Legal Abduction

Abdução Legal

Giovanni Tuzet
University of Ferrara - Italy
giovanni.tuzet@unife.it

Abstract: This paper deals with the role of abductive inference in judicial reasoning. In the determination of both the relevant facts and their legal consequences abductive inference plays a remarkable role, being the first step of such reasoning tasks. Two legal uses of abduction are distinguished in particular: abduction in the fact-finding, i.e. the reconstruction of the relevant facts, and in the law-finding, i.e. the legal conceptualization of those facts. We concentrate on the first, stressing the similarities it has with scientific abduction. We claim that both legal and scientific abduction are explanatory, truth-seeking and public. However, we deny that abduction *per se* can provide a justification of judicial decisions: rather, it is provided by the articulation of abduction, deduction and induction.

Keywords: Legal abduction. Scientific abduction. Induction. Deduction. Explanation. Justification.

Resumo: *Este artigo trata do papel da inferência abdutiva no raciocínio jurídico. Na determinação tanto de fatos relevantes como de suas conseqüências legais, a inferência abdutiva tem um papel notável, sendo o primeiro passo de tais tarefas de raciocínio. Dois usos legais de abdução são particularmente diferenciados: abdução na descoberta de fatos, isto é, a reconstrução de fatos relevantes, e na descoberta de leis, isto é, a conceituação legal desses fatos. Concentramo-nos na primeira, reforçando as semelhanças que tem com a abdução científica. Alegamos que tanto a abdução legal quanto a científica são explanatórias, públicas e buscam a verdade. Entretanto, negamos que a abdução* per se *possa fornecer uma justificação de decisões judiciais: antes, tal justificação é dada pela articulação de abdução, dedução e indução.*

Palavras-chave: *Abdução legal. Abdução científica. Indução. Dedução. Explicação. Justificação***.**

1. The Justification of Judicial Decisions

One of the traditional topics of legal philosophy is the justification of judicial decisions. What conditions are needed for a decision to be justified? Some authors try to confine them to formal and procedural conditions; others claim that further conditions are needed (for instance correctness or moral acceptability if the thesis is held that law is not utterly separated from morality).[1] Among these further conditions, some claim that logical ones are fundamental: judicial decisions must result from logical inference.[2] This being true, the question becomes: What kind of inference does justify a legal decision?

The traditional answer is *deduction*: a judicial decision should result form a deductive normative inference, that is from a legal norm or principle as major premise and a representation of the disputed facts as minor premise. For instance: if whoever commits a murder is to be punished by life imprisonment, and Anastasia has committed a murder, Anastasia is to be punished by life imprisonment. But such an idea has been vigorously contended by those who stress the value-sensitivity, uncertainty and even subjectivity of legal decision-making.[3] These authors claim that deductive justification in legal matters is rather an illusion. But they don't seem capable of offering an alternative model going beyond the subjective intuition of the judge or his sense of equity or political justice. Thus, such answers seem quite defective if the rule of law is to be maintained and rational conditions are needed for a decision to be justified. If so, does a different kind of inference provide a more suitable justification?

We discuss in this paper whether *abduction* provides such a justification.[4] With Charles Sanders Peirce (1839-1914) we take abduction to be the inference suggesting an explanation. The *prima facie* advantage of an abductive model is that it avoids the alternative between deductivism and intuitionism. Then it provides an account of the process of fact-finding and law-finding. In fact, one of the traditional challenges to the deductive model is this: Where do the premises of deduction come from? Now abduction seems to give an answer to that.

But a closer scrutiny cannot fail to see that it doesn't provide a sufficient degree of security, since abduction is a weak mode of inference, the most uncertain of our inferences.[5] Moreover, as we shall see, if abduction according to Peirce provides an explanation of

---

1 See e.g. RAZ (2003) on the question whether there is a necessary connection between law and morality. Cf. ALEXY (2004) for the thesis that the law raises a "claim to correctness".

2 Here we shall leave aside the issue of the logical status of normative inferences. It was famously questioned by JØRGENSEN (1938). Some arguments in favor of it are considered in TUZET (2005, p. 218-9).

3 Cf. e.g. HUTCHESON (1929), FRANK (1930; 1949), KELMAN (1987), KENNEDY (1997).

4 One may also wonder about other modes of inference such as induction and analogy. But induction, if intended as *generalization* (e.g. CP 2.640, 2.714), cannot constitute the justification of *particular* decisions (it could constitute at least the justification of some of their premises). As to analogy, if Peirce is right in claiming it is a spurious inference (e.g. CP 2.513, 2.632), the question becomes which is its component that plays the justificatory role. Cf. McJOHN (1983).

5 Cf. CP 8.384-388 on security and uberty in reasoning: on the one hand, abduction is the most uncertain of our inferences; on the other, only abduction introduces new ideas.

surprising observations, what is the relevance of abduction to legal reasoning, where in general observations are not surprising and the focus is not on the novelty of explanations but on their acceptability?

We shall meet these challenges claiming that abduction *per se* does not provide a justification. But it is the first step of the reasoning process providing an explanation of the facts, reconstructing what happened in particular. For instance whether Anastasia, to take the previous example, really committed the murder. Such a first step consists in formulating a hypothesis on the basis of the evidence at disposal. Then, to be an acceptable explanation, the hypothesis must be tested and confirmed by further evidence. As Peirce's scholars know well, that involves other inferential steps: determining by deduction some consequences of the hypothesis, then testing and evaluating them by induction. Now we claim that such a complex inferential process, of which abduction is the first step, provides a model of the legal fact-finding. It also provides a model of the law-finding process, i.e. the process of legally conceptualizing the relevant facts and determining their normative consequences. In our example, whether and how Anastasia must be punished. Such a complex inferential process is to be compared with what is called, by the recent literature, *Inference to the Best Explanation* (IBE). Then our answer to the question whether abduction provides a justification of legal decisions will be in the negative as to abduction *per se*, but in the positive as to the process of IBE involving a first abductive step. The logical conditions for a decision to be justified are not satisfied by abduction alone: it is the articulation and interplay of abduction, deduction and induction that provides a suitable justification.

Section 2 of the paper resumes very briefly Peirce's own account of abduction. Section 3 states what we take legal abduction to be and mentions some uses of abduction in legal reasoning. Section 4 deals with abduction and fact-finding and Section 5 with abduction and law-finding. Section 6 compares legal and scientific abduction. Finally Section 7 remarks in what sense truth is a necessary condition of justice.

