to the contrary. It is held to be a defeasible rule in the Prakken-Sartor theory in the same way as the following proposition: if Tweety is a bird, then normally, but subject to exceptions, Tweety can fly. Such a proposition is a defeasible rule in that it holds generally, but can default in the case of an exception, for example in the case that Tweety is a penguin. The argument map shown in Figure 1 can be used to give the reader an initial idea of how presumption works as an argumentation device in the Carneades model. In Figure 1, the text boxes are nodes of the graph that represent propositions (statements) that can be premises or conclusions in a chain of argumentation. The ultimate proposition to be proved in a case is displayed on the left. It is called the ultimate *probandum*. The lines and arrows represent arguments from premises to a conclusion. Arguments are represented by the circles shown in Figure 1. An argument can be pro or contra with respect to the conclusion that the premises are supposed to support. All three arguments shown in Figure 1 are pro arguments, that is, they are arguments that present evidence that supports the conclusion. Figure 1 is intended to represent the typical kind of case in which the bringing forward of a presumption is part of a chain of argumentation representing a body of evidence supporting or attacking a designated conclusion.

In the situation in Figure 1, there is insufficient evidence to prove the claim. This implies that there is some evidence, and that this evidence is insufficient to prove the claim that is the ultimate *probandum* in the case. It is shown in the middle of Figure 1 that the reason why there is a lack of sufficient evidence to prove the conclusion is that the argument fails to meet its required standard of proof. The role of a presumption in such a

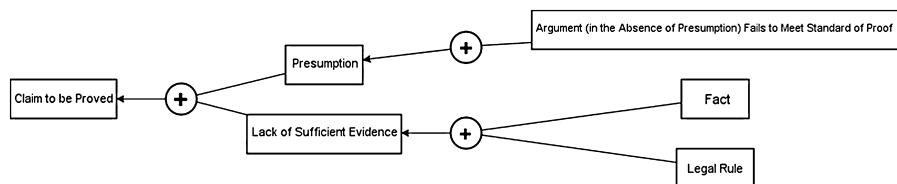


Figure 1: The function of a presumption in a mass of evidence in a typical case.

case is to act as an additional premise in the argument (in some instances it could be a separate argument) that can overcome this lack of evidence, by appeal to a legal rule that functions as a generalization that can be combined with a fact in the case to make an inference. What this shows is that a presumption is made up from premises of a fact and a legal rule that join together in a defeasible inference to generate a conclusion that can fill a gap in an argument caused by lack of sufficient evidence to meet a standard of proof.

3. Presumptions in a Dialectical Perspective

Presumptions can be distinguished from assumptions or ordinary statements because the respondent in a dialogue cannot simply reject them; in order not to make a commitment to a presumption, the interlocutor needs to provide a rebuttal (Walton 1993, 139–40). If we consider presumption from a dialectical point of view, we can notice that the dialectical move of presumption consists of three essential elements. (1) It must be based on a generally accepted principle of inference (otherwise it would be an assumption). (2) It is used in conditions of lack of evidence to meet a standard of proof (otherwise it would be an ordinary defeasible inference of any kind). (3) It is used to shift a burden of proof in types of dialogue characterized by an opposition of viewpoints and argumentation, such as persuasion dialogue (Walton 2010).³ The rationale behind this kind of definition of the notion of a presumption was shown in Figure 1 using the graphical interface of the Carneades system. In this model, in order to establish a judicial proof of a claim, there has to be an assumption that enough evidence has been collected so that this conclusion can be established for meeting an appropriate standard of proof. The four standards of proof used in Carneades' definition (Gordon and Walton 2009) can be used to give the reader an idea of how appropriate proof standards can be set in an orderly procedure of argumentation in a model of evidential reasoning.

Figure 2 shows the paradigm case in which a presumption is brought forward within a mass of evidence that has been presented to support a claim to be proved on one side of the case. In the Carneades graphical user interface, when a proposition appears in the shaded text box with a checkmark in front of the proposition, it means that this proposition has been accepted. When a proposition appears in the text box where the background is white, and a question mark appears in front of the proposition, it means that the proposition is questionable. To say it has been stated means that it has not been accepted. The shaded boxes in the middle column show the three elements that make bringing forward a presump-

³ It is used in a different way in deliberation dialogue (McBurney et al. 2007) where the aim is to decide what to do in a situation with changing circumstances.

tion a useful move. First, there is some evidence to prove the claim; second, there is lack of sufficient evidence to prove the claim; third, there is no evidence to disprove the claim.

If we look at all the shaded boxes in Figure 2, we can see that the evidence is insufficient to prove the claim on the left of the figure. However, let us say that in this situation, a presumption could be brought forward that would fill the evidential gap. This kind of situation is shown in Figure 3.

The transition between the evidential situation represented in Figure 2 and that represented in Figure 3 shows how Carneades works as a model that can be used to represent argument evaluation. As shown in Figure 3, once the law stating the presumption has been brought in and joined to an appropriate fact in the case (not shown in the diagram), the presumption is accepted. Once the presumption is shown as accepted, provided the presumption along with the other arguments in the case is sufficient to prove the claim shown on the far left, Carneades automatically shows the claim to be proved as accepted. In other words, Carneades displays the claim to be proven with a checkmark in front of it in a shaded box. When the system is used on a computer, it shows all such boxes colored in green, to contrast them with the text boxes that are shown with no color.

