Presumptions in Legal Argumentation.

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Abstract

Presumptions come into play in argumentation when the evidence needed to prove or disprove a position is incomplete, allowing the investigation to move forward to meet a standard of proof. Presumptions simply disappear, like bats in the twilight, once enough evidence comes to be known to dispense with them. In this paper presumption is defined at the inferential and the 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, 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 set at the opening stage.

Recent work in the interdisciplinary area between artificial intelligence and law has advanced logical models of presumption and burden of proof using argumentation approach (Gordon & Walton, 2009; Prakken & Sartor, 2009). However, presumption, as well as 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 best be understood in law a device for shifting the burden of persuasion in a trial setting. It is often said, both in law and in the argumentation literature generally, that a presumption is a device that shifts a burden of proof back and forth from one side to the other in a dialogue. The recent work in artificial intelligence and law has now produced precise models of burden of proof suitable for computing uses that supports this approach, and that not only draws the traditional distinction between two kinds of burden of proof, burden of persuasion and burden of producing evidence (burden of production), but also introduces a third type of burden called the tactical burden of proof.

Both the work in artificial intelligence and law, and also the related work in the field of argumentation studies generally, use a dialogue model of argumentation. In this paper we show how this dialogue model can be used to draw a much clearer distinction than has been possible in the past between presumption and presupposition, especially as these notions pertain to legal argumentation. We argue that current models of these two notions in artificial intelligence and law, when applied to examples of legal presumptions and presuppositions, throw light on the relationship between presumptions and burdens of proof. 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 program of supporting Wigmore's claim that there is a science of proof underlying the law of evidence (Park and Saks, 2006).

Section 1 is an outline of the new work on burden of proof in artificial intelligence and law that shows briefly 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 that have the form of speech acts.

1. The dialogical framework

Prakken and Sartor (2009: 228) have built a logical model of burden of proof in law. The burden of persuasion specifies which party has to prove an ultimate *probandum* in the case, and also specifies what proof standard 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, on the other hand is decided by the party putting forward an argument at some move. The judge is supposed to instruct the jury on what proof standard has to be met and which side estimated at the beginning of the trial process. The burden of production may in many instances only have to meet a low proof standard. If the evidence offered does not meet the standard, the issue can be decided as a matter of law against the burden party, or decided in the final stage by the trier. 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 being discussed at that point if he fails to put forward further evidence concerning that issue.

The relationship between burden of persuasion and burden of production works in a different way in a criminal case than in a civil case (Prakken and Sartor, 2009, 225-226). n civil cases the general rule is that the party who makes the claim has the burden of persuasion as well as the burden of production for any claim made, while the other party has both burdens for an exception. For example in the case of a contract dispute, the party who claims that contract exists has to prove that there was an offer that was accepted. These are called the two elements of proving a contract. However, there can be exceptions to this rule, for example the other party might claim that the first party deceived him. In such a case, the party who made the claim that there is a contract has both the burden of production and burden of persuasion for that, while the party who claims that there is an exception has both the burden of persuasion and the burden of production for that. In criminal cases, in contrast, the burden of production and the burden of persuasion can be on different parties. In a criminal case, the prosecution has to meet the standard of beyond reasonable doubt to prove that the defendant is guilty. This principle also covers the nonexistence of exceptions. No weakness in it argument can be left by the prosecution, or proof beyond a reasonable doubt will not be achieved. For example, in a murder case the prosecution has the burden of persuasion to not only 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, like the claim that the killing was done in self-defense. However, the burden of production for proving an exception is on the defense. For example, once the defendant has pleaded self-defense, he will have to provide some evidence to support this claim. Once the he has met this burden of production, even by a small amount of evidence, not large enough to meet the requirements of the beyond reasonable doubt standard, the prosecution then has the