2. Charles S. Peirce and Abduction

In the main Peirce calls *abduction* the inference suggesting an explanation, but the use of the term and its meaning are not constant. In his early writings instead of the term "abduction" he uses the term "hypothesis" (see e.g. W1: 180, 266 ff. [1865]; W1: 362, 430 ff. [1866]; W3: 323-38 [1878]). At that time his main purpose was to distinguish, in a Kantian way, ampliative from non-ampliative inferences. *Hypothesis* and *induction* are taken to be ampliative inferences while *deduction* is taken to be a non-ampliative, merely explicatory, inference. His point being the difference between ampliative and non-ampliative inferences, Peirce does not always draw in his early writings a clear distinction between *hypothesis* and *induction*. Yet he says that induction determines a general character while hypothesis permits the knowledge of causes (W1: 428; cf. e.g. CP 5.272-276, 2.624). Nonetheless, he more frequently uses *hypothesis* to denote a syllogistic, classificatory reasoning,[6] than a causal, explanatory reasoning.

[6] We call "classificatory" the reasoning that substitutes a more general predicate to less general predicates (cf. CP 2.461-516, 2.704 ff.).

But in his later writings he draws a clear threefold distinction between *abduction*, *deduction* and *induction* (see e.g. CP 7.162-255 [1901]; CP 5.14-212 [1903]). Such a distinction is functional and methodological.[7] In fact, according to the mature Peirce every scientific inquiry is constituted by three inferential steps: first, abduction suggests a hypothesis explaining a fact; second, deduction determines the conceivable consequences of the hypothesis; third, induction tests the conceivable consequences of the hypothesis.[8] As we shall see, this articulation provides, in our opinion, a model of justification of legal decisions.

Many issues concerning Peirce's theory of abduction are still far from being settled. For instance whether abduction is properly the process of *generating* a hypothesis, or rather the process of *evaluating* a hypothesis; whether it has a logical or rather psychological character; what is the role of instinct in abduction.[9] The most reasonable thing is to claim that the term "abduction" does not denote a single process or act of inference, but covers a range of different phenomena going from hypothesis generation to hypothesis evaluation. These are distinguishable in principle but present a remarkable continuity in mental life and inquiry. For our purposes here, the relevant distinction will be that of abduction as *classificatory reasoning*, and abduction as *explanatory reasoning*, as we try to show in the next Section.

3. Legal Abduction

Many uses of abduction are detectable and distinguishable in legal reasoning. These four at least:[10] (i) inferring, from an observed action, the norm that was followed by the agent; (ii) inferring, from an expressed norm, the unexpressed principle it depends on; (iii) inferring, from known facts, some unknown facts explaining them; (iv) inferring, from the observed characters of the case, how the case is to be legally classified.

Legal adjudication presents the last two in particular, on which we shall concentrate in this paper. The fact-finding process is a kind of abductive task in sense (iii), that is in the *explanatory* sense of abduction: going from known to unknown facts, making hypotheses on what happened. For instance whether Theodore, who was found dead, was killed and how. This has often a causal aspect, where the unknown causes are to be inferred from known effects as minor premises and empirical laws as major premises. The law-finding process is instead a kind of abductive task in sense (iv), that is in the *classificatory* sense of abduction: going from the observed characters of the case, to the legal classification of it. For instance whether the conduct of Anastasia, who was eventually found to have killed Theodore, is to be considered as a case of self-defence. *Legal*

---

7 Cf. LEVI (1997; 2004). Notice that abduction in this sense does not need to be a causal inference, since explanations are not necessarily causal.

8 See especially FANN (1970). On the logical and semiotic models involved in Peirce's theory of inference, see TIERCELIN (1993).

9 Cf. e.g. FRANKFURT (1958), HANSON (1958), AYIM (1974), ANDERSON (1986), KAPITAN (1990), HINTIKKA (1998), PAAVOLA (2004).

10 Cf. CONTE (2002), CARCATERRA (2002), TUZET (2004).

abduction on the whole comes to this double task: finding out what happened (the killing in our example) and classifying it according to some legal concept (self-defence).[11]

Thus, the thesis could be defended that abduction is the key inference in legal reasoning and justifies the decision of the judge or court. A warning remark must be made. According to Peirce's inferential methodology, no inference by itself is a sufficient condition of knowledge: abductive conclusions in particular need to be tested by further inferential steps (a deductive determination of their consequences and an inductive procedure of testing them). So, concerning in particular the fact-finding, it is in the first place an abduction but not an abduction only. Abduction is the first step of such reasoning tasks as fact-finding and law-finding, but it must be supported by subsequent inferences determining its value.

A further objection to considering abduction as the key inference of legal and judicial reasoning comes back to the role of deduction. The objection is this: once the double task of explaining and classifying the facts is achieved, the inference that determines the legal consequences of the relevant facts is, in the main, a *deduction*. To grasp the point, notice that every legal concept has no meaning *per se*: its meaning is determined by (a) the factual conditions to which it applies and (b) the legal consequences that follow from its application. Such consequences are determined by legal rules and principles. If so, once the facts are explained and classified, what needs to be done is to infer their normative consequences; such an inference is deductive: legal deduction determines the consequences that *ought* to follow from the facts ascertained, according to some rule or principle.[12] To this we shall reply that such a deduction is not only preceded by an abductive classification of the facts, but also followed by an inductive evaluation of the legal consequences as far as in complex legal systems more than one normative outcome is suitable.[13] If that is true, it confirms that the methodological articulation of the three inferences constitutes a model for judicial decision. But to reach this conclusion, the processes of fact-finding and law-finding should be considered more closely.

4. Abduction and Fact-finding

Legal reasoning about the facts starts as an abduction: what is needed is a hypothesis providing, or at least suggesting, an explanation of the known facts. It is not wrong to claim that this kind of abduction is the core of a trial – as Benjamin CARDOZO (1921, p. 129) said: "the controversy relates most often not to the law, but to the facts."[14]

In this respect legal and historical inquiry are quite proximate.[15] Both (always the historical, usually the legal) aim at reconstructing what happened. The problem is, in

---

[11] However, note that even though their conceptual distinction is clear, in practice the two, explaining and classifying, fact-finding and law-finding, cannot be sharply distinguished. The reasons are not difficult to imagine: one is that the facts to be found are *legally relevant* facts, not facts *simpliciter*.

[12] Cf. MacCORMICK (1978, chaps. 2-3).

[13] Cf. ALEXY (2003) on the issue of balancing competing principles.

[14] In the recent literature, cf. DOWNARD (2000), SCHUM (2001), ABIMBOLA (2001).