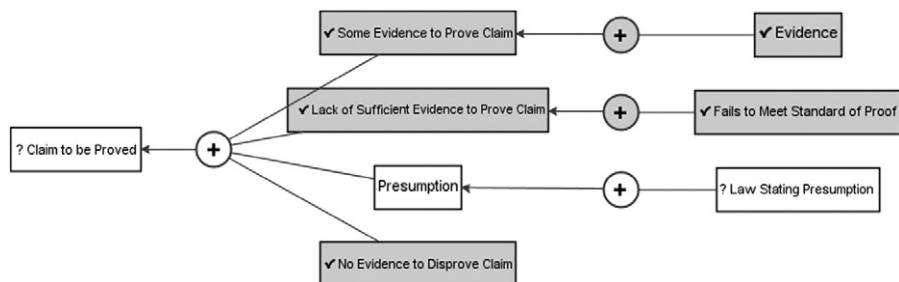


Figure 2: Evidential situation before a presumption has been accepted.

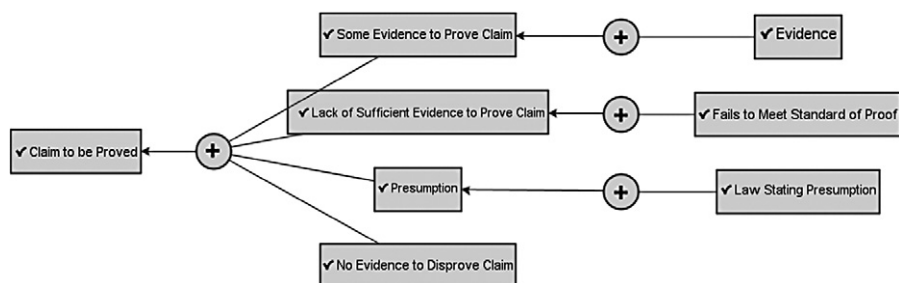


Figure 3: Evidential situation after the presumption has been accepted.

The dialectical effects of presumption can therefore be modeled by using computing systems that can describe the possible dialectical scenarios. However, the analysis of presumptions needs to take argument evaluation into consideration. As seen above, presumptions are rebuttable. But how? Why do they shift the burden of proof? Why do they operate only in the case of a lack of evidence? To answer these questions we need to take a step further and analyse their inferential structure and dialectical foundation.

4. Structure of Presumptions: Dialectical Effects and Epistemic Foundation

Presumptions, as mentioned above, can be described considering their inferential structure, their dialogical effect, and their epistemic foundation. The three elements are strictly connected, and will be shown to determine each other.

4.1. *The Rational Principle*

The first essential element is that the conclusion, or the presumption, needs to be supported by a rational principle (Ullmann-Margalit 1983, 147), that “may be grounded on general experience, or probability of any kind; or merely on policy and convenience” (Thayer 1898, 314). Nowadays presumptions in law are distinguished in three categories: 1. presumptions of fact, or *presumptio hominis* (conclusions drawn from principles from everyday experience and past facts, see Berger 1953, 646), 2. presumptions of law (inferences grounded on legal rules), and 3. irrebuttable presumptions, or *praesumptio iuris et de iure* (conclusions from principles of law that cannot be refuted) (see Park, Leonard and Goldberg 1998). The difference between the three types of presumption can be explained by the following rules of inference:

1. Things once proved to have existed in a particular state continue to exist in that state (Reynolds 1897, 118);
2. A person not heard from in five years is presumed to be dead (*California Evidence Code*, section 667; 663);
3. No child under the age of 10 can be guilty of an offence. (*Children and Young Persons Act 1933*, s. 50; *California Family Code 1994*, s. 7540)

In the first case, the court *may* draw a conclusion from certain facts previously established (Keane 2008, 656); depending on the nature of such regularities of events, the presumption of fact may shift the burden of proof or not (Best et al. 1875, 571). In (2) the nature of the presumption is different, as it is a rule of law, setting forth that the court must draw the inference that if five years have elapsed since a person was heard of, that

person is presumed to be dead unless the contrary is proved. In this case, the burden of proof always shifts. On the contrary, in (3) the burden never shifts, as the contrary proof is excluded. In this case, the notion of responsibility is defined by setting an age (see also Park, Leonard and Goldberg 1998, 106). To be right, following Wigmore, such presumptions should not be considered as such, but on the contrary as principles of law (Wigmore 1940, sec. 2491). The crucial distinction therefore rests on the presumptions of law and presumptions of fact. They are both grounded on the same probabilistic nature, but while presumptions of law are rules, presumptions of fact are mere connections grounded on experience or probability of any kind (Thayer 1898, 314). As Greenleaf put it (Greenleaf 1866, 49; see McBaine 1938, 525):

[Presumptions of fact] are, in truth, but mere arguments, of which the major premise is not a rule of law; they belong equally to any and every subject-matter; and are to be judged by the common and received tests of the truth of propositions, and the validity of arguments. They depend upon their own natural force and efficacy in generating belief or conviction in the mind, as derived from those connections, which are shown by experience, irrespective of any legal relations.

The rule of law distinguishes the two types of reasoning essentially equal as to their epistemic grounding. The dialogical effect is different: While presumptions of law command an inference in lack of evidence, avoiding any assessment of the rule of presumption, presumptions of fact need to be evaluated by the jury before drawing a conclusion.

4.2. Burden Shifting

The second element is the shifting of the burden of proof. Presumptions are rebuttable in nature (see Hall 1961, 10) and provide only a tentative conclusion which needs to be relied upon until the contrary is “proved” (Blackstone 1769, 371), in the sense that the interlocutor fulfils the *onus probandi* that has been shifted onto him by using the presumption (Best et al. 1875, 571). This characteristic of presumption can be better described by the definition given by Wigmore (1940, sec. 2491):

A presumption, as already noticed, is in its characteristic feature a rule of law laid down by the judge, and attaching to one evidentiary fact certain procedural consequences as to the duty of production of other evidence by the opponent. It is based, in policy, upon the probative strength, as a matter of reasoning and inference, of the evidentiary fact; but the presumption is not the fact itself, nor the inference itself, but the legal consequence attached to it. But, the legal consequence being removed, the inference, as a matter of reasoning, may still remain; and a “presumption of fact,” in the loose sense, is merely an improper term for the rational potency, or probative value, of the evidentiary fact, regarded as not having this necessary legal consequence. “They are, in truth, but mere arguments,” and “depend upon their own natural force and efficacy in generating belief or conviction in the mind.”