burden of persuasion that there was no self-defense. It is in this kind of case where 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, and is usually not explicitly considered in civil law countries. They add, however, 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 burden of production and tactical burden of proof, but from the point of view of understanding burden of proof as a concept of logical reasoning, both in law and in everyday conversational argumentation in contexts like philosophical argumentation and political debating, it is highly important to try to do so. The distinction can be clarified by going back to the example of a murder trial where the prosecution has provided evidence to establish killing and intent, and the defense has produced evidence in favor of its plea of self-defense. In such a case, if the prosecution does not rebut the claim of self-defense by producing a counterargument, they stand a very good chance of losing the trial. In such a case, we can say then that the prosecution now not only has the burden of persuasion but also has a tactical burden of proof with respect to the issue 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. It depends 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 provided 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 defendant. However, it is important to note that according to Prakken and Sartor, (2009: 227) that the burden production never shifts. Once it has been fulfilled, it is disregarded for the rest of the trial. On their view, the tactical burden is the only one of the three of the three burdens that can be properly said to shift.

Carneades is a mathematical model consisting of definitions of mathematical structures and functions 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 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. This model has been implemented using a functional programming language, and has a graphical user interface[1]. Carneades models argumentation as a dialogue exchange in which two parties (in the simplest case) take turns to perform speech acts, like asking a question or putting forward an argument, as moves.

[1] http://carneades.berlios.de/downloads/

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	$P_1, P_2, \ldots, P_n$ therefore S.	$P_1, P_2, \ldots, P_n$ is a set of premises that give a reason to support S.

Table 1: Some Typical Types of Speech Acts in a Dialogue Format

A dialogue is formally defined as an ordered 3-tuple ⟨O, A, C⟩ 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. Burden of persuasion is set at the opening stage of a dialogue, while burdens of production and tactical burdens are brought into play during the argumentation stage. The shifting back and forth of the tactical burden is during the argumentation stage have an effect on whether the burden of persuasion which was said at the opening stage is met or not. This effect is calculated and summed up at the closing stage. It determines which side has won the case by bringing forward 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 argument[2] 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 exceeds some threshold α, and the difference between the maximum weight of the applicable *pro* arguments and the maximum weight of the applicable *con* arguments exceeds 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.

It is highly questionable whether a precise definition of the standard of beyond a reasonable doubt 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

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

been analyzed in argumentation theory considering their dialogical function of shifting the burden of proof (Pinto, 1984; Walton, 1993; 2008a). Thus by formulating standards of proof in a dialogue model of argumentation like Carneades, part of the work is done to get a better understanding of how presumptions work by shifting burdens 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

There are many different theories of presumption in argumentation studies from Whately onwards, summarized in (Godden & Walton, 2007). 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, a defeasible rule that sanctions the passage from the presumed fact to the conclusion, (3) the conclusion is 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.
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 as a defeasible rule. The problem is that it does not go far enough to enable us to tell what the differences 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 plaintiff has the burdens of production and persuasion that the bicycle was damaged and that he owned it. One way he can prove that he owns the bicycle is to prove 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 the 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, subject to evidence to the contrary. It is held to

be defeasible rule in the Prakken-Sartor theory in the same way the following proposition is: if Tweety is a bird, then normally, but subject to exceptions, Tweety flies. 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 at 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 meant 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.