[15] See NERHOT (1994). On the differences between them see TARUFFO (1992, p. 310 ff.).

doing that, that they deal with past facts and events, to be reconstructed on the basis of present evidence. Were they about general facts or dispositions, the abduction of their antecedents wouldn't be a major problem for those who defend, like Peirce, a metaphysically realist position.[16] In fact, when the hypotheses deal with dispositions or laws of nature, the reality of would-bes is a metaphysical answer to the issue of hypotheses concerning the past. But the specificities of legal hypotheses are, first, that they must be *proved epistemically*, not metaphysically, and, second, that legal issues usually concern *singular* facts and events. They concern something unique. Again in our example, the issue is not on murder in general but on the singular event of Theodore's being killed; not, to take another example, on the disposition of a poisonous substance but on the singular event of someone's being killed with that substance. In this sense, the disputed facts cannot be reproduced experimentally, so as to test the hypotheses on them by induction using statistical or quantitative methods (cf. CP 2.758-759). So, these are the difficulties: in general the hypotheses concerning the legally relevant facts cannot be tested and proved directly, but only indirectly by the supporting evidence, and, being on something unique, they cannot be tested with statistical or quantitative methods.

It does not follow from that that abduction has no relevance for legal reasoning. In the first place, even a singular event may have some aspects that depend on dispositions or laws of nature; such aspects can be explained by abductions relying on the knowledge of such dispositions and laws of nature (for instance whether that kind of substance was capable of killing that kind of organism), even though this abductive step does not imply a complete reconstruction of the singular event. In the second place, the singular aspects of the event can be reconstructed indirectly on some evidential basis and general assumptions (for instance whether the fact that Irene was a chemist supports the hypothesis that it was she who prepared the poisonous substance by which Basil was killed). Even if a legal-historical hypothesis cannot be tested and proved directly, it can be indirectly when supported by adequate evidence. Even if it cannot be tested statistically, it can be with qualitative methods.[17] Now the question is: Are such abductive reconstructions sufficient to justify a legal decision on the disputed facts?

A current objection to legal abduction is the following: if for example some footprints are found where Theodore was killed, and if they correspond in size to footprints of Anastasia, then we could argue by abduction that Anastasia was there; but another woman could well exist with the relevant physical character.[18] Thus, one may claim that abduction is not only an invalid form of reasoning but also an unreliable one. This conclusion is too strong. First, because logical validity is not just deductive validity.[19] Second, because abduction does not go without standards of proof, in that plausible explanations always require a certain standard to be met. Such a standard is contextual, depending on the subject-matter and the kind of inquiry. In fact, in the example just made the problem is less with the reasoning form than with the evidence: the evidential basis is not sufficient

[16] On this aspect of Peirce's realism cf. CP 5.206, 5.426, 5.544-545, 5.564.

[17] See CP 2.756-759 (c. 1905) on the distinction between crude, quantitative, and qualitative induction. Cf. CP 2.761 ff.

[18] Cf. e.g. IACOVIELLO (1997, p. 115 ff.).

[19] On the issue of validity see LEVI (1997). Obviously, abduction is invalid form a deductive point of view; it is not necessarily so on different standards of logical validity.

to yield a *legal* conclusion concerning Anastasia, even though it might be sufficient to yield conclusions in other contexts. Anyway, abduction never yields certainty. It is a probable inference, that is an inference determining conclusions whose truth does not necessarily follow from the truth of the premises (cf. W2: 22). This is not a check however: it is indeed a matter of responsibility. Those who know the uncertainty of abductive conclusions, assume the responsibility of their inference. Knowing that some piece of reasoning is not infallible, means the impossibility of concealing a fallible decision under the shield of logic. The shared knowledge of the hypothetical nature of a conclusion, means the impossibility of presenting it as necessary.

In sum, we must not expect from abduction more than abduction can yield, that is, probable conclusions. So the answer to the question whether abductive conclusions are sufficient to justify a legal decision is inevitably in the negative. But the answer is different as to abductive conclusions tested and confirmed by subsequent processes and inferences.

5. Abduction and Law-finding

It is sometimes said it is more difficult to admit the relevance of abduction for the process of law-finding. The law-finding cannot be naturalized, according to some legal scholars.[20] Yet the processes leading to the determination of the law to be applied need to be analyzed. Denying the existence of such processes is quite implausible. Better is to admit their role, so as to eventually criticize them instead of ignoring their existence and functioning. So the question may be posed which are the logical and psychological processes involved in the law-finding. Here we shall not consider the strictly psychological ones, but the logical process of case classification, which we claim is a form of abduction.

The expression "law-finding" may be misleading: that which is found is not the law immediately, but in the first place a legal concept under which the case falls. Starting from the (empirically detectable) characters of the case, the case is classified as an instance of some concept. Thus, since legal concepts are stated in rules or principles, the finding of the legal concept instantiated by the case is a fundamental step for the determination of the law (rule or principle) to be applied. This finding has an abductive character. Suppose the case S presents characters P_1, P_2, P_3. If these characters partly define the connotation of a legal concept M, the case is to be (tentatively) classified as an instance of that concept. Think at the example of self-defence: if Anastasia acted to protect her own person (P_1), from unjust aggression (P_2), and with necessary and proportionate force (P_3), and these characters partly define the connotation of self-defence, her conduct is to be classified as an instance of self-defence. This classification is not deductive, but abductive as far as legal concepts do not have a sharply and fairly defined connotation.[21]

---

[20] "Peirce's abduction is a powerful instrument to build empirical hypotheses, and it is extremely doubtful that the very concept of an empirical hypothesis could work with a legal (or moral) rule" (GANFORMAGGIO, 1997, p. 264, footnote 51). On law-finding cf. POUND (1960). See also, on legal interpretation as abduction, DASCAL; WRÓBLEWSKI (1988, p. 214 ff.).

[21] Cf. the well-known HART (1994, chap. VII) on legal concepts has having an "open texture". On self-defence in particular see e.g. UNIACKE (1994).

So, the question "how the law is found" should be better substituted with the question "how the case is classified". Such a classification is abductive, as we said. To be more precise, it is a *hypothesis* in the logical sense given by Peirce's early writings to the term "hypothesis", that is a *classificatory* inference substituting a more general predicate to other predicates less general: if case *S* has characters P_1, P_2, P_3, and legal concept *M* has such characters, case *S* is an instance of *M* (cf. CP 2.461-516, 2.704 ff.). Obviously, a problem to be faced is the want of a concept adequate to the particular characters of the case, and the want of a corresponding rule or principle. In such an eventuality, the relevant abduction will have the form of an analogical abduction (cf. CP 6.40, 1.65, 1.69), or it will be a highly creative abduction, producing a new legal concept and a new corresponding rule or principle.