Presumptions, however, are not actual proofs (W. R. R. 1915, 505). Their only role is the shifting of the burden of proof, as they cannot bring any evidentiary weight on the conclusion. How and why they shift the burden of proof, and the nature of the burden, will be examined in detail below.

4.3. Reasoning in Conditions of Lack of Sufficient Evidence

Presumptions cannot be considered as evidence as they are forms of reasoning that operate when proof is not available, that is, an inference in conditions of lack of evidence (Louisell 1977, 290). They are not a form of evidence (Rescher 1977, 1):

To presume in the presently relevant sense of the term is to accept something in the absence of the further relevant information that would ordinarily be deemed necessary to establish it. The term derives from the Latin *praesumere*: To take before or to take for granted.

As Rescher (1977, 2–3) puts it, presumption is a reasoning *in ignorance*, as a lack of evidence is “a circumstance in which one reasons as best one can, *faute de mieux* to the resolution of an issue that needs to be settled” (cf. Dascal 2001). Presumptions cannot prove a conclusion: on the contrary, they intervene when it is not possible to demonstrate a conclusion (Blackstone 1769, 371). A clear example of such a characteristic of presumption comes from the interpretation of intentions in matters of gifts. In *Turchin v. Turchin*, I So.3d, WL 2871564, (2009), the spouses entered into a prenuptial agreement and, after the marriage, Leslie Turchin acquired two properties with his premarital assets and took title to each in his and his wife’s name. The problem was the ownership of the assets after the death of the purchaser. The presumption is that “a gift is presumed under Florida law when property is purchased by one spouse but placed in both names.” However, such a presumption could support the conclusion only if there was a lack of evidence. As the spouses entered a prenuptial agreement, the situation was not of lack of evidence and the presumption could not be used.

The relationship between evidence and presumption can be understood from the legal discussion on the relationship between a presumption and contrary evidence. The controversial question is whether presumptions disappear when evidence to the contrary is brought in, or whether they should be weighed as evidence. A simple case can explain this dialectical effect. The most classical presumption is the presumption of death: in a situation in which there is no evidence warranting the conclusion that a person is dead, he can be presumed to be dead if he has not been heard from for five years. However, if the other party in a trial produces some testimony that the person is actually alive, positive evidence conflicts with the presumption and the court needs to establish whether the testimony or the presumption prevails. According to the most widely accepted view

(McBaine 1938, 534), such a case needs to be sent to a jury and be evaluated according to the reliability of the witness. The jury needs to decide whether they can trust the witness, and only in this case can the testimony be counted as real proof, as evidence dispelling the presumption. The jury, in other words, should not weigh a presumption against positive evidence, but they need to establish whether the evidence produced is real evidence supporting the opposite conclusion. Presumptions are therefore forms of reasoning in the case of a lack of evidence: the only way to rebut a presumption is to produce evidence, namely positive facts that the jury considers to be relevant and supporting the opposite conclusion (McBaine 1938, 545):

A rebuttable legal presumption is only a rule of law that a fact is judicially decreed to exist absent evidence to the contrary. In the first place then, it should be constantly borne in mind that the fact is only presumed to exist; that is not a thing established as final, by judicial command. Nor is it something established by evidence. If it were an established fact, there would be no need to have further evidence. No problem of weighing would exist.

Presumptions therefore simply assign the jury the task of establishing whether a proof is a real proof, or rather, of accepting some evidence or not based on their reasoning.

From these distinctions it may be seen how the nature of the presumption affects the shifting of the burden of proof. While presumptions of law provide for the burden to shift, presumptions of fact may trigger such a dialectical effect or not, depending on their strength. How strong an argument needs to be to prove a conclusion depends on its burden of proof, which in turn depends on the standard of proof required.

5. The Nature of Presumptions

The relationship between probability and presumption has been acknowledged in several judgments, highlighting how the premise and the conclusion in such cases need to be connected by co-occurrence. As set out in *Leary v. United States*, “the presumed fact needs to be more likely than not to flow from the proved fact supporting it” (*Leary v. United States*, 395 U.S. 6, 36, 1969). This likeliness opens up a crucial question about evaluating presumptions. If we look back at the history of presumptive evidence, we notice that presumptions were first classified by Gilbert according to their strength and their grounds (McBaine 1938, 522–4). The definition of presumption he proposes shows a crucial epistemic difference with the other types of argument or proof (Gilbert 1756, 159–60):

[presumption] is *Conjectura ex certo signo proveniens quae alio adducto pro veritate habetur*. When the Fact itself cannot be proved, that which comes nearest to the

Proof of the Fact is, the Proof of the Circumstances that necessarily and usually attend such Facts, and these are called Presumptions and not Proofs for they stand instead of the Proofs of the Fact till the contrary be proved.

This rational connection between events which cannot be considered as a proof, but simply as a matter of experience, sign and probability, can be evaluated according to how shared and how probable such a relation is (Greenleaf 1866, 21):

Presumptions of Law consist of those rules, which, in certain cases, either forbid or dispense with any ulterior inquiry. They are founded, either upon the first principles of justice; or the laws of nature; or the experienced course of human conduct and affairs, and the connection usually found to exist between certain things. The general doctrines of presumptive evidence are not therefore peculiar to municipal law, but are shared by it in common with other departments of science. Thus, the presumption of a malicious intent to kill, from the deliberate use of a deadly weapon, and the presumption of aquatic habits in an animal found with webbed feet, belong to the same philosophy, differing only in the instance, and not in the principle, of its application. The one fact being proved or ascertained, the other, its uniform concomitant, is universally and safely presumed. It is this uniformly experienced connection, which leads to its recognition by the law without other proof; the presumption, however, having more or less force, in proportion to the universality of the experience.