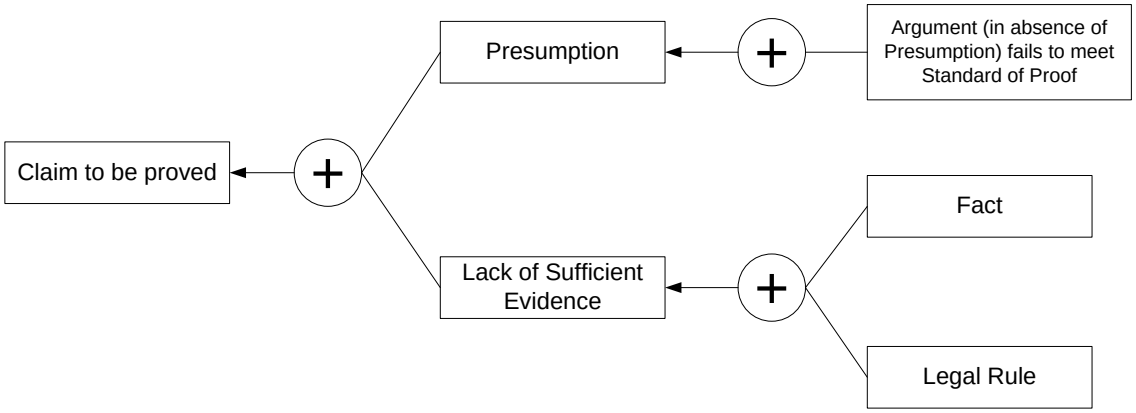

Figure 1: The function of a presumption in a mass of evidence in a typical case

As shown in figure 1, the situation is such that there is lack of sufficient 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 at the top right of figure 1 that the reason that there is 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 case is to act as an additional premise in the argument (or 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 up 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 be committed to a presumption, the interlocutor needs to provide a rebuttal (Walton, 1993: 139-140). 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[3] (Walton, 2010; McBurney *et al.*, 2007). The rationale behind this kind of definition of the notion of a presumption was displayed in figure 1 using the graphical interface of the Carneades system. In this model, in order to have 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 meeting an appropriate standard of proof. The four standards of proof used in Carneades definition (Gordon & 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 displays the paradigm case in which a presumption is brought forward within a mass of evidence that has been brought forward 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 darkened text box with a checkmark in front of the proposition, it means that this proposition has been accepted. What 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 has been stated. To say it has been stated means that it has not been accepted. The darkened boxes in the middle column show the three elements that make bringing forward a presumption but useful move. First, there is some evidence to prove the claim, second, there is lack of sufficient evidence to prove the claim, and third, there is no evidence to disprove the claim.

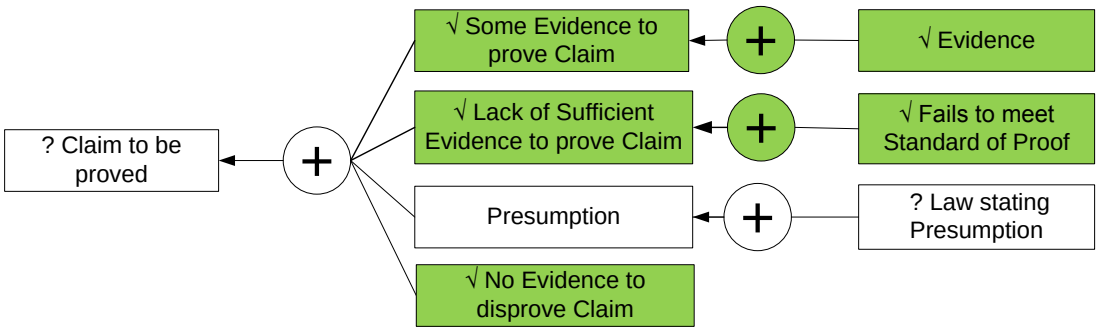

Figure 2: Evidential situation before a presumption has been accepted

If we look at all the darkened boxes in figure 2, we can see that the evidence is insufficient to prove the claim to be proved represented at the left of figure. However, let's say that in this situation, a presumption could be bought forward that would fill the evidential gap. This kind of situation is shown in figure 3.

[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.

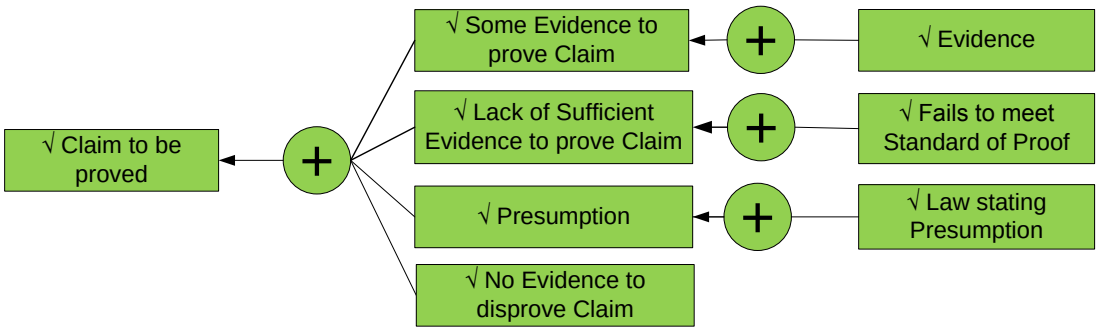

Figure 3: Evidential situation after the presumption has been accepted

The transition between the evidential situation represented in figure 2 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 extreme left, Carneades automatically shows the claim to be proved as accepted. In other words, Carneades displays the claim to be proved with a checkmark in front of it, and shown in a darkened box. When the system is used on a computer, it shows all such boxes is filled with a green color, to contrast them with the text boxes that are shown filled with no color.