Now our previous question must be posed again as to law-finding: Is abduction sufficient to justify a legal classification of the case? Again the answer must be in the negative, since abduction is a conjectural and fallible inference. But the answer is different when concerning abductive conclusions tested and confirmed by subsequent processes and inferences. Take the case of self-defence: once the hypothesis is formulated that *S* is an instance of *M*, one could realize that also character P_4, namely the immediacy of aggression, is part of *M*'s connotation. Then, to be true that *S* is an instance of *M*, *S* should also have character P_4, that is, Anastasia should have acted against an immediate aggression. If that is confirmed, the hypothesis that *S* is an instance of *M* is confirmed. Of course in the law-finding such testing processes and inferences are different in principle (but not separated in practice) from those of the fact-finding, since the latter is basically empirical and the former conceptual. But the inferences articulate in the same way: subsequent deductions elaborate on previous abductions while subsequent inductions test their outcomes. Such an articulation and interplay provides the justification that a single inference cannot provide.

But the objection concerning the role of deduction can be raised again. Once the facts are found and the case classified, the normative consequences should be deduced according to the relevant rule or principle. So one may claim that the key inference of judicial reasoning remains in any case deduction. We do not deny that judicial reasoning has a deductive component. On the contrary, it is in a sense its most peculiar one, being the normative inference where a normative conclusion is inferred from a normative major premise (the rule or principle) and a factual minor premise (the case). But where does the normative premise of deduction come from? It is the outcome of the law-finding. And where does the factual premise come from? It is the outcome of the fact-finding. Furthermore, it can be claimed that such a deduction, in a model of judicial decision, is followed by a third inferential step, an *induction* testing the deductive outcome. In particular, verifying whether the outcome is not in conflict with other normative requirements and principles. Concerning in particular the common law systems, similar considerations can be developed on the process of extracting a rule from a range of precedents: from the analysis of precedent decisions a rule is abduced, then its consequences are deduced, finally these consequences are tested by induction relatively to other cases.[22] Such a threefold articulation of the law-finding is proximate to Peirce's

[22] See DOWNARD (2000). The problem is originated by the plurality of *rationes decidendi* inferable from a set of precedents; see for example STONE (1985, p. 2 ff.).

threefold model of scientific inquiry. The same holds for the fact-finding, as we saw. Claiming this is not incompatible with recognizing that, in the strictest sense, the judicial decision is the outcome of a normative deduction, from the major premise established by the law-finding and the minor premise established by the fact-finding.[23] On the whole, such a complex process of law-finding and fact-finding can be taken to be the *inference to best (legal) explanation of the case in hand*. That provides the logical conditions for a decision to be justified.

6. Fact-finding in Science and Law

What are the main similarities and differences between scientific and legal abduction? For a better understanding of the issue, it is useful focusing on historical abduction as well, and consider the triangulation between legal, scientific and historical abduction. On the one hand, legal abduction is different from historical abduction since the subject-matter of judicial decisions are individual actions and conduct, not actions and events on a bigger scale (as in history). On the other hand, historians and lawyers are interested in scientific and social laws in order to explain particular facts, while scientists are interested in particular facts in order to establish general laws. The relations between those inferences are quite complex,[24] but the notion of *peculiarity of scale* can help in grasping some of them.

Approximately, we could order abductive inferences and their subject-matter in the following way: *scientific* abduction mostly deals with actions on a small scale (reconstructing processes in detail); *legal* abduction mostly deals with actions on a middle scale (reconstructing individual actions and conduct); *historical* abduction mostly deals with actions on a big scale (reconstructing a process as a whole). Be it considered the example of a poisonous substance:[25] scientific abduction finds its causal responsibility relative to a certain pathology; legal abduction determines whether someone contracted such a pathology in a way someone else is responsible for; historical abduction reconstructs how such a substance was introduced and used in a certain context and period. Every abduction has a sort of *peculiarity of scale*.[26] It should be noted, by the way, that the difference of scale is not directly proportional to the generality of the phenomena examined: it is inversely proportional. The small (scientific) scale studies the causal relations at the highest degree of generality, and the big (historical) scale at the lowest

---

[23] Some legal scholars (e.g. FERRAJOLI, 1989, p. 38-9) present this threefold model of legal reasoning: the discovery of the facts, their legal classification and the practical inference related to them. Others (WRÓBLEWSKI, 1992) distinguish between *internal* and *external* justification, the former being the (logical) justification of the conclusion of judicial deduction, and the latter the (argumentative) justification of its premises.

[24] Cf. e.g. HEMPEL (1942), NERHOT (1994), NEWMAN (2000), HAACK (2001).

[25] Cf. for instance the case Joiner *vs.* General Electric Co. (1994), discussed in WALKER (2001) and HAACK (2001, p. 233 ff.).

[26] This does not mean, of course, they have an absolute independence: historical or legal inquiries cannot disregard the scientific results concerning their subject; on the other hand, scientific abduction is provoked by certain cases situated in specific contexts having specific interests, problems, goals, etc.

degree. There are of course wide-ranging scientific theories, but they are either the generalization of phenomena of small scale or the historical reconstruction of their dynamics (think of evolutionism); in both cases it is confirmed that scale and generality are inversely proportional. We cannot say, in any event, that each kind of abduction is independent of the others. On the contrary, the most interesting and complex cases are those presenting an entanglement of scientific, legal and historical problems.

This being said, in the following we concentrate on the first kind of abduction we considered, the one concerning the fact-finding. Abduction in science and abduction in legal fact-finding can be compared and three similarities at least can be sketched. They concern respectively the *explanatory*, *truth-seeking*, and *public* nature of abduction.

6.1. Legal Abduction as Explanatory

Legal abduction is the inference suggesting an explanation of the known, legally relevant facts. It is the first step of the process of fact-finding whose aim is to provide the *best explanation* of the facts. Abduction in science has the same explanatory role. IBE denotes indeed a more complex process than the process of suggesting a hypothesis.[27] It comprehends the evaluation of the hypothesis compared to some rival hypotheses. Legal abduction in the strict sense is merely the inference suggesting an explanation. But the inferential articulation of abduction, deduction and induction provides the best explanation of what happened.

There is however a very important point distinguishing explanation in science and in law: the ampliative character of abduction. Peirce emphasizes on many occasions that abduction is the only inference providing new ideas (CP 2.96, 2.777, 5.171) and determining the advancement of science. But legal abductions must not be revolutionary: they must be justified.[28] In a trial, what is required is not a theoretically novel explanation of surprising facts, but an acceptable explanation of (usually) ordinary facts, grounded in accepted scientific assumptions and theories. This is the reason why we have elsewhere distinguished ordinary from extraordinary abduction, whose difference can be stated in these terms: ordinary abduction infers a new token of an old type, while extraordinary abduction infers a new token of a new type.[29] Apart from this difference, it can be maintained that both scientific and legal abduction are explanatory.

---

[27] Cf. HARMAN (1965), JOSEPHSON; JOSEPHSON (1994), LIPTON (2004).