Presumptions can therefore be evaluated according to the universality of the experience. However, as the elements of such experience are different from normal proofs, as presumptions intervene in conditions of lack of evidence, the factors constituting such probability need to be assessed. In Gilbert's view (1756, 159), presumptions can be more or less stringent, or rather "violent," "according as the several Circumstances sworn to more or less usually accompany the Fact to be proved." In this perspective, presumptions are inferences from circumstances, and the strength of a presumption depends on the co-occurrence of the circumstance with the fact.

The strength of a presumption can be classified as violent, probable and light. Violent presumptions can be considered as inferences from circumstances that necessarily accompany the fact (Gilbert 1756, 160), namely signs. For instance, if a man is seen running away with a bloody sword from a place where somebody has been found suddenly dead, he is presumed to be the murderer, as usually hasty flight accompanies crimes, and the sword and the blood are signs of a violent action. This type of reasoning was referred to in the medieval tradition as *Undoubted Indicia*⁴ (Sarat, Douglas, Merrill

⁴ The roots of the dialogical effect of violent presumption can be traced back to William of Ockham, who underscored how the presumption that a person remembers what he has previously learnt strongly supports a conclusion: "Some say [fifth way] that he should be judged immediately as pertinacious and a heretic of whom there is a *violent presumption* that he denies some assertion which he knows is contained in divine scripture or in a determination of the church. If it can be proved, for example, that he has previously read and

Umphrey, 2007, 32). Such presumptions have their roots in causal connections. On the contrary, probable presumptions refer only to concomitant factors. For instance, we can consider the following account distinguishing the three kinds of presumption (Archbold 1831, 114):

So, upon an indictment for stealing in a dwelling house, if the defendant were apprehended a few yards from the outer door, with the stolen goods in his possession, it would be a violent presumption of his having stolen them; but if they were found at his lodgings, some time after the larceny, and he refused to account for his possession of them, this, together with proof that they were actually stolen, would amount, not to a violent, but to a probable presumption merely; but if the property were not found recently after the loss, as, for instance, not until sixteen months after, it would be but a light or rash presumption and entitle to no weight.

Plausible presumptions are not signs, but only possible explanations that can be drawn from how things usually are. While a man who has stolen some goods needs to have them in his possession just after the theft, only probability can account for the relation between possession of stolen goods after a theft and the theft itself.

The older model of strength of presumption is echoed in some codes of evidence, in which presumptions are distinguished on the basis of their effect. As Mason (2000–2001, 748–50) puts it, presumptions can be classified in three categories (Table 2):

Table 2 Strengths of Presumptions

Name	Effect	Example
Weak or Ordinary Presumptions	Shifting the burden of presenting evidence	A person is presumed to intend to do what he does.
Strong presumptions	Shifting both the burden of presenting evidence, and the burden of persuasion	Where the parties had a ceremonial marriage it is presumed that they gave consent and that all essentials existed for a valid marriage
Very Strong Presumptions	Shifting both burdens; enhancing or increasing the burden to disprove the presumed fact by a higher level of persuasion.	Election returns are presumed to be valid and proper, requiring clear and convincing evidence to rebut them. A child born or conceived during a marriage is presumed to be the legitimate child of the husband and wife; proof beyond reasonable doubt is required to rebut this presumption.

understood in divine scripture or a determination of the church the assertion he denies, or if it can be proved that previously he had purposefully taught or, even, publicly or secretly affirmed the assertion he denies. For if *it is not probable that such a person has forgotten what he had previously learnt* there is a violent presumption that he knowingly denies catholic truth. And he should, as a consequence, be considered pertinacious and a heretic" (*Dialogus* IV, 13).

On this view, the epistemic foundation of the presumption is connected with its dialogical effects. However, this relationship is not reflected in modern theories on presumption holding the distinction between presumptions of fact and presumptions of law. As noted above, presumptions of law can stem either from dialogical policies or from factual reasons (see also Mueller and Kirkpatrick 1999, 176; Brodin and Avery 2007, 81). In the first case, presumptions are placed on a party in order to facilitate the production of evidence, while in the second case, presumptions are forms of inference. A common principle, however, underlies both cases, namely that the fact presumed or the dialogical condition of having access to evidence is more likely to be fulfilled than the contrary. If we consider the nature of presumptions of fact and presumptions of law, we can recognize a common pattern. Presumptions are indirect proof, not testimony or documents, and stem from the circumstances of a fact, connected to the fact itself either by an effect-to-cause relation (violent presumptions), or simply by concomitance (probable presumptions).⁵ We can refer to such types of presumptions as signs (or causal relations) and concomitances. The two types of presumptions can be rebutted in different fashions and place a different burden of proof on the other party.

6. Epistemic Grounds and Dialectical Effects: Rebutting a Presumption

As noted above, presumptions of law and presumptions of fact belong to the same domain of indirect proof, and the difference between them consists of the fact that their dialectical effects are governed by a legal provision. However, the origin of such effects needs to be found in the nature of presumptions, emerging from the strategies and the conditions of their rebuttal.