The dialectical effects of presumption can be therefore modeled by using computing systems which 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 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 (Ullman, 1983: 147), which “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: presumptions of fact, or *presumptio hominis* (or conclusions drawn from principles from everyday’s experience and past facts, see Berger, 1954: 646), presumptions of law (or inferences grounded on legal rules), and irrebuttable presumptions, or *praesumptio iuris et de iure* (or conclusions from principles of law

which cannot be refuted) (see Park, Leonard, 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 experienced (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 man was heard of, he must be considered as dead unless the contrary is proven. 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 & Goldberg, 1998: 106): therefore, 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 rests therefore 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 two types of reasoning essentially equal as to their epistemic grounding. The dialogical effect is different, as 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* which has been shifted on 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 burden shifting, 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 put it (1977: 2-3), presumption is a reasoning *in ignorance*, as 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 characteristic of presumption comes from the interpretation of intentions in matters of gifts. In *Turchin v. Turchin*, So.3d, WL 2871564 (2009), the two 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 property 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 presumption could support the conclusion only in conditions of 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 shall disappear when evidence to the contrary is brought in, or they shall be weighted as proofs. A simple case can explain such dialectical effect. The most classical presumption is the presumption of death: in a situation in which there is no evidence warranting the conclusion that is a man is dead, he can be presumed to be dead if is has been unheard from for seven years. However, if the other party in a trial produces some testimony that the man 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 accepted view (McBaine, 1938: 534), such case needs to be sent to the jury and be evaluated according to the reliability of the witness. The jury needs to assess whether they can trust the witness, and only in this case the testimony can be counted as a real proof, namely evidence

dispelling the presumption. The jury, in other words, should not weight a presumption against positive evidence, but needs to establish whether the evidence provided is real evidence supporting a contrary conclusion. Presumptions are therefore forms of reasoning in conditions of lack of evidence; the only way to win a presumption is to introduce evidence, namely positive facts that the jury considers to be actual and supporting a contrary 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 duty of establishing whether a proof is a real proof, or rather, of accepting some evidence or not based on their reasoning. From these distinctions in law we can notice how the nature of the presumption affects the shifting of the burden of proof. While presumptions of law provide the burden shifting, presumptions of fact may trigger such 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 premise and conclusion in such cases need to be connected by co-occurrence. As set out in the case *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)). Such likeliness opens up the 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: 522-524). The definition of presumption he proposes shows a crucial epistemic difference with the other types of arguments or proofs (Gilbert, 1756: 159-160):

> [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 is simply matter of experience, sign and probability, can be evaluated according to how shared and how probable is such relation (Greenleaf, 1853: 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 therefore can 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. On 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". On 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, 1765: 160), namely signs. For instance, if a man is seen running away with a bloody sword from a place where a man has 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. Such type of reasoning was also referred to in the Medieval tradition as *Undoubted Indicia*[4] (Sarat, Douglas, Merrill Umphrey, 2007: 32). Such presumptions have their roots in causal connections. On the contrary, probable presumptions refer only to concomitants 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 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, if would be but a light or rash presumption and entitle to no weight.

Plausible presumptions are not signs, but only possible explanations which 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 a probability can account for the relation between possession of stolen goods after a theft and the theft.

[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 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).

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: 748-750) put is, presumptions can be classified in three categories:

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 a reasonable doubt is required to rebut this presumption.*

Table 2: Strengths of Presumptions

On this view, the epistemic foundation of the presumption is connected with its dialogical effects. Such relationship, however, is not reflected in modern theories on presumption, holding the distinction between presumptions of fact and presumptions of law. As noticed above, presumptions of law can stem either from dialogical policies or from factual reasons (see also Mueller & Kirkpatrick, 1999: 176; Brodin & Avery, 2007: 81). In the first case, presumptions are set on a party in order to facilitate the production of evidence; 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 happen 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 proofs, namely are 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.