[28] PAAVOLA (2004, p. 263-5) distinguishes "Hansonian abduction" (a logic of discovery) and "Harmanian abduction" (IBE), stressing that the focus of the latter is on justification and claiming that Peirce was interested in the inference of *plausible* explanations rather than in the selection of the best existing explanation. On abduction as IBE see JOSEPHSON (2001).

[29] Cf. TUZET (forthcoming). This does not exclude that creative abductions may play a role in the law-finding, as we saw in Section 5. But it may be objected that "surprise" is a defining element of abduction, that cannot be dropped without dropping abduction itself. See GABBAY; WOODS (2001, p. 151; 2005).

6.2. Legal Abduction as Truth-Seeking

We also claim that both scientific and legal abduction are truth-seeking, that is aiming at a *true* explanation. But it can be objected that legal abduction is not such, for truth is not the goal of a legal process. This critical argument could even take the *Modus tollens* form, claiming that if abduction is truth-seeking and the so-called Legal Abduction is not truth-seeking, then there is no such thing as Legal *Abduction*. What are the reasons for claiming that?

It could be said that in legal adjudication the only thing to be evaluated is the *evidence* produced by the parties, and that the inquiry is not to be pushed beyond that limit. It could be argued in this way that legal abduction is not truth-seeking, since it should rather account for the evidence, not for truth. In this sense, to scientific inquiry and abduction another model of inquiry is opposed, one whose aim is not to find the truth, but to evaluate the evidence in order to take a practical decision. According to some legal scholars, this model of inquiry fits better what happens in a trial. This opinion is largely based on the distinction between the *adversarial model* and the *inquisitorial model* of legal process. The former leaves to the parties the faculty of seeking, finding, collecting, and showing the evidence on which the judge or court will decide the case. The latter instead attributes to the judge both the faculties of finding the evidence and deciding the case. So, in the latter model, the judge or the court has both the powers of constructing the charge and deciding on it. The tension between these two powers is evident, and the lack of impartiality in the final decision is the most deplorable consequence of such a model.

The fact that the adversarial model has today a larger diffusion supports the opinion that truth is not the goal of the legal process, its goal being otherwise the sole evaluation, by an impartial judge, of the evidence produced by the parties. If that is true, legal abductions (if any) are not truth-seeking. To this we reply with two arguments, which we call *the institutional argument* and *the conceptual argument*.

According to the *institutional argument*, even if truth is not *the* goal of a legal process, it is *one of its* goals. The first of these is of course making justice, but if a true representation of the case or a true reconstruction of what happened are necessary conditions of a just decision, then determining such truths is one of the goals of the process.[30] So the institution of the legal process cannot be thought of making abstraction from its cognitive function, from the truth-seeking goal. Between the goals there can be tensions, which every legal systems resolves in its own way. Susan HAACK (2004a) has recently remarked on the tensions between truth and justice, stressing that the legal concern for prompt and final resolutions is opposed to the open-ended fallibilism of science.[31] That applies in particular to the adversarial model. In fact such tensions and

---

[30] To be just, a normative conclusion needs to follow not only from an acceptable normative premise, but also from a true factual premise. Were the minor premise false, the norm would be applied to the wrong situation. In the Italian literature, see TARUFFO (1992) defending this thesis for the civil process and FERRAJOLI (1989) for the criminal process. Cf. also our Section 7.

[31] See also HAACK (2003; 2004b). Cf. FERRER (2004, p. 32) stressing on the other hand the fallibility of judicial decisions.

the differences between the two models, adversarial and inquisitorial, cannot be disregarded; however, we believe they consist in putting different constraints on legal process and inquiry. In the adversarial model some moral, political and legal principles restrain the patterns of investigation. But such differences can be conceived of as different ways of settling the tensions between the goals of the process, not as differences excluding in some cases that truth is a goal of the process institution. In fact, a judicial decision based on a false representation of the disputed facts fails to be just.

The *conceptual argument* stresses the conceptual relation between evidence and truth, or proof and truth. It may be observed that it is uncontroversial that a proof is a proof of truth. In legal matters it is not so. Such a relation is contended by those who claim that the rules of evidence are not (only) truth-directed.[32] Some prominent scholars claim indeed that the conceptual relation between truth and proof does not hold in legal matters. In particular, FERRER (2004, p. 38-41) claims that the sentence "It is proven that *p*" is not synonymous with "It is true that *p*", but synonymous with "There is sufficient evidence in favor of *p*". If this is right, it can perfectly happen that it is proved that *p* without being true that *p*; for instance when the standards of proof defining the criterion of "sufficient evidence" are met but in fact it is false that *p*. To this, one can reply that the relevant difference in such cases is between being proved and being *considered as* proved; in such cases, where the criterion of "sufficient evidence" is met but in fact it is false that *p*, that *p* is not proved but erroneously considered as proved. Our conceptual argument explains why this difference is needed: because a proof is a proof of truth.[33]

From a conceptual point of view, we believe that the separation of truth and evidence, or truth and proof, is incorrect.[34] If *evidence* is required, it is in order to determine the *truth*. The same applies to proof. A *proof*, is a proof of the *true*. This is not to equate truth with proof, but to claim that a proof is a proof if and only if it is a proof of the true. We can draw some paradoxical consequences from the separation of truth and proof. For example, to be correct, it should imply that some proofs hold good while being false. It should likewise imply that some proofs hold good while allowing the inference of false consequences, or while being inferred from false premises.

---

[32] Consider for instance these remarks on the American Rules of Evidence: "Even were it theoretically possible to ascertain truth with a fair degree of certainty, it is doubtful whether the judicial system and rules of evidence would be designed to do so. Trials in our judicial system are intended to do more than merely determine what happened. Adjudication is a practical enterprise serving a variety of functions. Among the goals – in addition to truth-finding – which the rules of procedure and evidence in this country have sought to satisfy are economizing of resources, inspiring confidence, supporting independent social policies, permitting ease in prediction and application, adding to the efficiency of the entire legal system, and tranquilizing disputants" (WEINSTEIN, 1966, p. 241).

[33] Still many lawyers accept the distinction between the so-called material truth (what is factually true) and the so-called judicial truth (what is established by the judge). Against that, FERRER (2004, p. 35-6) claims that it makes judicial decisions about facts true by definition. The impossibility of saying that they are fallible is one of the implausible consequences of that.

[34] We leave aside a discussion of Peirce's conception of truth, even though it would be of great interest for our topic. On truth, convergence of opinion, and correspondence according to Peirce, see HOOKWAY (2000, chaps. 2-3). Cf. MISAK (1991).