Presumptions admit two different types of rebuttal strategies (Park, Leonard and Goldberg 1998, 107), that is, challenging the presumed facts or the foundational fact. For instance, considering the presumption of death, the other party can either prove that the presumed deceased was

⁵ See Phillipps (1815, 111): "The proof is positive, when a witness speaks directly to a fact from his own immediate knowledge; and presumptive, when the fact itself is not proved by direct testimony, but is to be inferred from the circumstances, which either necessarily or usually attend such facts. It is obvious therefore, that a presumption is more or less likely to be true, according as it is more or less probable, that the circumstances would not have existed, unless the fact, which is inferred from them, had also existed; and that a presumption can only be relied on, until the contrary is actually proved. In order to raise a presumption, it cannot be necessary to confine the evidence to such circumstances alone, as could not have happened, unless they had been also attended by the alleged fact,—for that in effect would be to require in all cases evidence amounting to positive proof;—but it will be sufficient to prove those circumstances, which usually attend the fact."

actually heard of during the five-year period, or produce evidence that the person is actually alive. The crucial problem is to assess the effect of the presumption, and the standard of proof needed to rebut the presumption. According to several legal scholars (for a review, see Andersen 2003, 112), presumptions are distinguished according to their strength:

1. *mandatory burden-of-pleading-shifting presumptions*: If the party proves A, then the factfinder must find B, unless the opposing party claims B is not true;
2. *mandatory burden-of-production-shifting presumptions*: If the party proves A, then the factfinder must find B, unless the opposing party introduces evidence sufficient to prove B is not true. Sufficient evidence may be defined as any evidence, reasonable evidence, or substantial evidence.
3. *mandatory burden-of-persuasion-shifting presumptions*: If the party proves A, then the factfinder must find B, unless the opposing party persuades the factfinder that B is not true. Persuasion may be defined anywhere from a preponderance to beyond a reasonable doubt.

The crucial epistemic problems lie in the distinction between the burden-of-production and the burden-of-persuasion shifting presumptions, and the interpretation of the concept of "production."

6.1. "Causal" or Rational Connections

The first problem can cast light on the crucial connection between the causal, or logical, foundations and the dialogical effects of presumptions. The distinction between the two types of burden lies with the strength of the relationship between facts and conclusions, and it is always established at the beginning of the trial in civil cases.

In civil cases, presumptions do not really shift the burden of persuasion, but rather set it according to considerations different from the principle that "he who pleads needs to prove." Strong presumptions of this kind are, for instance, the presumption against suicide (the death of the insured was not due to suicide, but accidental). These are grounded on human experience and human nature (Boos 1945, 798), even if there is no direct causal connection between death and not-suicide. If we analyze the Codes of Evidence of the various states, we notice how presumptions are distinguished according to their purpose and foundation. In the *Florida Evidence Code* (2005), in particular, presumptions shifting the burden of proof (or rather setting it) need to be established "to

implement public policy" and not simply to facilitate the determination of a particular action (90.303). An interesting example comes from the presumption concerning the burden of proof, that is, undue influence in *inter vivos* or testamentary gifts. This presumption has been explained on the basis of a strong social policy (*In re Estate of Davis*, 428 So. 2d 774, 775–76, Fla. 4th DCA, 1983), and in particular on the grounds that older persons need to be defended against financial exploitation by those they rely upon and trust. Undue influence is "rarely susceptible of direct proof," because in cases of testamentary gifts the decedent never testifies the contrary, and the entire proof rests on the self-serving testimony of the alleged wrongdoer (Nilsson 2003). The dialectical reason for incrementing the burden of proving the absence of influence is in this case combined with the purpose of avoiding potential crimes and defending the weaker party.

The relationship between rational connections and dialectical effects can be found in criminal law. In criminal cases there is no presumption stronger than the presumption of innocence, and presumptions cannot reverse the burden of proof (Martin, Capra and Rossi 2003, 94; *Sandstrom v. Montana*, 442 U.S. 510, 517–8, 1979). As a result, in criminal cases there is no burden-of-persuasion shifting presumption; presumptions are not mandatory, but may simply assist the prosecution by relieving them of the burden of proving all the elements of the offence (such as knowledge or intent), without being conclusive or warranting directly the truth of the conclusion (*Francis v. Franklin*, 471 U.S. 307, 307, 1985).⁶ However, such presumptions need to be grounded on a rational connection, and not simply on statistical probability (*Tot v. United States*, 319 U.S. 463, 467–8, 1943).

6.2. Rational, Inductive and Dialogical Presumptions

Crucial problems in presumption evaluation stem from uncertain civil cases in which the type of presumption has not been stated by law. Such cases are governed by a default federal rule, *FRE 301*, that is included in the legislations of all states. According to *FRE 301*, presumptions only shift the burden of production: when a presumption is governed by this default rule for civil cases, it has the effect of shifting on to the other party the burden of producing contrary evidence. However, what counts for

⁶ Usually some presumptions are incorrectly regarded as presumption-shifting, such as the presumption of intoxication for people found with a blood-alcohol percentage of 10/100. In such cases, presumptions are never mandatory, but only permissible (Taylor and Oberman 2006, 33–5)

“evidence” is often interpreted by the local jurisdictions, and sometimes read as “introducing any kind of evidence,” sometimes as “proving that the nonexistence of the presumed fact is more probable than its existence”⁷ (for the interpretation problem, see *United States v. Jessup*, 757 F.2d 378, 1st circ., 1985).