[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"

6. Epistemic grounds and dialectical effects: Rebutting a presumption

As seen above, presumptions of law and presumptions of fact belong to the same domain of indirect proof, and their difference lies in their dialectical effects being governed by a legal provision. However, the origin of such effects needs to be found in the nature of presumptions, which emerges from the strategies and the conditions of their rebuttal.

Presumptions admit two different types of rebuttal strategies (Park, Leonard & 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 actually was heard of during the five years' time, or provide evidence that he 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 on the strength of the relationship between facts and conclusion, and it is always set 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 consideration different from the principle that 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 was accidental), which are grounded on human experience and human nature (Boos, 1945: 798), even if there is not direct causal connection between death and not-suicide. If we analyze the Evidence Codes of the singular states, we notice how presumptions are distinguished according to their purpose and foundation. In *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 only presumption affecting the burden of proof, that is, undue influence in *inter vivos* or testamentary gifts. Such 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 the elderly need to be defended against being financially exploited by people 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 whole proof rests on the self-serving testimony of the alleged wrongdoer (Nilsson, 2003). The dialectical reason of incrementing the burden of proving absence of influence is in this case combined with the purpose of avoiding potential crimes and defending the weaker party.

Such relationship between rational connections and dialectical effects can be found in criminal law. In criminal cases there are no presumptions stronger than the presumption of innocence, and presumptions cannot reverse the burden of proof (Martin, Capra, Rossi, 2003: 94; *Sandstrom v. Montana*, 442 U.S. 510, 517 -518 (1979)). Therefore, in criminal cases there is not a burden-of-persuasion shifting presumption; presumptions are not mandatory, but simply may assist the prosecution by relieving them from the burden of proving all the elements of the offence (such as, for instance, 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- 68 (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*, which 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 the other party the burden of producing contrary evidence. However, what counts for "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: 229-230) notices 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 & Pinzler, 1978; Park, Leonard & Goldberg, 1998: 102-105) distinguished between different theories of interpretation of such 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 alters 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 & Kirkpatrick, 1999: 182-190). If we look at the local interpretations of such 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: 968-69), which act alone or in combination with other reasons:

[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, Oberman, 2006: 33-35)

[7] *FRE 301*. Notes of Committee on the Judiciary, House Report No. 93-650.

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 have believed 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 presumption shall be dispelled by the simple introduction of any kind of evidence; when instead matters of probability or public policy intervene, the burden shifting may be considered.

6.3. Evaluating presumptions

The different natures of presumption arise also in consideration of conflicting presumptions. In criminal cases, the most relevant cases of conflicting presumptions concern the alleged shifting of the burden of persuasion. The burden of persuasion can be never won 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 presumptions of innocence conflicts with the presumption of guilty:

> "(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 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 presumption, see Hoffman & Rowe, 2010: 216-217).

In civil cases, (Mueller & Kirkpatrick, 1999: 190-192), 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 expressed 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 such case, two presumptions differently grounded conflict: the presumption of continuation of life and the presumption of validity of the 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. On this perspective, the epistemic

foundation on logical reasons or on simply statistical connections plays a fundamental role in determining the effects of a presumption, which led to a tentative classification in (*O'Dea v. Amodeo* 118 Conn. 58, 170. Atl. 486 (1934)):

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 upon making out a prima facie case until evidence to the contrary is introduced.* ***Civil****: The presumption operates only until the defendant has produced some substantial countervailing evidence, some 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 he should have the burden not merely of offering some substantial countervailing evidence but of proving such circumstances.*

However, in such case, presumptions based on social policy are not considered.
The last feature of presumptions can be shown 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 not-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 are on different orders of plausibility. The trust can be presumed from a voluntary payment only if advancement cannot be presumed (Ong, 2007: 401-402). In such case, the impossibility of a presumption is a presupposition of the other presumption.