Essentially, we can reformulate the so-called Moore's paradox. Such a paradox is known from a passage of Wittgenstein's *Philosophical Investigations* (second part, X). It concerns the relation between reality and belief, the paradox being, in our reading, that a conceptual difference such as the difference between reality and belief implies nevertheless a certain connection between the two, so as to make some statements paradoxical as the following:

(1) It rains but I believe it does not rain.

We can reformulate Moore's paradox considering the relation between truth and proof:

(2) We have the proof of *p* but *p* is not true.

Or:

(3) We have no proof of *p* but *p* is true.

Such statements as (2) and (3) are paradoxical by virtue of the conceptual relation between truth and proof. They confirm our intuition that a proof is ultimately a proof if and only if it does account for truth.

Three objections could be raised indeed to this argument.[35] The first is a *legal* one: civil proof and criminal proof have different standards. In a criminal case, the relevant fact should be proved "beyond reasonable doubt"; while in civil cases the standard is less high. This is true, but it does concern the pragmatics of legal proof, so to speak, and not the semantics of it and the conceptual relation between truth and proof: independently of the standard, a proof is always taken to be a proof of the true. No one, both in civil and criminal cases, would ever claim to have a false proof of the fact he is trying to prove. The second objection is a *logical* one: on a certain logical conception of proof, (2) and (3) are not paradoxical. They could be stated as follows: (2') We have the proof of *p* but *p* is not true, then the system is not sound; (3') We have no proof of *p* but *p* is true, then the system is not complete. This is true for a syntactic conception of proof, we suspect, and false or pointless for a semantic conception of proof, as the legal conception is: what matters in a legal context of proof are the facts accounted for, not the strictly logical properties of the proofs or the properties of the system they belong to. The third objection is a *metaphysical* one: (3) would be not paradoxical if truth were intended as metaphysical truth. It could be the case, given the distinction between epistemology and metaphysics, that we have no proof of *p* but *p* is true. This cannot be denied by those who have realist intuitions. In fact, our argument does not claim the equation of truth with proof: it claims that a proof is a proof if and only if it does account for truth. So, on the conceptual priority of truth over proof, there is room for a realist conception of truth consistent with the principle that unproved or unknown truths could not determine a legal decision.

Something more must be said on the third objection. Granted that a proof is a proof of truth, one may remark that the third objection addresses a different issue: that

[35] Thanks to Martin P. Golding and François Lepage for drawing our attention on the first and second objection, respectively.

truth may obtain even where there is no proof. It may be true but impossible to prove, for instance, that Anastasia killed Theodore. The law does not then assert that it is simply not "true in a legal sense" that Anastasia killed Theodore.[36] The law asserts that the truth of the case has not been established. If there is insufficient evidence (proof) of the charge then an additional legal principle is brought in which asserts that Anastasia cannot be found guilty. The law recognizes the possibility stated by (3) but introduces a legal principle to constrain the effects of this possibility. This remark is basically correct, but what is paradoxical is (3) as a definite statement: what is paradoxical is asserting a definite instance of (3), as far as we are not entitled to assert what we cannot prove.[37] This is in tune with the principle that unproved or unknown truths could not determine a legal decision. So the issue addressed by the third objection is different but not separated from the issue of proof as a proof of truth, as far as we are not entitled to assert what we cannot prove: on the one hand, proof is a proof of truth; on the other, we need proofs to state the truth.

To resume, these objections do not undermine our intuition that a proof is a proof of truth, at least in the legal context. Moreover, any legal limitation concerning the patterns of inquiry does not exclude truth from the goals of the process. Legal abduction is truth-seeking for truth is one of the goals of the legal process.

6.3. Legal Abduction as Public

Legal abductions (at least in the adversarial model) are publicly discussed and evaluated as scientific abductions are. Moreover, according to some fallibilist approach in epistemology that emphasizes the importance of the public debate of arguments, we can say that the adversarial model offers many more truth-warranties than a "private" inquiry does according to the inquisitorial model.[38]

In fact the adversarial model, which seems in other respects to separate legal and scientific abduction, has *publicity* as its main character: the evidence is produced in the trial, in the public debate of the parties. This is a fundamental difference from the inquisitorial model, where the legal inquiry can be carried on secretly by the authority, being admitted as relevant for the final decision the evidence collected *privatim* by the authority, regardless of its being discussed on trial. This public dimension constitutes a strong similarity between legal and scientific abduction: the method of science defended by Peirce requires our beliefs to be discussed by the community of the inquirers (see e.g. CP 5.378, 5.407).

---

[36] But those who accept the distinction between "material truth" and "judicial truth" (see footnote 33 above) may accept this.

[37] To put it differently, asserting (3) violates Grice's maxim of quality, since the maxim requires us not to assert what we cannot prove. See GRICE (1989, p. 22-40).

[38] See in the Italian literature FERRUA (1997), who denounces the misunderstanding of the opposition between adversarialism and truth-seeking: he claims that truth is to be determined less in investigation than in debate. On the opposition between truth-seeking and adversarialism, see for example FRANK (1949, chap. VI: *The "Fight" Theory versus the "Truth" Theory*).

Thus, we are able to comprehend the limit of the comparison between abduction and police investigation. Many Peircean scholars insisted on such a comparison.[39] But the legal reconstruction of what happened is less a private investigation, the hunch of a particularly skillful detective, than a public confrontation of hypotheses. It can certainly happen that the most ingenious and brilliant hypothesis is the one resolving a case, but any hypothesis should be publicly evaluated according to shared criteria and principles. The trial is the means of a public reconstruction of the disputed facts. It is not decided by the genial hunch of a detective, nor by the absolutely private investigation of an authority.

Indeed it could be objected that the focus is here on what follows abduction, that is the process of hypothesis evaluation, and not on abduction as hypothesis suggestion. This is not false, but such an objection would rely again on the quite romantic idea of a private hunch, regardless of any principle of method (cf. CP 2.634-635, 7.220, on the *criteria* of hypothesis formulation and selection). Even when a hypothesis is private in the sense of being generated in a singular mind, suggesting it in a context and evaluating it are public activities.