Best (2009, 229–30) noted how the interpretation of the effects of presumption differ from state to state. The literature on the rebuttal of presumptions in civil law (see for instance Hecht and Pinzler 1978; Park, Leonard and Goldberg 1998, 102–5) distinguished between different theories of interpretation of this rule, namely the bursting bubble (see McCormick 1972, 871), the burden of persuasion shifting, and an intermediate theory (see Morgan 1933). In the first case, the presumption simply disappears when evidence of any kind is brought in; in the second case, presumptions alter the burden of persuasion and need to be rebutted by a standard of proof; in the third case, evidence needs to be real evidence, namely it should be considered by the jury or the judge as sufficient (see Mueller and Kirkpatrick 1999, 182–90). If we look at the local interpretations of this general rule, we can notice how different theories are often applied to different types of presumption, depending on their grounding and their reasons (Craig Lewis 1995, 20). This view is based on an analysis of the different grounds of presumption (Cleary 1984, 968–9), that act alone or in combination with other reasons:

1. to correct an imbalance resulting from one party’s superior access to the proof;
2. for notions, usually implicit rather than expressed, of social and economic policy that incline the courts to favor one contention by giving it the benefit of a presumption, and correspondingly to handicap the disfavored adversary;
3. to avoid an impasse, to some result, even though it is an arbitrary one;
4. probability: the judges believe that proof of fact B renders the inference of the existence of fact A so probable that it is sensible and timesaving to assume the truth of fact A until the adversary disproves it.

When the purpose of presumption is only to facilitate the determination of a specific case, such a presumption is dispelled by the simple introduction of any kind of evidence; when instead matters of probability or public policy intervene, then burden shifting may be considered.

⁷ FRE 301. Notes of Committee on the Judiciary, House Report No. 93–650.

6.3. Evaluating Presumptions

The different nature of presumptions arises also in relation to conflicting presumptions. In criminal cases, the most significant cases of conflicting presumptions concern the alleged shifting of the burden of persuasion. The burden of persuasion can be never defeated by any other presumptions, unless such presumptions are grounded on serious policies of public interest (*State v Coetzee*, 2 LRC 593, 677, para 220, 1997). A leading case is *R v DPP, ex parte Kebilene* (2 AC 326, 2000), in which the presumption of innocence conflicts with the presumption of guilt:

(1) A person is guilty of an offence if he has any article in his possession in circumstances giving rise to a reasonable suspicion that the article is in his possession for a purpose connected with the commission [. . .] of acts of terrorism [. . .] (3) It is a defence for a person charged with an offence under this section to prove that [. . .] the article in question was not in his possession for such a purpose [. . .].

In such a case, the burden is on the accused, but the presumption of guilt prevails because of a potential prejudice of the public interest (for the reverse onus and the reasons underlying such a presumption, see Hoffman and Rowe 2010, 216–7).

In civil cases (Mueller and Kirkpatrick 1999, 190–2), most theories support the view that the presumption grounded on stronger reasons of policy and logic shall prevail, even though such comparisons are only rarely made by the court (Louisell 1977, 295). A clear example is given by *Sillart v. Standard Screen Co.* (119 N.J.L. 143, 194 A. 787, 1937); in this case, two presumptions grounded conflict in different ways: the presumption of continuation of life and the presumption of validity of a common law marriage arising upon the consummation thereof. The facts can be summarized as follows:

On May 27th, 1916, Anna Sillart had entered into a ceremonial marriage with a Hans Rekand who disappeared in 1923 and has neither been seen nor heard from since that time. Five years after Rekand's disappearance, in 1928, although the Rekand marriage was not dissolved, she effected a common law marriage with decedent with whom she, together with one son by Rekand, lived until decedent's death.

In this case, the presumption grounded on public policy was found to prevail over a presumption based on probability and experience. In this perspective, the epistemic foundation on logical reasons or simply on statistical connections plays a fundamental role in determining the effects of a presumption, that led to a tentative classification in *O'Dea v. Amodeo* (118 Conn. 58, 170. Atl. 486, 1934), represented in Table 3 below:

Table 3 Epistemic foundations of presumptions and their effects

Epistemic foundation	Purpose	Dialogical effect
Convenience (presumption of sanity)	To bring out the real issues in dispute, thus avoiding the necessity of producing evidence as to matters not really in issue.	Criminal: The State might rest upon it as making out a prima facie case until evidence to the contrary is introduced Civil: The presumption operates only until the defendant has produced substantial countervailing evidence, that is evidence sufficient to raise an issue
Common experience and inherent probability	Common experience and reason justify the drawing of a certain inference from the circumstances of a given situation.	It exhausts itself when the defendant produces substantial countervailing evidence
Dialogical reasons	The circumstances involved in an issue are peculiarly within the knowledge of one party.	In certain instances the law deems it fit that the burden should be on him not merely to offer some substantial countervailing evidence but to prove such circumstances

However, in such cases, presumptions based on social policy are not considered.

The last feature of presumptions can be shown by considering cases of conflicting equipollent presumptions. In *Westdeutsche Landesbank Girozentrale v. Islington London Borough Council* (A.C. 669. TOP, 1996), a voluntary payment was made, raising a presumption of a resulting trust, that is, a trust settled for the purposes of holding the money on trust. The problem arose in consideration of the conflicting presumption, that is, that advancement was made. While the voluntary payment raises the presumption of a non-gift, the advancement leads to the conclusion that the sum was in fact a gift. The two presumptions are on the same level considering their grounds; however, they reflect different orders of plausibility. The trust can be presumed from a voluntary payment only if advancement cannot be presumed (Ong 2007, 401–2). In such cases, the impossibility of a presumption is a presupposition of the other presumption.

Considering the above-mentioned policies, it may be noted that the force and the strength of a presumption, or rather its “violence,” adopting the old terminology, stem from epistemic considerations. Presumptions arise from dialectical, causal or statistical reasons, and, as it emerges from the civil law rules, dialectical reasons give rise to presumptions weaker than the ones stemming from logical or probabilistic grounds. Considering the criminal law, it may be noted how the type of connection is a crucial element that distinguishes statutory from non-statutory presumptions. The rational, or logical, connection carries a different effect on the dialogical situation than foundations that are dialectical or inductive in nature.