Considering the above mentioned policies, we can notice 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, we can notice how the type of connection is a crucial element which distinguishes statutory from non- statutory presumptions. The rational, or logical, connection carries a different effect on the dialogical situation than foundations which 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 needed 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 evident can be collected

and examined. The problem is that a particular proposition may be necessary as a premise in a proponent's argument he has put forward, but the evidence that he has at present may be insufficient to prove it to the level required to make it acceptable to all parties. Hence moving 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 where one 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 let this proposition hold temporarily as a premise in the proponent's argument, so that we can say he has proved his contention well enough so that 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 that served as the premise.

7. Rebutting the grounds of presumptions

As seen 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 be 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' 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' character for truth, honesty, or integrity;
(6) the extent of the witness' 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' testimony.

These factors can be structured as critical questions matching an argumentation scheme for argument form witness testimony. Recent studies on argumentation and law (Wyner & Bench-Capon, 2007; Gordon & Walton, 2009, Bex *et al.*, 2003) showed 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 side to the other in argumentation about a disputed claim (Bench-Capon & Prakken, 2010; Prakken & 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 2007, Perelman and Olbrechts-Tyteca 1969).

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

POSITION TO KNOW PREMISE	Witness *W* is in position to know whether *A* is true or not.
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 recollects, and the truth of his or her statements shall be interpreted as truth in reporting his or her own memories, which can be assessed during the 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 ability to recollect and testify, or truth-telling elements, such as being unbiased are proved, still the argument is defeasible (*United States v. Khadr*, Mot. for App. Relief, (D-084), (Sep. 31, 2008)). Memories are reconstructions which can be different from reality, and can be influenced during the cross examination or altered during 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).

Next we illustrate more generally how schemes represent common evidential reasoning in law of a kind that is defeasible and that depend on presumptions. The following argumentation scheme represents argument form expert opinion (Walton & Reed, 2003: 200):

PREMISE 1	Source *E* is an expert in subject domain *S* containing proposition *A.*
PREMISE 2	*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 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, we can notice 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 inference[8]

> (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 categorise 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 column stated 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);
- Mr. Popov captured the ball for six-tenths of a second;
- Therefore, 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

[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).

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 abstracted concept licences the attribution of the predicate ("to be a positive act / an omission"); at last the predicate is attributed to the second entity ("killing one of the two conjoined twins is a positive act / an omission") (see Macagno & Walton, 2009).

To sum up our findings on the nature of presumption so far, presumptions are closely related to defeasible inferences of a kind commonly used in evidentiary reasoning in law that are associated with argumentation schemes that can be used to represent their structure as instances of logical reasoning. Presumptions are defeasible in that they can be rebutted as new evidence enters into a case. In the law of evidence, a presumption is an assumption that a fact obtains, an assumption that can be made without proof in some situations. Thus one defining characteristic of presumption is that it is a proposition that is accepted as factual in law, even though it has not been proved. This characteristic links it to the second characteristic that 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 in the framework of legal evidence. The third characteristic is that a presumption is appropriate in situations where there is lack of evidence. Presumption always implies a dubiousness about what is taken for granted.

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). Often social policies are 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, 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 social policy, the principle of fairness underlying the presumption of innocence is not breached, but simply weighted against a different and stronger reason (Hoffman & Rowe, 2010: 216-222).

8. Conclusion

Our analysis has shown that the notion of presumption has to be defined at 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 responding 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 sat at the opening stage of the dialogue. Presumption is used in a dialectical situation where one party puts forward an argument that is not strong enough to meet the standard of proof that should be required to accept

it, but is nevertheless a worthy argument should be taken into account because it provides some relevant evidence.

Presumptions can be conceived as arguments in ignorance, and play an important role in argumentation when the evidence needed to prove or disprove a thesis is incomplete. Presumptions provide tentative support, directed at achieving different purposes, but ultimately aimed at allowing the parties to move forward in an investigation that may provide the needed positive proofs. Presumptions can bring about different dialogical effects depending on the purpose for which they have been introduced. Every presumption is aimed at achieving a specific goal, which can be dialectical (deciding an issue on the basis of the most reasonable or probable relationship), social (defending the interests of a particular group of people), or political (promoting a particular policy pro or against specific behaviours). According to the importance or strength of such a purpose, presumptions simply disappear upon providing evidence, or need to be weighted against "real" evidence or a convincing argument.

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