What has often been pointed out about the logical structure of judicial decision, is the practice of inverting the decision and the reasons for it. It is not only a practice in certain legal systems where the reasons for decision are made public after the decision is made; it is also, according to some scholars, a practice of reasoning. That is, the practice of finding the premises after the conclusion is selected. This inversion was noticed by John Dewey in his celebrated 1924 paper *Logical Method and Law* (MW 15: 65-77).[40] According to him, we generally begin with some vague anticipation of a conclusion (or at least of alternative conclusions), and then look around for reasons and premises supporting it. It could be replied that a chronological priority is not a logical priority. As Neil MacCormick has rightly observed, it does not make sense to insist on the inversion between reasons for decision and decision, or in other words between the context of discovery and the context of justification: in law, what makes a conclusion acceptable is the justification for it, regardless of the way it has been discovered at first.[41] Were it a logical priority, from Peirce's point of view it would be "sham reasoning."[42]

So, both the reconstruction of facts and the justification of decision are publicly made and evaluated through the debate of the parties. However, the parties are obviously more interested in their own success than they are in the discovery of truth or justice. But it is no less true that the judgment must not concern the personal or political interests of the parties: it must concern their arguments and the evidence they produce. Even if

---

39 See especially ECO; SEBEOK (1983); cf. recently PAAVOLA (2004, p. 257). That legal reasoning is quite different from police investigation is clearly shown by the legal scholars who work on legal decision and justification, for the legal decision is "perhaps a uniquely public and published form of reasoning" (MacCORMICK, 1978, p. 7) and being such it should have a public justification.

40 On Dewey's legal thought, compared to coeval Legal Realism, see MENDELL (1994).

41 MacCORMICK (1978, p. 15-6). Cf. ANDERSON (1996).

42 Reasoning from the conclusions desired is contrary to truth and logical validity – "it is no longer the reasoning which determines what the conclusion shall be, but it is the conclusion which determines what the reasoning shall be. This is sham reasoning" (CP 1.57).

there is no community of inquirers as in science, even if the parties do not aim at a shared determination of truth, the judge or court must in any case evaluate the truth or falsehood of their claims.

To resume. These are the similarities we have considered between legal and scientific abduction:

(1) legal abduction has an explanatory role as scientific abduction has, and is part of a process of inference to the best (legal) explanation;

(2) legal abduction is truth-seeking as scientific abduction is; concerning then the relation of truth and proof, their separation is incorrect, because a proof is a proof of the true, and a limitation of the patterns of investigation does not exclude truth from the goals of the process;

(3) in the adversarial model at least, legal abduction is public as scientific abduction is; concerning then the tension between the truth-seeking goal and the parties interests within an adversarial model, as far as it is true that the parties are in conflict and interested in their own success, it is no less true that the judge or the court should consider the truth or falsehood of their claims, not their personal or political convenience.

7. Conclusions on Truth and Justice

The points examined above confirm the relevance of abduction for legal reasoning and inquiry. There is such thing as *Legal Abduction*, even though abduction *per se* cannot provide a justification of judicial decisions. As we saw, it is rather a process of IBE that provides a justification concerning both the fact-finding and the law-finding.

To conclude on truth and justice, notice that where a just decision follows from a true representation of the disputed facts and an acceptable norm or principle, truth is a necessary condition of justice, even though it is not a sufficient condition of it. Essentially, a judicial decision is just if (i) factual premises are true and (ii) normative premises are acceptable. Now, concerning the first condition, justice follows from a true account of the facts. There cannot be justice without truth. There cannot be a just decision on the basis of a false reconstruction of what happened or matters. In this sense, *justice follows from truth*.[43]

Abbreviations

CP: *Collected Papers of C.S. Peirce*. V. I-6 ed. by HARTSHORNE, C.; WEISS, P. [1931-5]; v. 7-8 ed. by BURKS, A. [1958]. Harvard University Press, 1931-1958. [For example, CP 5.189: volume 5, paragraph 189.]

W: *Writings of C.S. Peirce*: a Chronological Edition. Ed. by FISCH, M. et al.

[43] The author thanks all the participants in a seminar on Legal Philosophy held in Padova on June 2005, and two anonymous referees of this journal, for their comments on previous versions of this paper; he also thanks Prof. Susan Haack for a very helpful exchange.

Bloomington: Indiana University Press, 1982-. 6 vols. [For example, W1: 210: volume 1, page 210.]

MW: *The Middle Works of J. Dewey, 1899-1924*. Ed. by BOYDSTON, J.A. Carbondale/ Edwardsville: Southern Illinois University Press, 1976-83. [For example MW 3: 111: volume 3, page 111.]

References

ABIMBOLA, K. (2001). Abductive Reasoning in Law: Taxonomy and Inference to the Best Explanation. *Cardozo Law Review*, v. 22, P. 1683-1745 [2001].

ALEXY, R. (2003). Constitutional Rights, Balancing, and Rationality. *Ratio Juris*, v. 16, P. 131-40 [2003].

_____ (2004). The Nature of Legal Philosophy. *Ratio Juris*, v. 17, P. 156-67 [2004].

ANDERSON, B. (1996). Discovery. In: *Legal Decision-Making*. Dordrecht: Kluwer Academic Publishers.

ANDERSON, D.A. (1986) The Evolution of Peirce's Concept of Abduction. *Transactions of the Charles S. Peirce Society*, v. XXII, 145-64 [1986].

AYIM, M. (1974). Retroduction: The Rational Instinct. *Transactions of the Charles S. Peirce Society*, v. X, p. 34-43 [1974].

CARCATERRA, G. (2002). Indizi di norme. *Sociologia del diritto*, v. XXIX, p. 123-39 [2002].

CARDOZO, B.N. (1921). *The Nature of Judicial Process*. New Haven and London: Yale University Press [1991].

CONTE, A.G. (2002). Unomia. Il luogo delle regole in un mondo di fatti. *Sociologia del diritto*, v. XXIX, p. 9-44 [2002].

DASCAL, M.; WRÓBLEWSKI, J. (1988). Transparency and Doubt: Understanding and Interpretation in Pragmatics and in Law. *Law and Philosophy*, v. 7, p. 203-24 [1988].

DOWNARD, J.B. (2000). The Common Law and the Forms of Reasoning. *International Journal for the Semiotics of Law*, v. 13, p. 377-406 [2000].

ECO, U.; SEBEOK, T.A. (Eds.) (1983). *The Sign of Three*: Holmes, Dupin, Peirce. Bloomington: Indiana University Press.

FANN, K.T. (1970). *Peirce's Theory of Abduction*. The Hague: Martinus Nijhoff.

FERRAJOLI, L. (1989). *Diritto e ragione*. Roma-Bari: Laterza.

FERRER, J. (2004). "It is proven that *p*": The Notion of Proven Fact in the Law. *Associations*, v. 8, p. 29-54 [2004].

FERRUA, P. (1997). *Studi sul processo penale*, III. Torino: Giappichelli.

FRANK, J. (1930). *Law and the Modern Mind*. Glouchester, MA: Peter Smith [1970].

_____ (1949). *Courts on Trial*: Myth and Reality in American Justice. Princeton: Princeton University Press [1973].

FRANKFURT, H.G. (1958). Peirce's Notion of Abduction. *The Journal of Philosophy*, v. 55, p. 593-7 [1958].

GABBAY, D.; WOODS, J. (2001). The New Logic. *Logic Journal of the IGPL*, v. 9, p. 141-74 [2001].