The function of making a presumption is to enable argumentation to move forward without getting continually bogged down by having to

prove a proposition as part of an argument required to help the investigation move forward. The problem may be that proving such a proposition may be too costly, or may even require stopping the ongoing discussion or investigation temporarily so that more evidence can be collected and examined. The problem is that a particular proposition may be necessary as a premise in a proponent's argument that has been put forward, but the evidence available at present may be insufficient to prove it to the level required to make it acceptable to all parties. Hence the attempt to move forward with the argumentation may be blocked while the opponent demands proof. The two parties may then become locked into an evidential burden of proof dispute in which one party says "you prove it" and the other says "you disprove it." This interlude may block the ongoing discussion. A way to solve the problem is for the proponent or a third party to say, "Let's allow this proposition to hold temporarily as a premise in the proponent's argument, so that we can say he has proved his contention well enough and we can accept the conclusion of his argument tentatively as a basis for proceeding." If necessary, later on, the sub-discussion can be continued by bringing in more evidence for or against the proposition serving as the premise.

7. Rebutting the Grounds of Presumptions

As noted above, presumptions can be rebutted by challenging the foundational facts or the conclusion of the inference based on the presumption (interpreting presumption as the rule of presumption). Challenging the presumption rule would be pointless in both presumptions of law and presumptions of fact. In the first case, it would amount to challenging a law; in the second case, it would be meaningless to prove the defeasibility of an inference which by nature is rebuttable. Problems concerning presumptions arise when the case rests on the inference from witness statements to the truth of the testimony. In law, such an inference is warranted by the presumption that a witness is presumed to speak the truth, and therefore this kind of testimony can be rebutted by showing that the witness is not truthful. More specifically, the evidence can be questioned by raising doubts about various factors (*Mont. Code Ann. § 26-1-302*; cf. *Cupp v. Naughten*, 414 U.S. 141, 1973:

- (1) the demeanor or manner of the witness while testifying;
- (2) the character of the witness's testimony;
- (3) bias of the witness for or against any party involved in the case;
- (4) interest of the witness in the outcome of the litigation or other motive to testify falsely;
- (5) the witness's character for truth, honesty, or integrity;

- (6) the extent of the witness's capacity and opportunity to perceive or capacity to recollect or to communicate any matter about which he testifies;
- (7) inconsistent statements of the witness;
- (8) an admission of untruthfulness by the witness;
- (9) other evidence contradicting the witness's testimony.

These factors can be structured as critical questions matching an argumentation scheme for argument from witness testimony. Recent studies on argumentation and law (Wyner and Bench-Capon 2007; Gordon and Walton 2009; Bex et al. 2003) have shown how the underlying logic of legal reasoning can be described by using argumentation schemes representing prototypical patterns of defeasible inference that can shift a burden of proof from one party to the other in argumentation about a disputed claim (Bench-Capon and Prakken 2010; Prakken and Sartor 2006). The link between presumption and rebuttal is provided by argumentation schemes, abstract and prototypical patterns of inference (see Walton, Reed and Macagno 2008; Kienpointner 1992; Grennan 1997; Perelman and Olbrechts-Tyteca 1969).

We can represent the structure of the scheme for *argument from witness testimony* as follows (Walton 2008a, 45):

POSITION TO KNOW PREMISE: Witness *W* is in position to know whether *A* is true.

TRUTH TELLING PREMISE: Witness *W* is telling the truth (as *W* knows it).

STATEMENT PREMISE: Witness *W* states that *A* is true (false).

GENERALIZATION: If a witness *W* is in a position to know whether *A* is true or not, and *W* is telling the truth (as *W* knows it), and *W* states that *A* is true (false), then *A* is true (false).

CONCLUSION: Therefore (defeasibly) *A* is true (false).

The acceptability of the argument centrally depends on the two factors: the truth telling premise, and the generalization. However, what is the truth? Obviously the witness can only report what he or she recollects, and the truth of his or her statements shall be interpreted as truth in reporting his or her own memories that can be assessed during cross-examination. However, the weakness of the reasoning depends on the generalization, linking memories, which can be faulty or defective, to truth. Even if all knowledge-related factors, such as ability to recollect and testify, or truth-telling elements, such as being unbiased, are proved, the argument is still defeasible (*United States v. Khadr*, Mot. for App. Relief, (D-084), Sep. 31, 2008). Memories are reconstructions that can differ from reality, and can be influenced during cross-examination or altered over the years by similar

experiences. However, the strength of the presupposition on which the presumption of truth is based, that is, that memory reflects the truth, cannot be questioned or attacked (*States v. Carter*, 410 F.3d 942, 950–51, 7th Cir., 2005), holding that expert testimony on memory reliability is not needed), but only contrasted with the different presumption that memory fades over the years (*United States v. Rosenberg*, 297 F.2d 760, 763, 3d Cir., 1958).

We now illustrate more generally how schemes represent common evidential reasoning in law of a kind that is defeasible and that depends on presumptions. The following argumentation scheme represents *argument from expert opinion* (Walton and Reed 2003, 200):

MAJOR PREMISE: Source *E* is an expert in subject domain *S* containing proposition *A*.

MINOR PREMISE: *E* asserts that proposition *A* (in domain *S*) is true (false).

CONDITIONAL PREMISE: If source *E* is an expert in a subject domain *S* containing proposition *A*, and *E* asserts that proposition *A* is true (false), then *A* may plausibly be taken to be true (false).

CONCLUSION: *A* may plausibly be taken to be true (false).

This scheme represents the relation between the ethos and knowledge of the person expressing an opinion, and the reliability or acceptability of his or her opinion. The premise “If *E* is an expert, then his or her opinion may be plausibly taken to be true” is commonly accepted, and the reasonableness of the inferences based on such a scheme depends on how we classify a person as an “expert.”