_____ (2005). *The Reach of Abduction*: Insight and Trial. New York: Elsevier Academic Press.

GIANFORMAGGIO, L. (1997). "Like"–"Equal"–"Similar": Are They To Be Treated Alike? In: WRIGHT, G.H. von *et al.* (Eds.). *Normative Systems in Legal and Moral Theory*. Berlin: Duncker & Humblot. p. 251-77.

GRICE, H.P. (1989). *Studies in the Way of Words*. Cambridge, MA/London: Harvard University Press.

HAACK, S. (2001). An Epistemologist in the Bramble-Bush: At the Supreme Court with Mr. Joiner. *Journal of Health Politics, Policy and Law*, v. 26, p. 217-47 [2001].

_____ (2003). Inquiry and advocacy, fallibilism and finality: culture and inference in science and the law. *Law, Probability and Risk*, v. 2, p. 205-14 [2003].

_____ (2004a). Truth and Justice, Inquiry and Advocacy, Science and Law. *Ratio Juris*, v. 17, p. 15-26 [2004].

_____ (2004b). Epistemology Legalized: Or, Truth, Justice, and the American Way. *The American Journal of Jurisprudence*, v. 49, p. 43-61 [2004].

HANSON, N.R. (1958). The Logic of Discovery. *The Journal of Philosophy*, v. 55, p. 1073-89 [1958].

HARMAN, G. (1965). Inference to the Best Explanation. *The Philosophical Review*, v. 74, p. 88-95 [1965].

HART, H.L.A. (1994). *The Concept of Law*. 2th ed. Oxford: Oxford University Press.

HEMPEL, C.G. (1942). The function of general laws in history. *The Journal of Philosophy*, v. 39, p. 35-48 [1942].

HINTIKKA, J. (1998). What is Abduction? The Fundamental Problem of Contemporary

Epistemology. *Transactions of the Charles S. Peirce Society*, v. XXXIV, p. 503-33 [1998].

HOOKWAY, C. (2000). *Truth, Rationality, and Pragmatism*. Oxford: Oxford University Press.

HUTCHESON, J.C. (1929). The Judgment Intuitive: The Function of the "Hunch" in Judicial Decision. *Cornell Law Quarterly*, v. 14, p. 274-88 [1929].

IACOVIELLO, F.M. (1997). *La motivazione della sentenza penale e il suo controllo in cassazione*. Milano: Giuffrè.

JØRGENSEN, J. (1938). Imperatives and Logic. *Erkenntnis*, v. 7, p. 288-96 [1938].

JOSEPHSON, J.R. (2001). On the Proof Dynamics of Inference to the Best Explanation. *Cardozo Law Review*, v. 22, p. 1621-43 [2001].

JOSEPHSON, J.R.; JOSEPHSON, S.G. (Eds.) (1994). *Abductive Inference*. Cambridge: Cambridge University Press.

KAPITAN, T. (1990). In What Way is Abductive Inference Creative? *Transactions of the Charles S. Peirce Society*, v. XXVI, p. 499-512 [1990].

KELMAN, M. (1987). *A Guide to Critical Legal Studies*. Cambridge, MA/London: Harvard University Press.

KENNEDY, D. (1997) *A Critique of Adjudication (fin de siècle)*. Cambridge, MA/ London: Harvard University Press.

LEVI, I. (1997). Inference and Logic According to Peirce. In: BRUNNING, J.; FORSTER, P. (Eds.). *The Rule of Reason*: The Philosophy of Charles Sanders Peirce. Toronto: University of Toronto Press. p. 34-56.

_____ (2004). Beware of Syllogism: Statistical Reasoning and Conjecturing According to Peirce. In: MISAK, C.J. (Ed.). *The Cambridge Companion to Peirce*. Cambridge: Cambridge University Press. p. 257-86.

LIPTON, P. (2004). *Inference to the Best Explanation*. 2th ed. London: Routledge.

McJOHN, S.M. (1993). On Uberty: Legal Reasoning by Analogy and Peirce's Theory of Abduction. *Willamette Law Review*, v. 29, p. 191-235 [1993].

MENDELL, M. (1994). Dewey and the Logic of Legal Reasoning. *Transactions of the Charles S. Peirce Society*, v. XXX, p. 575-635 [1994].

MISAK, C.J. (1991). *Truth and the End of Inquiry: A Peircean Account of Truth*. Oxford: Oxford University Press.

NERHOT, P. (1994). *Diritto – Storia*. Padova: Cedam.

NEWMAN, P. (2000). Law and Science: The Testing of Justice. *New York University Annual Survey of American Law*, v. 57, p. 419-27 [2000].

PAAVOLA, S. (2004). Abduction through Grammar, Critic, and Methodeutic. *Transactions of the Charles S. Peirce Society*, v. XL, 245-70 [2004].

RAZ, J. (2003). About Morality and the Nature of Law. *American Journal of Jurisprudence*, v. 48, p. 1-15 [2003].

SCHUM, D.A. (2001). Species of Abductive Reasoning in Fact Investigation and Law. *Cardozo Law Review*, v. 22, p. 1645-81 [2001].

STONE, J. (1985). *Precedent and Law*. Sydney: Butterworths.

TARUFFO, M. (1992). *La prova dei fatti giuridici*. Milano: Giuffrè.

TIERCELIN, C. (1993). *La pensée-signe* : Études sur C.S. Peirce. Nîmes : Éditions Jacqueline Chambon.

TUZET, G. (2004). Abduzione: quattro usi sociologico-giuridici. *Sociologia del diritto*, v. XXXI, p. 117-31 [2004].

_____ (2005). Abduction and Deduction: Epistemic Justice *vs*. Political Justice? In: DAHLMAN, C.; KRAWIETZ, W. (Eds.). *Values, Rights and Duties in Legal and Philosophical Discourse*. Berlin: Duncker & Humblot. p. 211-21.

_____ [forthcoming]. Projectual Abduction. In: MAGNANI, L. (Ed.). Special issue of the *Logic Journal of IGPL*.

UNIACKE, S. (1994). *Permissible Killing*: The self-defence justification of homicide. Cambridge: Cambridge University Press.

WALKER, V.R. (2001). Theories of Uncertainty: Explaining The Possible Sources of Error in Inferences. *Cardozo Law Review*, v. 22, p. 1523-70 [2001].

WEINSTEIN, J.B. (1966). Some Difficulties in Devising Rules for Determining Truth in Judicial Trials. *Columbia Law Review*, v. 66, p. 223-46 [1966].

WRÓBLEWSKI, J. (1992). *The Judicial Application of Law*. Ed. by BANKOWSKI, Z.; MacCORMICK, N. Dordrecht: Kluwer Academic Publishers.