If we analyze schemes frequently used in law such as the argument from classification, or argument from cause to effect, or argument from analogy, it may be seen that they are characterized by an epistemic principle, based on the concept of classification, and in turn sometimes based on definition. These concepts are embedded in common patterns of legal reasoning. Consider the following examples (Gray 2002, 7):

Case 1. Classification: *Modus ponens*

The Keppel videotape shows the 73rd Home Run ball enter the webbing of the Plaintiffs’ softball glove and stay there for approximately six-tenths of one second before the ball, the glove, and Mr. Popov disappear behind the head of another spectator. The Plaintiff has proposed a definition of “catch” that would direct the Court to find first possession and award title based on this evidence. “Popov’s catch is the single controlling element determining possession and ownership. Once the baseball entered Popov’s glove, the fate of the baseball was sealed.” (Plaintiff’s Trial Brief at 20).

Case 2. Classification: Analogical inference⁸

(case: conjoined twins) I was at first attracted by the thought prompted by one of the doctors, that Jodie was to be regarded as a life support machine and that the operation proposed was equivalent to switching off a mechanical aid. Viewed in that way previous authority would categorize the proposed operation as one of omission rather than as a positive act.

Case 3. Classification: *Modus tollens*⁹

Milkovich, a high school wrestling coach, sued Lorain Journal Company's newspaper for publishing a column stating that "Anyone who attended the meeting . . . knows in his heart that Milkovich [. . .] lied at the hearing [. . .]" (Milkovich, 497 U.S. at 5, 110 S. Ct. at 2698, 111 L. Ed. 2d at 9). The statement was classified as "defamatory," as it damaged the petitioner's reputation. The shared definition of "defamatory" presupposes the existence of a false statement, stated with malice, damaging someone's reputation. The respondent did not choose to prove that the assertion was in fact true (harder to prove), but that the assertion could not be verified, as it reported an opinion and not a fact. Under the First Amendment "there is no such thing as a false idea" (*Gertz v. Welch*, 418 U.S. 323, 1974).

In Case 1, a plausible *modus ponens* is used, which can be represented as follows:

- "to catch" means to take hold of an object (whether for a nanosecond or less);
- Popov captured the ball for six-tenths of a second;
- as a result, he caught the ball.

The plausibility of the conclusion depends only on the plausibility of the definition, which may be more or less accepted or acceptable. The conclusion follows necessarily from the premises according to the deductive axiom, but the conclusion is rebuttable as the definitional premise is defeasible. In the second case, the same semantic principle, namely classification, is combined with analogical reasoning, in which a new generic concept ("entity able to provide life support") is first abstracted from the entities compared, considering only one of their possible functions; such an abstracted concept licences the attribution of the predicate ("to be a positive act / an omission"); finally the predicate is attributed to the

⁸ *Re A (Children) (Conjoined Twins: Surgical Separation)*, 4 All ER 961 (2001), Fam 147, at 249.

⁹ *Milkovich v. Lorain Journal Co.*, 497 U.S. 1 (1990).

second entity (“killing one of the two conjoined twins is a positive act / an omission”) (see Macagno and Walton 2009).

As seen in the sections above, presumptions are based on two types of groundings: value judgments (social or dialogical policies), and logic and experience (or causal connections and probability) (Louisell 1977, 296). Social policies are often interlaced with probabilities different in nature, and the effect or strength of a presumption essentially depends on such considerations. However, if a presumption disappears or is rebutted by evidence or another presumption, the principle on which it is based is never affected, nor is the principle, even the strongest one, a necessary condition for establishing the prevalence of a presumption over the other. Convenience, public policy, dialectical considerations and possibility or rational connection are not necessary or sufficient conditions, but simply epistemic justifications of reasoning in lack of evidence. If the defendant is presumed guilty for reasons of social policy, the principle of fairness underlying the presumption of innocence is not breached, but simply weighed against a different and stronger reason (Hoffman and Rowe 2010, 216–22).

8. Conclusion

Our analysis has shown that the notion of presumption has to be defined on two levels: an inferential level and a dialectical level. At the inferential level, a presumption is defined as an inference to the acceptance of a proposition from two other propositions called a fact and a rule. At the dialectical level, presumption is best modeled as a speech act put forward by parties in a dialogue during the argumentation stage where the two parties to the dispute are putting forward arguments in response to the arguments and other moves of the other party. At the dialectical level, a presumption is defined in terms of its use or function in a context of dialogue. This function is to shift an evidential burden from one side to the other in a dialogue, where the effect of such a shift is on the burden of persuasion established at the opening stage of the dialogue.

We can summarize our findings by citing the six essential characteristics of presumptions:

1. Presumptions are used in dialectical situations where one party puts forward an argument that is not strong enough to meet the standard of proof required to accept it.
2. The argument in question is nevertheless a worthy argument and should be taken into account because it provides some relevant evidence that is important.

3. Presumptions provide tentative support, directed at achieving different purposes, but are ultimately aimed at allowing the parties to move forward in an investigation that may provide the necessary positive evidence.
4. Presumptions can bring about different dialogical effects depending on the purpose for which they have been introduced.
5. Every presumption is aimed at achieving a specific goal, which can be dialectical (deciding an issue on the basis of the arguments pro and contra), social (defending the interests of a particular group of people), or political (promoting a particular policy pro or against specific behaviours).
6. A presumption disappears on the provision of sufficient evidence to prove or refute the proposition presumed.

How the last characteristic works is controversial in law. There are two theories (Park, Leonard and Goldberg 1998, 109–12). The question of precisely how presumptions are refuted is left as a problem worth further research and study.

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